

SECURITIES AND EXCHANGE COMMISSION

FORM 20-F

Annual and transition report of foreign private issuers pursuant to sections 13 or 15(d)

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CGG

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SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM 20-F

☐ REGISTRATION STATEMENT PURSUANT TO SECTION 12(B) OR (G) OF THE SECURITIES EXCHANGE ACT OF 1934

OR

☒ ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(D) OF THE SECURITIES EXCHANGE ACT OF 1934
For the Fiscal Year Ended December 31, 2016

OR

☐ TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(D) OF THE SECURITIES EXCHANGE ACT OF 1934

OR

☐ SHELL COMPANY REPORT PURSUANT TO SECTION 13 OR 15(D) OF THE SECURITIES EXCHANGE ACT OF 1934

Date of Event Requiring this Shell Company Report

Commission File Number 001-14622

CGG

(Exact name of registrant as specified in its charter)

CGG

(Translation of registrant's name into English)

Republic of France

(Jurisdiction of incorporation or organization)

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Securities registered or to be registered pursuant to Section 12(b) of the Act.

<u>Title of each class</u>	<u>Name of each exchange on which registered</u>
American Depositary Shares representing Ordinary Shares, nominal value 0.80 per share	New York Stock Exchange

Securities registered or to be registered pursuant to Section 12(g) of the Act.

None

(Title of class)

Securities for which there is a reporting obligation pursuant to Section 15(d) of the Act.

7.75% Senior Notes due 2017

6.50% Senior Notes due 2021

6.875% Senior Notes due 2022

(Title of class)

Indicate the number of outstanding shares of each of the issuer's classes of capital or common stock as of the close of the period covered by the annual report.

22,133,149 Ordinary Shares, nominal value 0.80 per share

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ☐ No ☒

If this report is an annual or transition report, indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934. Yes ☐ No ☒

Note – checking the box above will not relieve any registrant required to file reports pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934 from their obligations under those sections.

Indicate by check mark whether the registrant has submitted electronically and posted on its corporate website, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T (§ 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files).** Yes ☐ No ☐

** This requirement is not currently applicable to the registrant.

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☒ No ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, or a non-accelerated filer. See definition of "accelerated filer and large accelerated filer" in Rule 12b-2 of the Exchange Act. (Check one):

Large accelerated filer ☒

Accelerated filer ☐

Non-accelerated filer ☐

Indicate by check mark which basis of accounting the registrant has used to prepare the financial statements included in this filing: US GAAP ☐

International Financial Reporting Standards as issued by the International Accounting Standards Board ☒ Other ☐

If "other" has been checked in response to the previous question, indicate by check mark which financial statement item the registrant has elected to follow: Item 17 ☐ Item 18 ☐

If this is an annual report, indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes ☐ No ☒

PRESENTATION OF INFORMATION

Unless the context otherwise requires, “CGG” refers to CGG SA, and “we”, “us”, “our” and “Group” refers to CGG SA and its subsidiaries.

References to “Senior Notes” are to our 7.75% Senior Notes due 2017, our 5.875% Senior Notes due 2020, our 6.50% Senior Notes due 2021 and our 6.875% Senior Notes due 2022. References to “convertible bonds” are to our 1.75% Convertible Bonds due 2019 and our 1.25% Convertible Bonds due 2020. References to the “US revolving facility” are to the US\$165 million revolving credit facility under our senior secured New York-law credit agreement dated July 15, 2013, as amended from time to time. References to the “French revolving facility” are to the US\$325 million revolving credit facility under our senior secured French-law revolving facility agreement dated July 31, 2013 as amended from time to time. References to the “Nordic credit facility” are to the US\$250 million Norwegian-law agreement split into US\$150 million term loan and US\$100 million revolving facility dated July 1, 2013. References to the “2019 secured term loans” are to the US\$342 million term loan facility under our New York-law term loan credit agreement dated November 19, 2015, as amended from time to time. References to the “Credit Facilities” are to the French revolving facility, the US revolving facility, and the 2019 secured term loans, collectively.

References to the “Geoscience Acquisition” are to our acquisition of most of the Geoscience Division of Fugro N.V. (“Fugro”), including Fugro-Geoteam, Fugro Seismic Imaging, Fugro Geophysical and Geological Services and De Regt Marine Cables, as well as all related entities and assets, but excluding Fugro’s multi-client library and OBN activity. References to the “Seabed JV” are to the joint venture between us and Fugro specializing in shallow water and ocean bottom systems. References to the “Transformation Plan” are to our ongoing transformation plan intended to transform CGG from a seismic acquisition company into an integrated geosciences group.

In this annual report, references to “United States” or “US” are to the United States of America, references to “US dollars”, “\$” or “US\$” are to United States dollars, references to “France” are to the Republic of France, references to “Norway” are to the Kingdom of Norway, references to “NOK” are to Norwegian kroner and references to “euro” or “ ” are to the single currency introduced at the start of the third stage of European Economic and Monetary Union pursuant to the Treaty establishing the European Union.

As our shares are listed on the New York Stock Exchange (in the form of American Depositary Shares), and the offer and sale of certain of our bonds was registered with the SEC, we are required to file an annual report on Form 20-F with the SEC. Our annual report includes our annual financial statements prepared in accordance with International Financial Reporting Standards (“IFRS”) and its interpretations as issued by the International Accounting Standards Board (IASB). These consolidated financial statements were also prepared in accordance with IFRS as adopted by the European Union.

Unless otherwise indicated, statements in this annual report relating to market share, ranking and data are derived from management estimates based, in part, on independent industry publications, reports by market research firms or other published independent sources. Any discrepancies in any table between totals and the sums of the amounts listed in such table are due to rounding.

FORWARD-LOOKING STATEMENTS

This annual report includes “forward-looking statements” within the meaning of the federal securities laws, which involve risks and uncertainties, including, without limitation, certain statements made in the sections entitled “Information on the Company” and “Operating and Financial Review and Prospects”. You can identify forward-looking statements because they contain words such as “believes”, “expects”, “may”, “should”, “seeks”, “approximately”, “intends”, “plans”, “estimates”, or “anticipates” or similar expressions that relate to our

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strategy, plans or intentions. These forward-looking statements are subject to risks and uncertainties that may change at any time, and, therefore, our actual results may differ materially from those that we expected. We have based these forward-looking statements on our current views and assumptions about future events. While we believe that our assumptions are reasonable, we caution that it is very difficult to predict the impact of known factors, and, of course, it is impossible for us to anticipate all factors that could affect our actual results. All forward-looking statements are based upon information available to us on the date of this annual report.

Important factors that could cause actual results to differ materially from our expectations (“cautionary statements”) are disclosed under “Item 3: Key Information – Risk Factors” and elsewhere in this annual report, including, without limitation, in conjunction with the forward-looking statements included in this annual report. Some of the factors that we believe could affect our actual results include:

- the progress and outcome of discussions with our stakeholders (currently involving an ‘ad hoc representative’ (*Mandataire ad hoc*)) to achieve a financial restructuring in light of a debt level that we consider too high, including associated court proceedings and the impact on our business and working capital;
- the impact of the current economic environment and oil and natural gas prices;
- the social, political and economic risks of our global operations;
- our ability to integrate successfully the businesses or assets we acquire;
- the risks associated with activities operated through joint ventures in which we hold a minority interest;
- any write-downs of goodwill on our balance sheet;
- our ability to sell our seismic data library;
- exposure to foreign exchange rate risk;
- our ability to finance our operations on acceptable terms;
- the impact of fluctuations in fuel costs on our marine acquisition business;
- the weight of intra-group production on our results of operations;
- the timely development and acceptance of our new products and services;
- difficulties and costs in protecting intellectual property rights and exposure to infringement claims by others;
- ongoing operational risks and our ability to have adequate insurance against such risks;
- our liquidity and outlook;
- the implementation of our Transformation Plan;
- the level of capital expenditures by the oil and gas industry and changes in demand for seismic products and services;
- our clients’ ability to unilaterally delay or terminate certain contracts in our backlog;
- the effects of competition;
- difficulties in adapting our fleet to changes in the seismic market;
- the seasonal nature of our revenues;
- the costs of compliance with governmental regulation, including environmental, health and safety laws;
- our substantial indebtedness and the restrictive covenants in our debt agreements;
- our ability to access the debt and equity markets during the periods covered by the forward-looking statements, which will depend on general market conditions and on our credit ratings for our debt obligations;

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exposure to interest rate risk; and

our success at managing the foregoing risks.

We undertake no obligation to update or revise any forward-looking statements, whether as a result of new information, future events or otherwise. We caution you that the foregoing list of important factors may not contain all of the material factors that are important to you. In addition, in light of these risks, uncertainties and assumptions, the forward-looking events discussed in this annual report might not occur. When considering forward-looking statements, you should keep in mind the risk factors and other cautionary statements included in this annual report, including those described in “Item 3: Key Information – Risk Factors” of this annual report.

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PART I

Item 1: IDENTITY OF DIRECTORS, SENIOR MANAGEMENT AND ADVISERS

Not applicable.

Item 2: OFFER STATISTICS AND EXPECTED TIMETABLE

Not applicable.

Item 3: KEY INFORMATION

Selected Financial Data

The selected financial data included below should be read in conjunction with, and are qualified in their entirety by reference to, our consolidated financial statements and “Item 5: Operating and Financial Review and Prospects” included elsewhere in this annual report. The selected financial data for each of the years in the five-year period ended December 31, 2016 have been derived from our audited consolidated financial statements prepared in accordance with IFRS.

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	At December 31,				
	2016	2015	2014	2013	2012 (restated*)
	(In millions of US\$ except per share data and ratios)				
Statement of operations data:					
Operating revenues	1,195.5	2,100.9	3,095.4	3,765.8	3,410.5
Other revenues from ordinary activities	1.4	1.4	1.5	2.1	3.6
Cost of operations	(1,250.4)	(1,817.2)	(2,510.8)	(2,977.2)	(2,685.4)
Gross profit	(53.5)	285.1	586.1	790.7	728.7
Research and development expenses, net	(13.6)	(68.7)	(101.2)	(105.9)	(92.8)
Marketing and selling expenses	(62.2)	(87.2)	(113.9)	(118.6)	(96.0)
General and administrative expenses	(84.3)	(98.5)	(146.6)	(215.9)	(182.6)
Other revenues (expenses)	(182.9)	(384.5)	(506.9)	(105.2)	(26.7)
Impairment of goodwill	–	(803.8)	(415.0)	(640.0)	–
Operating income	(396.5)	(1,157.6)	(697.5)	(394.9)	330.6
Cost of financial debt, net	(174.2)	(178.5)	(200.6)	(191.7)	(156.7)
Other financial income (loss)	(11.4)	(54.5)	(43.0)	(22.3)	(19.7)
Income taxes	13.7	(77.0)	(123.8)	(82.9)	(99.2)
Equity in income of affiliates	(8.2)	21.4	(81.7)	0.6	37.4
Net income (loss)	(576.6)	(1,446.2)	(1,146.6)	(691.2)	92.4
Attributable to non-controlling interests	(3.2)	4.0	7.8	7.6	17.2
Attributable to owners of CGG SA	(573.4)	(1,450.2)	(1,154.4)	(698.8)	75.2
Net income (loss) per share:					
Basic ⁽¹⁾	(27.57)	(238.50)	(189.95)	(115.14)	13.51
Diluted ⁽²⁾	(27.57)	(238.50)	(189.95)	(115.14)	13.40
Balance sheet data:					
Cash and cash equivalents	538.8	385.3	359.1	530.0	1,520.2
Working capital ⁽³⁾	334.6	428.5	539.4	532.0	783.5
Property, plant & equipment, net	708.6	885.2	1,238.2	1,557.8	1,159.5
Multi-client surveys	847.9	927.1	947.4	818.0	604.2
Goodwill	1,223.3	1,228.7	2,041.7	2,483.2	2,415.5
Total assets	4,861.5	5,513.0	7,061.0	8,262.8	8,332.8
Gross financial debt ⁽⁴⁾	2,850.4	2,884.8	2,778.9	2,747.6	2,305.2
Equity attributable to owners of CGG SA	1,120.7	1,312.2	2,693.0	3,799.9	4,483.2
Other financial historical data and other ratios:					
EBIT ⁽⁵⁾	(404.7)	(1,136.2)	(779.2)	(394.3)	368.0
EBITDAS ⁽⁶⁾	273.6	452.8	775.7	1,139.7	1,006.2
Capital expenditures ⁽⁷⁾	104.5	145.6	281.9	347.2	368.8
Investments in multi-client surveys, net cash	295.1	284.6	583.3	479.4	363.8
Net financial debt ⁽⁸⁾	2,311.6	2,499.5	2,419.8	2,217.7	785.0
Gross financial debt ⁽⁴⁾ / EBITDAS ⁽⁶⁾	10.4x	6.4x	3.6x	2.4x	2.3x
Net financial debt ⁽⁸⁾ / EBITDAS ⁽⁶⁾	8.4x	5.5x	3.1x	1.9x	0.8x
EBITDAS ⁽⁶⁾ / Cost of financial debt, net	1.6x	2.5x	3.9x	5.9x	6.4x

* Restatement related to IAS 19 Revised-Employee benefits effective January 1, 2013. All comparative financial information was restated to present comparative amounts for each period presented as if the new accounting policy had always been applied.

(1) Basic per share amounts have been calculated on the basis of 20,795,431, 6,080,535, 6,077,792, 6,069,196 and 5,565,852 weighted average outstanding shares in 2016, 2015, 2014, 2013 and 2012 respectively.

- As a result of the February 5, 2016 CGG SA capital increase via an offering of preferential subscription rights to existing shareholders, the calculation of basic and diluted earnings per shares for 2015, 2014, 2013, and 2012 has been adjusted retrospectively. Number of ordinary shares outstanding has been adjusted to reflect the proportionate change in the number of shares. As a result of the July 20, 2016 reverse stock split the calculation of basic and diluted earnings per share for 2015, 2014, 2013, and 2012 has been adjusted retrospectively. Number of ordinary shares outstanding has been adjusted to reflect the proportionate change in the number of shares.*
- (2) *Diluted per share amounts have been calculated on the basis of 20,795,431, 6,080,535, 6,077,792, 6,069,196 and 5,611,588 weighted average outstanding shares in 2016, 2015, 2014, 2013 and 2012 respectively.*
- As a result of the February 5, 2016 CGG SA capital increase via an offering of preferential subscription rights to existing shareholders, the calculation of basic and diluted earnings per shares for 2015, 2014, 2013 and 2012 has been adjusted retrospectively. Number of ordinary shares outstanding has been adjusted to reflect the proportionate change in the number of shares.*
- As a result of the July 20, 2016 reverse stock split the calculation of basic and diluted earnings per share for 2015, 2014, 2013, and 2012 has been adjusted retrospectively. Number of ordinary shares outstanding has been adjusted to reflect the proportionate change in the number of shares.*
- (3) *“Working capital” is defined as net trade accounts and notes receivable, net inventories and work-in-progress, tax assets, other current assets and assets held for sale less trade accounts and notes payable, accrued payroll costs, income tax payable, advance billings to customers, deferred income, current provisions and other current liabilities.*
- (4) *“Gross financial debt” is defined as financial debt, including current maturities and bank overdrafts.*
- (5) *Earnings before interest and tax (“EBIT”) is defined as operating income plus our share of income in companies accounted for under the equity method. EBIT is used by management as a performance indicator because it captures the contribution to our results of the significant businesses that we manage through our joint ventures. However, other companies may present EBIT and related measures differently than we do. EBIT is not a measure of financial performance under IFRS and should not be considered as an alternative to cash flow from operating activities or as a measure of liquidity or an alternative to net income as indicators of our operating performance or any other measures of performance derived in accordance with IFRS. See “Item 5: Operating and Financial Review and Prospects – Liquidity and Capital Resources – EBIT and EBITDAS” for a reconciliation of EBIT to operating income.*
- (6) *“EBITDAS” is defined as earnings before interest, tax, depreciation, amortization net of amortization costs capitalized to multi-client surveys and share-based compensation cost. Share-based compensation includes both stock options and shares issued under our share allocation plans. EBITDAS is presented as additional information because we understand that it is one measure used by certain investors to determine our operating cash flow and historical ability to meet debt service and capital expenditure requirements. However, other companies may present EBITDAS and similar measures differently than we do. EBITDAS is not a measure of financial performance under IFRS and should not be considered as an alternative to cash flow from operating activities or as a measure of liquidity or an alternative to net income as indicators of our operating performance or any other measures of performance derived in accordance with IFRS. See “Item 5: Operating and Financial Review and Prospects – Liquidity and Capital Resources – EBIT and EBITDAS” for a reconciliation of EBITDAS to net cash provided by operating activities.*
- (7) *“Capital expenditures” is defined as “total capital expenditures (including variation of fixed assets suppliers, excluding multi-client surveys)” from our statement of cash flows.*
- (8) *“Net financial debt” is defined as gross financial debt less cash and cash equivalents. Net financial debt is presented as additional information because we understand that certain investors believe that netting cash against debt provides a clearer picture of the financial liability exposure. However, other companies may present net financial debt differently than we do. Net financial debt is not a measure of financial performance under IFRS and should not be considered as an alternative to any other measures of performance derived in accordance with IFRS. See “Item 5: Operating and Financial Review and Prospects – Liquidity and Capital Resources – Financial Debt” for a reconciliation of net financial debt to certain financing items on our balance sheet.*

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Capitalization and Indebtedness

Not applicable

Reasons for the Offer and Use of Proceeds

Not applicable

Risk Factors

RISKS RELATED TO OUR FINANCIAL RESTRUCTURING

We are discussing with our stakeholders a financial restructuring to provide us with a level of indebtedness and cost of debt that is substantially reduced and sustainably adapted to our cash flows.

On January 5, 2017 and March 3, 2017, we communicated that with a market environment expected to remain similar in 2017 to 2016 and continuing to weigh on our revenues, we consider that our debt level is too high. We do not expect our performance to generate sufficient cash flow to service our current level of debt over the years to come. We have therefore commenced discussions with certain stakeholders from various jurisdictions in order to achieve a financial restructuring. The President of the Commercial Court of Paris (*Tribunal de Commerce de Paris*) on February 27, 2017 appointed an ‘ad hoc representative’ (*Mandataire ad hoc*) in order to facilitate the discussions in a manner intended to respect the best interests of all of our stakeholders. The objective of this restructuring is to provide us with a level of indebtedness and cost of debt that is substantially reduced and sustainably adapted to our cash flows. The proposed debt reduction would involve the conversion of unsecured debt into equity and the extension of the secured debt maturities. See “Our Business – Recent Developments – Financial restructuring discussions” for more information on the status of the discussions. No assurance can be given as to the outcome of the discussions, any such restructuring and its implementation.

A restructuring plan may provide for CGG SA to equitize part of its debt and potentially raise additional capital, which could significantly dilute shareholders and holders of our American Depositary Shares through the issuance of a large number of shares and other equity securities.

We currently face uncertainties related to our business, the market for our goods and services and our future financial condition, as well as risks and costs associated with our financial restructuring process. As a result, our restructuring discussion with creditors and shareholders may lead to a restructuring plan that provides for CGG SA to equitize part of its debt and potentially raise additional capital to continue the group’s operations and meet our funding needs. Depending on the restructuring plan that might be agreed by us and our stakeholders, any such new money could be provided by existing shareholders, holders of our convertible bonds, holders of our Seniors Notes, lenders under our US revolving facility, French revolving facility and 2019 secured term loans and/or the public and could take the form of the issuance of a large number of shares and other equity and/or equity-linked securities. The issuance of new shares could be carried out at prices substantially below the market price of our common stock and could significantly dilute the ownership of our shareholders and holders of our American Depositary Shares. The future exercise or conversion of equity or equity-linked instruments could further dilute shareholders and holders of our American Depositary Shares, and the existence of such potential dilution would adversely affect the trading price of our shares and American Depositary Shares.

We may seek the protection of the bankruptcy court in connection with a negotiated restructuring or otherwise, which may harm our business and place common shareholders and holders of our American Depositary Shares at significant risk of losing substantially all of their interests in us.

As a result of the impact on our financial position from the challenging market conditions which persist with weak volumes and the debt level that we consider too high, we are discussing with stakeholders, under a French *mandat ad hoc* process, various strategic alternatives to address our liquidity and capital structure, including

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strategic and refinancing alternatives, which may include, but not be limited to, seeking a restructuring, amendment or refinancing of existing debt through a *sauvegarde* proceeding in France and/or Chapter 11 and/or Chapter 15 of the U.S. Bankruptcy Code and/or other proceedings.

Seeking bankruptcy court protection could have a material adverse effect on our business, reputation, financial condition and results of operations. So long as a court process continues, our senior management will be required to spend a significant amount of time and effort dealing with the reorganization instead of focusing exclusively on our business operations. Bankruptcy court protection also might make it more difficult to retain management and other key personnel necessary to the success and growth of our business. In addition, the longer a court process continues, the more likely it is that our customers and suppliers could lose confidence in our ability to reorganize our business successfully and could seek to establish alternative commercial relationships.

If our ongoing negotiations with our stakeholders, including our creditors, result in an agreed restructuring that equitizes certain of our indebtedness, our common shareholders and holders of our American Depositary Shares would experience significant dilution. In the absence of such an agreed restructuring, we have a significant amount of indebtedness that is senior to our existing common shares in our capital structure, and we believe that seeking bankruptcy court protection could place our common shareholders and holders of our American Depositary Shares at significant risk of losing substantially all of their interests us.

If we are unable to comply with the financial covenants governing our indebtedness or timely obtain necessary consents or waivers of any defaults that occur with respect to our indebtedness or achieve specific steps to conserve liquidity and/or secure additional capital, we may be unable to continue as a going concern.

Our substantial level of indebtedness, and the terms of the agreements that govern such indebtedness, require us and our subsidiaries to use a substantial portion of our cash flow from operations to pay interest and principal on the debt, which reduces the funds available for working capital, capital expenditures and other general corporate purposes and limits our ability to obtain additional financing.

Our Credit Facilities contain financial covenants that we are required to test on a quarterly basis. We obtained, in December 2016, consent from the requisite majority of the lenders under the French and US revolving facilities and the Nordic credit facility for the disapplication of the testing of the Total Leverage Ratio and the Interest Cover Ratio in respect of the Relevant Period ended on December 31, 2016 and we obtained a further consent from such lenders and for the lenders under the 2019 secured term loans for the Relevant Period ended March 31, 2017.

While we will endeavor to take appropriate mitigating actions to refinance or renegotiate our indebtedness prior to its maturity and to remediate any potential defaults, there is no assurance that any particular actions with respect to refinancing or renegotiation of existing indebtedness or remediating potential defaults in our existing and future debt agreements will be successful. The uncertainty associated with our ability to respect our financial covenants and meet future payment obligations could raise significant doubt about our ability to continue as a going concern. See note 1.3 to the Company's Consolidated Financial Statements included this annual report.

We continue to evaluate our financial and strategic alternatives, which include a financial restructuring of our existing indebtedness under a *sauvegarde* proceeding in France under the provisions of Articles L.620-1 et seq. of the *Code de commerce* (French Commercial Code) and/or Chapter 11 and/or Chapter 15 of the U.S. Bankruptcy Code and/or other procedures in these and other jurisdictions. We are currently negotiating with our stakeholders, under a French *mandat ad hoc* process, in order to achieve, among others, an extension of our debt maturities and/or a restructuring that equitizes certain of our indebtedness. However, we cannot provide assurance that we will be successful in completing a refinancing or restructuring of our existing indebtedness consensually or otherwise.

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The uncertainties surrounding the duration and the outcome of the ongoing financial restructuring could have a negative effect on our working capital needs.

We can no longer obtain financing at normal market conditions and our needs must be entirely met by our own available funds. As of March 2, 2017, in light of the Group's cash flow projections based on current operations and in the absence of any acceleration of the Group's financial debt, as described below, the CGG board of directors judged that we had enough cash liquidity to fund our operations until at least December 31, 2017, provided that certain planned specific actions, which were subject to negotiation with other parties, were successfully implemented during the period. As of April 27, 2017, we had successfully implemented certain of such actions, namely the proactive management of vessel charter contract costs and the fleet ownership changes (see note 30 to our consolidated financial statements included herein). However, the other specific planned actions may not occur, which could reduce our liquidity. In addition, the uncertainties created by our financial situation may have a negative effect on our working capital needs. For example, our relationships with suppliers could deteriorate, as they could demand more restrictive payment terms. Further, our inability to obtain financing at normal market conditions adversely and materially affects our ability to fund additional working capital demands.

For further important risks related to our indebtedness and liquidity, see "Risks Related to Our Indebtedness" below.

RISKS RELATED TO OUR BUSINESS

Current economic uncertainty and the volatility of oil and natural gas prices could have a significant adverse effect on us.

Global market and economic conditions are uncertain and volatile. In recent periods, economic contractions and uncertainty have weakened demand for oil and natural gas while the introduction of new production capacities have increased supply, resulting in lower prices, and consequently a reduction in the levels of exploration for hydrocarbons and demand for our products and services. These developments have had a significant adverse effect on our business, revenue and liquidity. The price of Brent decreased from US\$110.80 per barrel as of December 31, 2013 to US\$57.33 per barrel as of December 31, 2014 to US\$37.28 per barrel as of December 31, 2015 and rose to US\$56.82 as of December 31, 2016. It is difficult to predict how long the current economic conditions and imbalance between supply and demand will persist, whether oil prices will remain at a low level, whether the current market conditions will deteriorate further, and which of our products and services may be adversely affected. Nonetheless, the reduction in demand for our products and services and the resulting pressure on pricing in our industry could continue to negatively affect our business, results of operations, financial condition and cash flows.

We have had in the past and may have in the future impairment losses as events or changes in circumstances occur that reduce the fair value of an asset below its book value. We may also have write-offs and non-recurring charges. For 2014, 2015 and 2016, such asset impairments, write-offs and non-recurring charges totaled US\$939 million, US\$1,177 million and US\$184 million, respectively. These losses and changes could have a material adverse effect on our results of operations and financial condition.

Uncertainty about the general economic situation and/or the mid-term level of hydrocarbons prices has had and is likely to continue to have a significant adverse impact on the commercial performance and financial condition of many companies, which may affect some of our customers and suppliers. The current economic and oil industry climate may lead customers to cancel or delay orders or leave suppliers unable to provide goods and services as agreed. Our government clients may face budget deficits that prohibit them from funding proposed and existing projects or that cause them to exercise their right to terminate our contracts with little or no prior notice. If our suppliers, vendors, subcontractors or other counterparties are unable to perform their obligations to us or our customers, we may be required to provide additional services or make alternate arrangements on less favorable terms with other parties to ensure adequate performance and delivery of service to our customers.

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These circumstances could also lead to disputes and litigation with our partners or customers, which could have a material adverse impact on our reputation, business, financial condition and results of operations.

Turmoil in the credit markets, such as has been experienced in prior periods, could also adversely affect us and our customers. Limited access to external funding has in the past caused some companies to reduce their capital spending to levels supported by their internal cash flow. Some companies have found their access to liquidity constrained or subject to more onerous terms. In this context, our customers may not be able to borrow money on reasonable terms or at all, which could have a negative impact on their demand for our products, and impair their ability to pay us for our products and services on a timely basis, or at all.

In addition, the potential impact on the liquidity of major financial institutions may limit our ability to fund our business strategy through borrowings under either existing or new debt facilities in the public or private markets and on terms we believe to be reasonable. Persistent volatility in the financial markets could have a material adverse effect on our ability to refinance all or a portion of our indebtedness and to otherwise fund our operational requirements. We cannot be certain that additional funds will be available if needed to make future investments in certain projects, take advantage of acquisitions or other opportunities or respond to competitive pressures. If additional funds are not available, or are not available on terms satisfactory to us, there could be a material adverse impact on our business and financial performance.

We are subject to risks related to our international operations.

With operations worldwide, including in emerging markets, our business and results of operations are subject to various risks inherent in international operations. These risks include:

instability of foreign economies and governments, which can cause investment in capital projects by our potential clients to be withdrawn or delayed, reducing or eliminating the viability of some markets for our services;

risks of war, terrorism, riots and uprisings, which can make it unsafe to continue operations, adversely affect budgets and schedules and expose us to losses;

risk of piracy, which may result in delays carrying out customer contracts in affected areas or their termination;

seizure, expropriation, nationalization or detention of assets, or renegotiation or nullification of existing contracts;

foreign exchange restrictions, import/export quotas, sanctions and other laws and policies affecting taxation, trade and investment; and

availability of suitable personnel and equipment, which can be affected by government policy, or changes in policy, that limit the movement of qualified crew members or specialized equipment to areas where local resources are insufficient.

We are exposed to these risks in all of our international operations to some degree, particularly in emerging markets where the political and legal environment is less stable. We are subject to the risk of adverse developments with respect to certain international operations and any insurance coverage we have may not be adequate to compensate us for any losses arising from such risks.

Revenue generating activities in certain foreign countries may require prior United States government and/or European Union authorities' approval in the form of an export license and may otherwise be subject to tariffs and import/export restrictions. These laws can change over time and may result in limitations on our ability to compete globally. Thus, in the case of the U.S. legislation, non-U.S. persons employed by our separately incorporated non-U.S. entities may conduct business in some foreign jurisdictions that are subject to U.S. trade

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embargoes and sanctions by the U.S. Office of Foreign Assets Control (“OFAC”), including countries that have been designated by the U.S. government as state sponsors of terrorism. We have typically generated revenue in some of these countries through the performance of marine surveys, the provision of data processing and reservoir consulting services, the sale of software licenses and software maintenance and the sale of Sercel equipment. We have current and ongoing relationships with customers in these countries. We have procedures in place to conduct these operations in compliance with applicable U.S. and European laws. However, failure to comply with U.S. or European laws on equipment and services exports could result in material fines and penalties, damage our reputation, and negatively affect the market price of our securities. In addition, our presence in these countries could reduce demand for our securities among certain investors.

Certain of our clients and certain tax, social security or customs authorities may request that we or certain of our subsidiaries or affiliates post performance bonds or guarantees issued by financial institutions, including in the form of standby letters of credit, in order to guarantee our legal or contractual obligations. We cannot assure you that we will be able to provide these bonds or guarantees in the amounts or durations required or for the benefit of the necessary parties. Our failure to comply with these requests could reduce our capacity to conduct business or perform our contracts. In addition, if we do provide these bonds or guarantees, our clients or the relevant authorities may call them under circumstances that we believe to be improper, and we may not be able to challenge such actions effectively in local courts.

We and certain of our subsidiaries and affiliated entities also conduct business in countries where there is government corruption. We are committed to doing business in accordance with all applicable laws and our codes of ethics, but there is a risk that we, our subsidiaries or affiliates or their respective officers, Directors, employees or agents may act in violation of our codes and applicable laws, including the Foreign Corrupt Practices Act of 1977. Any such violations could result in substantial civil and criminal penalties and might materially adversely affect our business and results of operations, financial condition or reputation.

We are subject to certain risks related to acquisitions.

In the past we have grown by acquisitions, some of which, such as the merger with Veritas in 2007, the acquisition of Wavefield in 2008 or the acquisition of Fugro Geoscience Division in 2013, were quite significant. Such transactions, whether completed, pending or likely to be completed in the future, present various financial and management-related risks that can be material, such as integration of the acquired businesses in a cost-effective manner; implementation of a combined business strategy; diversion of management’s attention; outstanding or unforeseen legal, regulatory, contractual, labor or other issues arising from the acquisitions; additional capital expenditure requirements; retention of customers; combination of different company and management cultures; operations in new geographic markets; the need for more extensive management coordination; and retention, hiring and training of key personnel. Should any of these risks associated with acquisitions materialize, they could have a material adverse effect on our business, financial condition and results of operations.

We have transferred our Seabed business to a joint venture company that is controlled by a third party.

In connection with the Geoscience Acquisition, we transferred our shallow water, ocean bottom cable and ocean bottom node activities to a company in which Fugro holds a 60% majority interest and we hold a minority interest. As a result, we no longer have full control over the management and operations of these activities. While we have certain customary rights with respect to certain key decisions relating to the joint venture’s activities, this is not the same as the right to determine the strategy and policies of this business. In addition, our shares in the joint venture company are subject to restrictions on transfer, as well as to Fugro’s right to require us to sell our shares in certain circumstances.

We may need to write down goodwill from our balance sheet.

We have been involved in a number of business combinations in the past, leading to the recognition of large amounts of goodwill on our balance sheet. Goodwill on our balance sheet totaled US\$1,229 million as of

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December 31, 2015 and US\$1,223 millions of dollars as of December 31, 2016 due to exchange rate variations. Goodwill is allocated to cash generating units (“CGUs”) as described in note 11 to our consolidated financial statements for the year ended December 31, 2016. The recoverable amount of a CGU is estimated at each balance sheet date and is generally determined on the basis of a group-wide estimate of future cash flows expected from the CGU in question. The estimate takes into account, in particular, the removal from service of certain assets used in our business (such as decommissioning or coldstacking vessels), or change in purpose of a given asset (such as the use of a seismic vessel as a source-vessel), or any significant underperformance in cash generation relative to previously-expected results, which may arise, for example, from the underperformance of certain assets, a deterioration in industry conditions or a decline in the economic environment. At each balance sheet date, if we expect that a CGU’s recoverable amount will fall below the amount of capital employed recorded on the balance sheet, we may write down some value on given assets and/or the goodwill in part or in whole. Such a write-down would not in itself have an impact on cash flow, but could have a substantial negative impact on our operating income and net income, and as a result, on our shareholders’ equity and net debt/equity ratio. We wrote down US\$415 million of goodwill in our marine acquisition activity as of December 31, 2014 as a result of the deterioration in market conditions. Furthermore, as of December 31, 2015, in response to the continuing deterioration of market conditions and the drastic reduction of our fleet, we wrote down US\$365 million of goodwill in our marine acquisition activity and US\$439 million of goodwill in our Geology, Geophysics & Reservoir (“GGR”) activity, for a total of US\$804 million for 2015. In 2016, we did not write down any goodwill. The only movement in goodwill is linked to exchange rate variations. Particularly in light of our financial condition and difficult market dynamics, no assurance can be given that we will not be required to make future potentially significant goodwill write downs.

We invest significant amounts of money in acquiring and processing seismic data for multi-client surveys without knowing precisely how much of the data we will be able to sell or when and at what price we will be able to sell the data.

We invest significant amounts of money in acquiring and processing seismic data that we own. By making such investments, we are exposed to the following risks:

We may not fully recover the costs of acquiring and processing the data through future sales. The amounts of these data sales are uncertain and depend on a variety of factors, many of which are beyond our control. In addition, the timing of these sales is unpredictable, and sales can vary greatly from period to period. Each of our individual surveys has a limited book life based on its location, so a particular survey may be subject to significant amortization even though sales of licenses associated with that survey are weak or non-existent, thus reducing our net income.

Technological or regulatory changes or other developments could also materially adversely affect the value of the data. For example, regulatory changes such as limitations on drilling could affect the ability of our customers to develop exploration programs, either generally or in a specific location where we have acquired seismic data, and technological changes could make existing data obsolete.

The value of our multi-client data could be significantly adversely affected if any adverse change occurs in the general prospects for oil and gas exploration, development and production activities in the areas where we acquire multi-client data or more generally.

Any reduction in the economic value of such data will require us to write down its recorded value, which could have a material adverse effect on our results of operations. We wrote down the value of our multi-client data library by US\$97 million in the year 2016.

Our results of operations may be significantly affected by currency fluctuations.

We derive a substantial portion of our revenues from international sales, subjecting us to risks relating to fluctuations in currency exchange rates. Our revenues and expenses are mainly denominated in US dollars, and to a significantly lesser extent, in euros, Canadian dollars, Brazilian reais, Australian dollars, Norwegian kroner, British pounds and Chinese renminbi-yuan. Historically, a significant portion of our revenues that were invoiced

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in currencies other than US dollars related to contracts that were effectively priced in US dollars, as the US dollar often serves as the reference currency when bidding for contracts to provide geophysical services.

Fluctuations in the exchange rate of other currencies, particularly the euro, against the U.S. dollar, have had in the past and will have in the future a significant effect upon our results of operations. We attempt to reduce the risks associated with such exchange rate fluctuations through our hedging policy. We cannot assure you that fluctuations in the values of the currencies in which we operate will not materially adversely affect our future results of operations. As of December 31, 2016, we estimate our annual fixed needs in euros to be approximately 400 million and as a result, an unfavorable variation of US\$0.20 in the average yearly exchange rate between the US dollar and the euro would reduce our operating income and our shareholders' equity by approximately US\$80 million. See “– *Market and Other Risks – We are exposed to exchange rates fluctuations.*”

Our working capital needs are difficult to forecast and may vary significantly, which could result in additional financing requirements that we may not be able to meet on satisfactory terms, or at all.

It is difficult for us to predict with certainty our working capital needs. This difficulty is due primarily to working capital requirements related to the marine seismic acquisition business, multi-client projects and the development and introduction of new lines of geophysical equipment products. For example, under specific circumstances, we may have to extend the length of payment terms we grant to customers or may increase our inventories substantially. We may therefore be subject to significant and rapid increases in our working capital needs that we may have difficulty financing on satisfactory terms, or at all, due notably to limitations in our debt agreements or market conditions. See “– *Risks Related to Our Financial Restructuring – The uncertainties surrounding the duration and the outcome of the ongoing financial restructuring could have a negative effect on our working capital needs.*”

Our results of operations may be affected by fluctuations in fuel costs.

Our marine acquisition business, with the fleet described in Item 4 of this report incurs significant fuel costs, which were approximately US\$50 million in 2016, compared to approximately US\$96 million in 2015. Fuel costs can vary depending on the supply location, local regulations and the price of crude oil at a given time. Only a portion of this variation can be contractually charged to or negotiated with the client. We therefore estimate that, by reference to a resized fleet of five operational vessels an increase of 10% of the average annual price of crude oil could increase our fuel costs and have a maximum negative effect of less than US\$5 million on our cash flow.

Our results of operations may be affected by the weight of intra-group production.

We dedicate a significant part of our production capacity to intra-group sales. For example, the Marine, Land and Multi-Physics Acquisition Business Lines may purchase Sercel equipment as well as acquire multi-client data, to be processed by the Subsurface Imaging Business Line. The relative size of our intra-group sales and our external sales has a significant impact both on our revenues and our operating results. With respect to intra-group sales, we capitalize only the direct production costs, and we treat the corresponding general and administrative costs as expenses in our income statement, which decreases operating profit for the period when the sales occur.

Technological changes and new products and services are frequently introduced in the market, and our technology could be rendered obsolete by these introductions, or we may not be able to develop and produce new and enhanced products on a cost-effective and timely basis.

Technology changes rapidly in the seismic industry and new and enhanced products are frequently introduced in the market in which we operate, particularly in the equipment manufacturing and data processing and geoscience sectors. Our success depends to a significant extent upon our ability to develop and produce new

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and enhanced products and services on a cost-effective and timely basis in accordance with industry demands. While we commit substantial resources to research and development, we may encounter resource constraints or technical or other difficulties that could delay the introduction of new and enhanced products and services in the future. In addition, the continuing development of new products risks making our older products obsolete. New and enhanced products and services, if introduced, may not gain market acceptance and may be materially adversely affected by technological changes or introductions of other new products or services by one of our competitors.

We depend on proprietary technology and are exposed to risks associated with the misappropriation or infringement of that technology.

Our ability to maintain or increase prices for our products (such as Sercel equipment and GGR software) and services depends in part on our ability to differentiate the value delivered by our products and services from those delivered by our competitors. Our proprietary technology plays an important role in this differentiation. We rely on a combination of patents, trademarks and trade secret laws to establish and protect our proprietary technology. Patents last up to 20 years, depending on the date of filing and the protection accorded by each country. In addition, we enter into confidentiality and license agreements with our employees, customers and potential customers which limit access to and distribution of our technology. However, actions that we take to protect our proprietary rights may not be adequate to deter the misappropriation or independent third-party development of our technology. In addition, we may have lawsuits filed against us claiming that certain of our products, services, and technologies infringe the intellectual property rights of others. Although we do not have any current litigation involving our intellectual property rights or the intellectual rights of others which may have an impact on us, such litigation may take place in the future. In addition, the laws of certain foreign countries do not protect proprietary rights to the same extent as, in particular, the laws of France or the United States, which may limit our ability to pursue third parties that misappropriate our proprietary technology.

Our failure to attract and retain qualified employees may adversely affect our future business and operations.

Our future results of operations will depend in part upon our ability to retain certain of our highly skilled employees and to attract new ones. A number of our employees are highly skilled scientists and technicians. We compete with other seismic products and services companies and, to a lesser extent, companies in the oil industry for skilled geophysical and seismic personnel, particularly in times when demand for seismic services is relatively high. A limited number of such skilled personnel is available, and demand from other companies may limit our ability to fill our human resources needs. If we are unable to hire and retain a sufficient number of qualified employees, this could impair our ability to compete in the geophysical services industry and to develop and protect our know-how. Our success also depends to a significant extent upon the abilities and efforts of members of our senior management, the loss of whom could materially adversely affect our business and results of operations.

We have had losses in the past and there is no assurance we will be able to restore profitability in the coming years.

We have experienced losses in the past. In 2014, 2015 and 2016, we recorded a net loss attributable to shareholders of US\$1,146.6 million, US\$1,446.2 million and US\$576.6million, respectively. There is no assurance that we will be able to restore profitability in the coming years.

We are exposed to commercial risk and counter-party risk.

Our receivables and investments do not represent a significant concentration of credit risk due to the wide variety of customers and markets in which we sell our services and products and our presence in many geographic areas. We seek to reduce commercial risk by monitoring our customer credit profile. In 2016, the

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Group' s two most significant customers accounted for 6.7% and 6.4% of the Group' s consolidated revenues, compared with 5.0% and 4.9% in 2015 and 7.1% and 5.2% in 2014.

RISKS RELATED TO OUR INDUSTRY

The volume of our business depends on the level of capital expenditures by the oil and gas industry, and reductions in such expenditures may have a material adverse effect on our business.

Demand for our products and services has historically been dependent upon the level of capital expenditures by oil and gas companies for exploration, production and development activities. These expenditures are significantly influenced by oil and gas prices and by expectations regarding future hydrocarbon prices, which may fluctuate based on relatively minor changes in the supply of and demand for oil and gas, expectations regarding such changes and other factors beyond our control. Lower or volatile hydrocarbon prices tend to limit the demand for seismic services and products. In 2015 and 2016, oil and gas companies reduced their planned exploration and production spending due notably to falling oil prices, affecting demand for our products and services. We expect exploration and production spendings to remain at a low level in 2017, in the light of the uncertainties concerning the oil price recovery.

Factors affecting prices and, consequently, demand for our products and services, include:

demand for hydrocarbons;

worldwide political, military and economic conditions, including political developments in the Middle East and North Africa, the Ukraine crisis, economic sanctions, economic growth levels, the availability of financing and the ability of OPEC to set and maintain production levels and prices for oil;

laws or regulations restricting the use of fossil fuels or taxing such fuels and governmental policies regarding atmospheric emissions and use of alternative energy;

technological developments increasing oil and gas extraction capacity or reducing costs;

levels of oil and gas production, changes in those levels and the estimated current and future level of excess production capacity;

the rate of depletion of existing oil and gas reserves and delays in the development of new reserves;

more appetite for onshore activities while offshore activities usually have a higher break-even level;

the pressure imposed by equity markets on oil and gas companies to maintain a dividend distribution policy which could lead them to significantly reduce their capital expenditure plans in the short term;

oil and gas inventory levels;

the price and availability of alternative fuels;

policies of governments regarding the exploration for and production and development of oil and gas reserves in their territories; and

general weather conditions, with warmer temperatures decreasing demand for products such as heating oil and extreme weather events potentially disrupting oil and gas exploration or production operations over a wide area.

Increases in oil and natural gas prices may not increase demand for our products and services or otherwise have a positive effect on our financial condition or results of operations. Forecasted trends in oil and gas exploration and development activities may not materialize and demand for our products and services may not reflect the level of activity in the industry. In particular, with respect to the marine acquisition market, prices remain very dependent upon the balance between supply and demand. They can thus fluctuate only slightly or even decline, even as demand increases if, at the same time, the available production capacity in the market increases to a greater degree.

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Our backlog includes contracts that can be unilaterally delayed or terminated at the client's option.

In accordance with industry practice, contracts for the provision of seismic services typically can be delayed or terminated at the sole discretion of the client without payment of significant cancellation costs to the service provider. As a result, even if contracts are recorded in backlog, there can be no assurance that such contracts will be wholly executed by us and generate actual revenue, or even that the total costs already borne by us in connection with the contract would be covered in full pursuant to any cancellation clause. Furthermore, there can be no assurance that contracts in backlog will be performed in line with their original timetable and any possible delay could result in operating losses as most of our costs are fixed.

We are subject to intense competition in the markets where we carry out our operations, which could limit our ability to maintain or increase our market share or maintain our prices at profitable levels.

Most of our contracts are obtained through a competitive bidding process, which is standard for our industry. Competitive factors in recent years have included price, crew availability, technological expertise and reputation for quality, safety and dependability. While no single company competes with us in all of our segments, we are subject to intense competition in each of our segments. We compete with large, international companies as well as smaller, local companies. In addition, we compete with major service providers and government-sponsored enterprises and affiliates. Some of our competitors operate more crews than we do and have greater financial and other resources than we do. These and other competitors may be better positioned to withstand and adjust more quickly to volatile market conditions, such as fluctuations in oil and gas prices and production levels, as well as changes in government regulations. In addition, if geophysical service competitors increase their capacity (or do not reduce capacity if demand decreases), the excess supply in the seismic services market could apply further downward pressure on prices. The negative effects of the competitive environment in which we operate could have a material adverse effect on our results of operations.

We have taken significant measures to adapt our fleet to changes in the seismic market, and depending on the seismic market in the future, we may make further adjustments that could impose exceptional charges.

Our fleet of marine seismic acquisition vessels has evolved in the past mainly in reaction to changes in the seismic contractual market and our marine strategy. In February 2014, we announced our intention to reduce the fleet from 18 to 13 3D high-end vessels before the end of 2016 and decided in mid-2014 to accelerate the implementation of this plan to have it completed by the end of 2014. Consequently, we stopped operating the *Symphony*, the *Princess*, the *Viking II* and the *Vantage* in 2014. The *Viking II* and the *Vantage* were returned to their owner at the end of their leasing period. The *Viking* and the *Geowave Voyager* have been converted into source vessels.

In February 2015, as the market environment deteriorated further, we announced our intention to reduce our operated fleet from 13 to 11 3D high-end vessels. Then in November 2015, when we announced the next step of our Transformation Plan, we stated our objective to reduce our operated fleet to five vessels, principally dedicated to multi-client production. As of December 31, 2015, our operational fleet was composed of eight 3D high-capacity vessels (12 or more streamers), one source vessel and one 3D/2D lower capacity vessel. We ceased operating the *CGG Alizé* and the *Geo Celtic* in early 2016 and the *Vision* in fall 2016. As of December 31, 2016, the fleet was operating five high-end vessels as targeted. In April 2017, we carried out certain transactions in order to change the ownership structure of our marine fleet and restructure the related financial obligations under the Nordic credit facility related thereto. See “Item 4: Information on the Company – Recent developments – Fleet ownership changes” for more information.

Past fleet reductions have generated, and we expect that the current and any future reductions will generate, non-recurring charges and could hinder our operational scope in marine acquisition activity. Restructuring charges and fixed assets impairments related to fleet reduction amounted to US\$288 million in 2015 and US\$34 million in 2016.

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We have high levels of fixed costs that are incurred regardless of our level of business activity, including in relation to bareboat charters.

We have high fixed costs and seismic data acquisition activities that require substantial capital expenditures and long-term contractual commitments. As a result, downtime or decreased productivity due to reduced demand, weather interruptions, equipment failures, permit delays or other circumstances that affect our ability to generate revenue could result in significant operating losses.

We have implemented our Transformation Plan in an effort to reduce our high fixed costs in light of the difficult market environment, with a focus on high value-added activities and a reduction of our fleet to five vessels principally dedicated to multi-client activity, as well as cost saving actions and a reduction in investments. However, we cannot assure you that this plan will be sufficient to respond to market pressures, which could have a material adverse effect on our results, financial position and prospects.

After the implementation of the Transformation Plan, we continue to operate certain of our marine acquisition vessels under long-term bareboat charters, which generate significant fixed costs that cannot easily be reduced during the term of the charters. In 2016, we operated six vessels until the fall and five vessels from October 2016 to December 2016 under bareboat charters for a fixed cost of US\$77 million. As of December 31, 2016, the aggregate amount of our off balance sheet commitment for bareboat charters for our fleet was US\$387.1 million. Of this amount, US\$264.4 million corresponded to the five seismic vessels and the two source vessels operated in 2016 and beyond and US\$100.4 million corresponded to vessels that we have already coldstacked. In 2017, we have taken steps to reduce our annual charter costs, as described in “Item 4: Information on the Company – Recent developments – Fleet ownership changes”. While we believe that these steps will make our marine acquisition activity more competitive, we will continue to have high levels of fixed costs in a market with historically low levels of demand and pricing, which could have a material adverse effect on our results, financial position and prospects.

The revenues we derive from marine seismic data acquisition vary significantly during the year.

Our seismic data acquisition revenues, in particular in the marine market, are partially seasonal in nature. In the marine market notably, certain basins can be very active and absorb higher capacity during a limited period of the year (such as the North Sea between April and September), triggering significant volatility in demand and price in their geographical markets throughout the year. The marine data acquisition business is, by its nature, exposed to unproductive interim periods due to vessel maintenance and repairs or transit time from one operational zone to another during which revenue is not recognized. Other factors that cause variations from quarter to quarter include the effects of weather conditions in a given operating area, the internal budgeting process of some important clients for their exploration expenses, and the time needed to mobilize production means or obtain the administrative authorizations necessary to commence data acquisition contracts.

Our business and that of our customers are subject to governmental regulations, which may adversely affect our operations or demand for our products in the future.

Our operations are subject to a variety of international, federal, regional, national, foreign and local laws and regulations, including flight clearances (for airborne activities), environmental, health and safety and labor laws. We invest financial and managerial resources to comply with these laws and related permit requirements. Our failure to do so could result in fines, enforcement actions, claims for personal injury or property damages, or obligations to investigate and/or remediate contamination. Failure to obtain the required permits on a timely basis may also prevent us from operating in some cases, resulting in increased crew downtime and operating losses. Moreover, if applicable laws and regulations, including environmental, health and safety requirements, or the interpretation or enforcement thereof, become more stringent in the future, we could incur capital or operating costs beyond those currently anticipated. The adoption of laws and regulations that directly or indirectly curtail exploration by oil and gas companies could also adversely affect our operations by reducing the demand for our geophysical products and services.

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In the United States, new regulations governing oil and gas exploration were put in place following the Deepwater Horizon platform disaster in the Gulf of Mexico. These new regulations may have a significant financial impact on oil and gas companies that wish to carry out exploration projects in deep-water Gulf of Mexico. Our client mix could be altered with the disappearance of small and medium sized players, which could decrease our sales of multi-client data.

We are exposed to environmental risks.

We are subject to various laws and regulations in the countries where we operate, particularly with respect to the environment. These laws and regulations may require Group companies to obtain licenses or permits prior to signing a contract. Our management believes that we comply with applicable environmental laws; however, frequent changes in such laws and regulations make it difficult to predict their cost or impact on our future operations. We are not implicated in any legal proceedings relating to environmental matters and are not aware of any claim or any potential liability in this area that could have a significant effect on our business or financial position.

Furthermore, we may be affected by new laws or regulations intended to limit or reduce emissions of gases, such as carbon dioxide and methane, which may be contributing to climate change, and these laws or regulations may affect our operations or, more generally, the production and demand for fossil fuels such as oil and gas. The European Union has already established greenhouse gas regulations, and many other countries, including the United States, may do so in the future. This could impose additional direct or indirect costs on us as our suppliers incur additional costs that get passed on to us or reduce our customers' demand for our products or services.

RISKS RELATED TO OUR INDEBTEDNESS

Our debt agreements contain restrictive covenants that may limit our ability to respond to changes in market conditions or pursue business opportunities.

The agreements governing our borrowings (including the 2019 secured term loans) and our US and French revolving facilities contain restrictive covenants that limit our ability and the ability of certain of our subsidiaries to, among other things:

- incur or guarantee additional indebtedness or issue preferred shares;
- pay dividends or make other distributions;
- purchase equity interests or reimburse subordinated debt prior to its maturity;
- create or incur certain liens;
- enter into transactions with affiliates;
- issue or sell capital stock of subsidiaries;
- engage in sale-and-leaseback transactions; and
- sell assets or merge or consolidate with another company.

Complying with the restrictions contained in some of these agreements requires us to meet certain ratios and tests, relating notably, to consolidated interest coverage and net indebtedness, and to maintain our liquidity at a certain level. See “– *Our substantial debt adversely affects our financial health and poses risks to our liquidity*” below. The requirement that we comply with these provisions may adversely affect our ability to react to changes in market conditions, take advantage of business opportunities we believe to be desirable, obtain future financing, sell assets, fund capital expenditures, or withstand a continuing or future downturn in our business.

Detailed information relating to our debt and the restrictions provided for in our borrowing agreements are set forth in note 13 to our 2016 consolidated financial statements included herein.

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If we are unable to comply with the restrictions and covenants in the indentures governing our Senior Notes, the agreements governing our Credit Facilities and other current and future debt agreements, there could be a default under the terms of these indentures and agreements, which could result in an acceleration of repayment.

If we are unable to comply with the restrictions and covenants in the indentures governing our Senior Notes or in other current or future debt agreements, including those governing our Credit Facilities, there could be a default under the terms of these indentures and agreements. Our ability to comply with these restrictions and covenants, including meeting financial ratios and tests, may be affected by events beyond our control. As a result, we cannot assure you that we will be able to comply with these restrictions and covenants or meet such financial ratios and tests. In certain events of default under these agreements, lenders could terminate their commitments to lend or accelerate the loans or bonds and declare all amounts outstanding due and payable. Borrowings under other debt instruments that contain cross-acceleration or cross-default provisions may also be accelerated and become due and payable. If any of these events occur, our assets might not be sufficient to repay in full all of our outstanding indebtedness and we may be unable to find alternative financing. Even if we could obtain alternative financing, it might not be on terms that are favorable or acceptable to us.

The deterioration of market conditions in 2016, which we expect to continue in 2017, has negatively affected our ability to respect the financial covenants in certain of our Credit Facilities and the Nordic credit facility. To face this situation, we obtained, in December 2016, consent from the requisite majority of lenders under (i) the French and US revolving facilities and (ii) the Nordic credit facility for the disapplication of the testing of the Total Leverage Ratio and the Interest Cover Ratio in respect of the Relevant Period ended on December 31, 2016 and we obtained a further consent from such lenders and the 2019 secured term loan lenders for the Relevant Period ended March 31, 2017.

Our French revolving facility and US revolving facility require that we meet a minimum liquidity amount (cash and cash equivalents plus certain undrawn credit facilities) of US\$175 million. As of December 31, 2016, we had a total liquidity of US\$539 million available. See “*Risks Related to Our Financial Restructuring*”.

We and our subsidiaries may incur additional debt.

We and our subsidiaries may incur additional debt (including secured debt) in the future. The terms of the indentures governing our Senior Notes and the agreements governing our Credit Facilities and our other existing senior indebtedness limit, but do not prohibit, us and our subsidiaries from doing so.

As of December 31, 2016, we had no long term confirmed and undrawn credit lines.

If new debt is added to our current debt levels, the related risks for us could intensify. See “*Risks Related to Our Financial Restructuring*” and “– *Our substantial debt adversely affects our financial health and poses risks to our liquidity*”.

To service and/or refinance our indebtedness and make capital expenditures, we require a significant amount of cash or will have to implement a debt restructuring plan, and our ability to generate cash or implement such plan will depend on many factors beyond our control.

Our ability to make payments on and to refinance our indebtedness, and to fund planned capital expenditures, depends in part on our ability to generate cash in the future and our ability to implement a debt restructuring plan (see “Item 4: Information on the Company – Recent developments – Financial restructuring discussions”). This ability is, to a certain extent, subject to general economic, financial, competitive, legislative, regulatory and other factors that are beyond our control.

In light of our 2016 fourth quarter results and given the challenging market conditions which persist, we expect 2017 operating results to be in line with 2016; however, we expect downward pressure on cash flow

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generation in 2017 compared to 2016. In this environment and given delays in market recovery, we do not expect our performance to generate sufficient cash flow to service our current level of debt over the years to come. Given the likelihood that we will be unable to satisfy our debt obligations through cash flow generation, if we cannot implement a debt restructuring plan, we may have to undertake alternative financing plans, such as refinancing or restructuring our indebtedness, selling assets, reducing or delaying capital investments or seeking to raise additional capital. Our ability and the conditions under which we may borrow fund to refinance existing debt or finance our operations depend on many factors, including conditions in credit markets, perceptions of our business and the ratings attributed to us by rating agencies. We cannot assure you that any refinancing or debt restructuring would be possible, that any assets could be sold or that, if sold, the timing of the sales and the amount of proceeds realized from those sales would be favorable to us or that additional financing could be obtained on acceptable terms. Any disruptions in the capital and credit markets could adversely affect our ability to meet our liquidity needs or to refinance our indebtedness, including our ability to draw on our existing credit facilities or enter into new credit facilities. Banks that are party to our existing credit facilities may not be able to meet their funding commitments to us if they experience shortages of capital and liquidity or if they experience excessive volumes of borrowing requests from us and other borrowers within a short period of time. Furthermore, changes in the monetary policies of the US Federal Reserve and the European Central Bank may increase our financing costs and consequently adversely impact our ability to refinance our indebtedness.

Our substantial debt adversely affects our financial health and poses risks to our liquidity.

We have an amount of debt that we consider to be too high given the difficult market environment impacting our volume of business, which we expect to continue in 2017. We do not expect our performance to generate sufficient cash flow to service our current level of debt over the years to come. We have therefore commenced discussions with certain stakeholders from various jurisdictions in order to achieve a financial restructuring. The objective of this restructuring is to provide us with a level of indebtedness and cost of debt that is substantially reduced and sustainably adapted to our cash flows. See the risk factors above under the heading “Risks Related to Our Financial Restructuring.”

As of December 31, 2016, our net financial debt (which we define as gross financial debt less cash and cash equivalents) amounted to US\$2,312 million out of a total capital employed of US\$3,468 million, with US\$2,850 million of gross financial debt (based on the closing exchange rate of US\$1.0541 per euro), including 316 million related to the debt component, according to IFRS, of the convertible bonds due 2019 and 2020, and including US\$36 million of bank overdrafts and accrued interest. As of December 31, 2016, our available financial resources amounted to US\$443 million (including cash, cash equivalents and marketable securities and excluding trapped cash). As of that date, we had a debt reimbursable in cash or shares amounting to US\$2,319 million, which corresponds to net financial debt less financial leases, and before IFRS accounting adjustments related to convertible bonds and issuing fees.

Our substantial debt could have important consequences. In particular, it could:

- increase our vulnerability to general adverse economic and industry conditions;
- require us to dedicate a substantial portion of our cash flow from operations to payments on our indebtedness, thereby reducing the availability of our cash flow to fund capital expenditures and other general corporate purposes;
- limit our ability to plan for, or react to, changes in our businesses and the industries in which we operate;
- place us at a competitive disadvantage compared to competitors that have less debt;
- limit our ability to issue bonds and guarantees and entering into hedging contracts; and
- increase the risk that a change in laws or regulations may materially impact us.

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Our ability to service or refinance all or a portion of our indebtedness is currently limited. Moreover, continued difficult conditions in the markets where we operate or volatility in the financial markets could have a material adverse effect on our ability to otherwise fund our operational requirements. We cannot be certain that additional funds will be available if needed to make future investments in certain projects, take advantage of acquisitions or other opportunities or respond to competitive pressures. If additional funds are not available, or are not available on terms satisfactory to us, there could be a material adverse impact on our business and financial performance. As at December 31, 2016, the Group liquidity (cash and cash equivalents) was US\$539 million.

In the context of a difficult market environment, which started for the seismic industry in the second semester of 2013 with a significant reduction of capital expenditures by our clients outside of North America and intensified with the sharp decline in oil prices since the fall of 2014, we confront a reduction in demand for our products and services and the resulting pricing pressure in our industry. In 2016, our operating income amounted to a loss of US\$397 million, compared to an operating loss of US\$1,158 million (or a gain of US\$19 million, excluding depreciation of goodwill, assets and restructuring costs) for 2015. It is difficult to predict how long the current economic conditions and imbalance between supply and demand will persist, whether oil prices will remain at their current low levels, or whether current market conditions will deteriorate further.

Depending on the evolution of our financial performance and cash flow generation, as well as our financial restructuring negotiations, we may have to undertake alternative financing plans, including selling assets, reducing or delaying capital investments or other expenses, in addition to restructuring our debt. We cannot assure you that any assets will be able to be sold or, if sold, as to the timing of the sales or the amount of proceeds realized from those sales. Reductions in capital investments or other expenses could adversely affect our ability to generate future revenues. The outcome of our restructuring discussions is uncertain, and we may not be able to obtain alternative financing on acceptable terms or at all.

As of December 31, 2016, our financial debt consisted primarily of:

US\$8.3 million outstanding principal amount of our 7.75% Senior Notes due 2017, 400 million outstanding principal amount of our 5.875% Senior Notes due 2020, US\$605 million outstanding principal amount of our 6.50% Senior Notes due 2021, and US\$420 million outstanding principal amount of our 6.875% Senior Notes due 2022;

360 million outstanding principal amount of our convertible bonds (bonds convertible into or exchangeable for new or existing shares) of which 35 million of our 1.25% convertible bonds due 2019 and 325 million of our 1.75% convertible bonds are due 2020;

our US\$300 million French revolving facility, of which 122 million and US\$166 million were drawn as of December 31, 2016;

our US\$165 million US revolving facility, of which US\$165 million was drawn as of December 31, 2016;

our US\$190 million Nordic credit facility, of which US\$100 million was drawn under the US\$100 million authorized revolving amount and US\$90 million was outstanding under the term loan as of December 31, 2016;

US\$339 million under the 2019 secured term loans; and

a total of US\$5 million under various credit lines held by several of our subsidiaries.

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The breakdown of our financial liabilities as of December 31, 2016 is presented in the table below:

<i>In millions of US\$</i>	12/31/ 2016	N+1		N+2 to N+4		N+5 and >		Total	
		Principal	Interest	Principal	Interest	Principal	Interest	Principal	Interest
Senior Notes & Convertible bonds	1,788	9	100	755	282	1,024	63	1,788	445
Bank borrowings	651	56	45	595	33	–	–	651	78
Financial leases	76	9	4	25	8	42	3	76	15
Banks overdrafts	–	–	–	–	–	–	–	–	–
Other financial debts	341	6	26	335	30	–	–	341	56
Derivative instruments	–	–	–	–	–	–	–	–	–
Cash	(539)	–	–	–	–	–	–	(539)	–
Total net financial liabilities	2,317	80	175	1,710	353	1,066	66	2,317	594

Note: For the purposes of the table above, the various components of the financial debt are presented at their normal maturities even though these debts – except finance lease debt – are presented entirely as current due to the application of IAS 1 (see note 13 to our consolidated financial statements, included elsewhere in this document).

Excluding accrued interest, IFRS adjustments and issue premium.

The Senior Notes and the Credit Facilities contain certain restrictive covenants, including covenants that require compliance with certain financial ratios.

We receive from the credit agencies a rating outlook, which assesses the potential direction of credit rating over time. In determining a ratings outlook, consideration is given to any changes in the economic and/or fundamental business conditions of a company. Our ratings, and any changes to them, can materially affect the conditions under which we may borrow funds and our access to borrowings more generally.

We are exposed to interest rate risk.

We may be required to obtain a portion of our borrowings from financial institutions at variable interest rates indexed to drawing periods ranging from one to 12 months. As a result, our interest expenses on this debt vary in line with movements in short-term interest rates. However, a significant portion of our debt consists of fixed-rate bonds, as well as a number of fixed-rate finance leases and fixed-rate medium-term bank credit facilities with variable maturities (see note 14 “Financial Instruments” to our consolidated financial statements, included elsewhere in this document). This debt is not exposed to interest rate fluctuations.

Net exposure to interest rate risk before and after hedging:

The following table shows our variable interest rate exposure by maturity as of December 31, 2016.

12.31.2016	Financial assets(*)		Financial liabilities(*)		Net position before hedging		Off-balance sheet position		Net position after hedging	
	(a)		(b)		(c) = (a) - (b)		(d)		(e) = (c) + (d)	
	Fix rate	Variable rate	Fix rate	Variable rate	Fix rate	Variable rate	Fix rate	Variable rate	Fix rate	Variable rate
	<i>In millions US\$</i>									
Overnight to 1 year	136	267	52	29	84	238	–	–	(84)	238
1 to 2 years	16	1	174	807	(158)	(806)	–	–	(158)	(806)
3 to 5 years	–	–	1,794	–	(1,794)	–	–	–	(1,794)	–
More than 5 years	–	–	1	–	(1)	–	–	–	(1)	–
Total	152	268	2,021	836	(1,869)	(568)	–	–	(1,869)	(568)

Note: For the purposes of the table above, the various components of the financial debt are presented at their normal maturities even though these debts – except finance lease debt – are presented entirely as current due to the application of IAS 1 (see note 13 to our consolidated financial statements, included elsewhere in this document).

() Excluding bank overdrafts, accrued interest, IFRS adjustments and issue premium.*

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As of December 31, 2016, our variable-rate assets (net of liabilities) maturing in less than one year totaled US\$238 million.

The following table shows our variable interest rate exposure on our financial assets and liabilities as of December 31, 2016:

(In millions of US\$)	12.31.2016	
	Impact on result	Impact on shareholders' equity
	before tax	before tax
Impact of an interest rate variation of +1%	(5.7)	(5.7)
Impact of an interest rate variation of -1%	5.7	5.7

Our variable interest rate indebtedness carried an average interest rate of 5.1% in 2016, and our investments and other financial assets earned interest at an average rate of 0.8%.

MARKET AND OTHER RISKS

We are exposed to exchange rates fluctuations.

Our financial debt is partly denominated in euro and converted in US dollars at the closing exchange rate. As of December 31, 2016, our US\$2,312 million of net debt included a part of debt denominated in euro of 862 million based on the closing exchange rate of US\$1.0541.

From one year end closing to another, a variation of US\$0.10 in the closing exchange rate between the US dollar and the euro would impact our net debt by approximately US\$86 million.

The following table shows our exchange rate exposure as of December 31, 2016:

(Converted in millions of US\$)	12.31.2016					
	Assets	Liabilities	Currency	Net position	Off-balance	Net position
			commitments	before hedging	sheet	after hedging
	(a)	(b)	(c)	(d) = (a) - (b) ± (c)	(e)	(f) = (d) + (e)
US\$(1)	1,794.5	1,853.8	–	(59.3)	0.0	(59.3)

(1) US\$-denominated assets and liabilities in the entities whose functional currency is the euro.

(In millions of US\$)	12.31.2016					
	Assets	Liabilities	Currency	Net position	Off-balance	Net position after
			commitments	before hedging	sheet	hedging
	(a)	(b)	(c)	(d) = (a) - (b) ± (c)	(e)	(f) = (d) + (e)
EUR(1)	45.0	107.7	–	(62.7)		(62.7)

(1) Euro-denominated assets and liabilities in the entities whose functional currency is the US\$.

Our net foreign-exchange exposure is principally linked to the euro. We seek to reduce our foreign-exchange position by selling the future receivables surplus over euro costs of our Equipment division as soon as they enter the backlog and taking out dollar-denominated loans supported by long-term assets. Although we attempt to reduce the risks associated with exchange rate fluctuations, we cannot assure you that fluctuations in the values of the currencies in which we operate will not materially adversely affect our future results of operations. Our annual fixed expenses in euros are equal to approximately 400 million and as a consequence, an unfavorable variation of US\$0.20 in the average yearly exchange rate between the US dollar and the euro would reduce our operating income and our shareholders' equity by approximately US\$80 million.

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Sensitivity Analysis Table

Impact of US\$ variation in expenses in euros

	Impact on result before taxes		Impact on shareholders' equity before taxes	
	Increase of	Decrease of	Increase of	Decrease of
	20 cents	20 cents	20 cents	20 cents
In millions of US\$	80	(80)	80	(80)
Total	80	(80)	80	(80)

We monitor our balance sheet exposure by maintaining a balance between our assets and liabilities denominated in foreign currencies and adjusting any discrepancies through either spot sales or capital operations.

With respect to exchange rate risk related to investments in operating subsidiaries, we consider such risk to be low, since the functional currency of the majority of operating entities is the US dollar.

We are exposed to risk related to equities and financial instruments.

We are exposed to risk of fluctuations in the value of equities and other financial instruments we may hold.

Any transactions involving our own shares are decided by management in accordance with applicable regulations.

As of December 31, 2016, we owned 25,000 of our own shares with a balance sheet value at CGG SA' s level of 0.4 million (US\$0.4 million). Those shares are not valued in the consolidated financial statements of the Group.

Our investment policy does not authorize short term investment in the equities of other companies.

The fair value of the own shares as of December 31, 2016 is as follows:

12.31.2016	At fair value	Available for sales	Held to maturity	Derivatives	Total
Shares	US\$0.4 million	–	–	–	US\$0.4 million
Total	US\$0.4 million	–	–	–	US\$0.4 million

We are subject to risks that are not fully insured.

The nature of our business involves ongoing and significant operating risks for which we are not always insured, and in respect of which we may not be able to obtain adequate insurance at commercially reasonable rates, if at all.

Our seismic data acquisition activities, particularly in deepwater marine areas, are often conducted under harsh weather and other hazardous operating conditions, including the detonation of dynamite. These operations are subject to the risk of downtime or reduced productivity, as well as to the risks of loss to property and injury to personnel resulting from fires, accidental explosions, mechanical failures, spills, collisions, stranding, ice floes, high seas and natural disasters. In addition to losses caused by human errors and accidents, we may also be subject to losses resulting from, among other things, war, terrorist activities, piracy, political instability, business interruption, strikes and weather events.

Our extensive range of seismic products and services expose us to litigation and legal proceedings including those related to product liability, personal injury and contract liability.

We produce and sell highly complex products and we cannot assure you that our extensive product development, manufacturing controls and testing will be adequate and sufficient to detect all defects, errors, failures, and quality issues that could affect our customers and result in claims against us, order cancellations or delays in market acceptance.

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We have put in place insurance coverage against operating hazards, including product liability claims and personal injury claims, damage, destruction or business interruption of data processing centers, manufacturing centers and other facilities, in amounts we consider appropriate in accordance with industry practice. Our risk coverage policy reflects our objective of covering major claims that could affect our facilities and equipment, as well as third-party liability claims that we may be exposed to as a result of our activities. We review the adequacy of insurance coverage for risks we face periodically.

Whenever possible, we obtain agreements from customers that limit our liability.

However, we cannot assure you that our insurance coverage will be sufficient to fully indemnify us against liabilities arising from pending and future claims or that our insurance coverage will be adequate in all circumstances or against all hazards, or that we will be able to maintain adequate insurance coverage in the future at commercially reasonable rates or on acceptable terms.

We are subject to disruptions in our supply chain and third party suppliers.

Disruptions to our supply chain and other outsourcing risks may adversely affect our ability to deliver our products and services to our customers.

Our supply chain is a complex network of internal and external organizations responsible for the supply, manufacture and logistics supporting our products and services around the world. We are vulnerable to disruptions in this supply chain from changes in government regulations, tax and currency changes, strikes, boycotts and other disruptive events as well as from unavailability of critical resources. These disruptions may have an adverse impact on our ability to deliver products and services to our customers.

Within our Group, Sercel makes particular use of subcontracting. Our French manufacturing sites outsource part of their production to local third-party companies selected according to certain criteria, including quality and financial soundness. Outsourced operations are distributed among several entities, each having a small proportion of aggregate outsourced activity in order to limit risk related to the failure of any one of our subcontractors. For our services business, our policy is not to rely on outsourcing for any of our activities, except in special cases where there is a lack of available capacity.

If our suppliers, vendors, subcontractors or other counterparties are unable to perform their obligations to us or our customers, we may be required to provide additional services or make alternate arrangements on less favorable terms with other parties to ensure adequate performance and delivery of service to our customers. These circumstances could also lead to disputes and litigation with our partners or customers, which could have a material adverse impact on our reputation, business, financial condition and results of operations.

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Item 4: INFORMATION ON THE COMPANY

Introduction

We are a global participant in the geoscience industry, as a manufacturer of geophysical equipment, as a provider of marine, land and airborne data acquisition services, and as a provider of a wide range of other geoscience services, including data imaging, seismic data characterization, geoscience and petroleum engineering consulting services, and collecting, developing and licensing geological data. Our clients are principally in the oil and gas exploration and production industry.

We have more than 100 years of combined operating experience (through CGG, Veritas and Fugro Geoscience) and a recognized track record of technological leadership in the science of geophysics and geology. We believe we are well placed to capitalize on the growing importance of seismic and geoscience technologies to enhance the exploration and production performance of our broad base of clients, which includes independent, international and national oil companies.

CGG SA is the parent company of the CGG Group. We are a *société anonyme* incorporated under the laws of the Republic of France and operating under the French Commercial Code. Our registered office is at Tour Maine Montparnasse, 33, avenue du Maine, 75015 Paris, France. Our telephone number is (33) 1 64 47 45 00.

Organization

As of December, 31, 2016, CGG was organized in eight Business Lines, as follows:

Equipment (which includes all the Sercel business entities or trademarks, such as Metrolog, GRC and De Regt);

Marine Acquisition;

Land Acquisition (including Land Electromagnetics and General Geophysics);

Multi-Physics;

Multi-Client and New Ventures;

Subsurface Imaging;

GeoSoftware (including the software sales and development of Jason and Hampson-Russell); and

GeoConsulting (including the consulting activities of Jason and Hampson-Russell combined with the consulting and geologic library business of Robertson, as well as Data Management Services).

These activities are organized into four segments for financial reporting purposes since September 1, 2015: (i) Equipment, (ii) Contractual Data Acquisition (which includes Marine Acquisition, Land Acquisition and Multi-Physics) and (iii) GGR (which includes Multi-Client and New Ventures, Subsurface Imaging, GeoSoftware and GeoConsulting). In addition, we have a fourth segment for financial reporting purposes, Non-Operated Resources, which comprises the costs of our non-operated marine resources as well as all the costs of our Transformation Plan (mainly restructuring provisions and provision for onerous contracts).

We believe that these eight Business Lines allow us to cover the spectrum from exploration to production, giving us more opportunities to create value for our shareholders, customers and partners.

Our six Corporate functions, at the Group level, ensure a global transverse approach and provide support across all activities: (i) the Finance Function, (ii) the Human Resources Function, (iii) the Global Operational Excellence/Internal Audit/Risk Management, Health, Safety and Environment & Sustainable Development Function, (iv) the General Secretary, (v) the Geomarkets, Sales and Marketing Function and (vi) the Technology Function.

Our two Group Departments are, respectively, in charge of (i) Communication and (ii) Investor Relations.

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Recent developments

Financial restructuring discussions

On January 5, 2017 and March 3, 2017, we communicated that with a market environment expected to remain similar in 2017 to 2016 and continuing to weigh on our revenues, we consider that our debt level is too high. We do not expect our performance to generate sufficient cash flow to service our current level of debt over the years to come. We have therefore commenced discussions with certain stakeholders from various jurisdictions in order to achieve a financial restructuring. The objective of this restructuring is to provide us with a level of indebtedness and cost of debt that is substantially reduced and sustainably adapted to our cash flows.

The proposed debt reduction would involve the conversion of unsecured debt into equity and the extension of the secured debt maturities. The President of the Commercial Court of Paris (*Tribunal de Commerce de Paris*) on February 27, 2017 appointed a ‘*mandataire ad hoc*’ (a French facilitator for creditor negotiations) in order to facilitate the discussions in a manner intended to respect the best interests of all of our stakeholders. We had previously received the requisite consent from our creditors to permit such appointment.

At the date of this report, the negotiations are ongoing. No assurance can be given as to the outcome of the discussions, any such restructuring and its implementation.

If our ongoing negotiations with our stakeholders, including its creditors, result in an agreed restructuring that equitizes certain of our indebtedness, our common shareholders would experience significant dilution. In the absence of such an agreed restructuring, we have a significant amount of indebtedness that is senior to our existing common shares in our capital structure, and we may seek bankruptcy court protection under a sauvegarde proceeding in France and/or Chapter 11 or Chapter 15 proceedings in the United States and/or proceedings elsewhere.

Reclassification of financial debt as a current liability

Having carefully analyzed the situation as of December 31, 2016 and March 2, 2017 in the light of IAS 1 § 69, 74 and 75, and considering reasonable assumptions on the progress of the negotiations on its financial restructuring, CGG concluded that leaving its secured financial debt as a non-current liability was the appropriate accounting treatment for the financial statements authorized for issue by the Board of Directors as of March 2, 2017.

Considering the progress of the negotiations of the financial restructuring of the company and the timeline of the options contemplated, it appears that reclassifying the financial debt as a current liability is the most appropriate accounting treatment according to IAS 1 for the financial statements authorized for issue by the Board of Directors on April 27, 2017. This pure accounting reclassification does not question the going concern assumption, comforted by the main actions plans successfully implemented as of April 27, 2017 and does not make immediately payable (as CGG has not breached its financial covenants) the US\$2,682.0 million of financial debt classified as current liability nor does it reduces its maturity below 12 months.

Fleet ownership changes

In April 2017, we entered into agreements with Eidesvik Shipping AS (“Eidesvik”), the lenders under our Nordic credit facility and the lenders under the credit facilities of Eidesvik Seismic Vessels AS (“ESV”) and Oceanic Seismic Vessels AS (“OSV”) in order to change the ownership structure of our marine fleet and restructure the related financial obligations under the Nordic credit facility related thereto (the “Marine Fleet Restructuring”). Under the new arrangements, Global Seismic Shipping AS (“GSS”), a company organized under the laws of Norway and 50% owned by us (through our subsidiary, Exploration Investment Resources II AS) and 50% owned by Eidesvik, holds (i) CGG Geo Vessels AS (to be renamed Geo Vessels AS), our former wholly-owned subsidiary, which owns the five previously cold-stacked vessels (*Geo Coral* (having been re-rigged), *Geo*

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Caribbean, Geo Celtic, CGG Alizé and Oceanic Challenger), and (ii) ESV and OSV (in which we previously held direct 49% stakes), which respectively own the *Oceanic Vega* and *Oceanic Sirius* (together, the “X-bow Vessels”). GSS is not a subsidiary of CGG.

As part of the Marine Fleet Restructuring, the charter agreements for the X-bow Vessels were amended to, among other things, reduce the charter day-rate to a rate in line with the prevailing market rate in exchange for an extension of the charter agreements and certain payment obligations to ESV and OSV, which we settled through the Marine Fleet Restructuring. Through our subsidiary, CGG Services SAS, we continue to charter the X-bow Vessels from ESV and OSV, respectively, under the amended charter agreements. The obligations of CGG Services SAS under the amended charter agreements are subject to parent guarantees provided by us in favor of ESV and OSV.

The Marine Fleet Restructuring has also allowed us to complete the termination of the charter relating to the vessel *Viking Vanquish*, which had been cold-stacked, in exchange for a cash payment of a settlement amount to Eidesvik.

In addition, through CGG Services SAS, we also entered into an umbrella agreement with Geo Vessels AS to further reduce our charter costs, mainly through the re-profiling of the reimbursement schedule of the debt related to the vessels, together with an extension of the vessel employment commitments to ten years through charters of a duration of no more than 12 months. We provided a parent guarantee in respect of the obligations of CGG Services SAS (and any of our subsidiaries which enters into a charter under the umbrella agreement) under such umbrella agreement and bareboat charters thereunder. Under the umbrella agreement, we have begun to charter the *Geo Coral* from April 20, 2017. Furthermore, once the charters of the other vessels that we operate expire, we will charter the *Geo Caribbean* and the *Geo Celtic* from Geo Vessels in order to maintain an operated fleet of five 3D high-capacity seismic vessels (including the X-bow Vessels).

In connection with the Marine Fleet Restructuring, Geo Vessels AS continues to be the borrower of the loan outstanding under our Nordic credit facility. The removal of Geo Vessels AS from our consolidated perimeter is expected to result in a reduction of the gross debt of the Group by US\$182.5 million, corresponding to the principal amount of loans under the Nordic credit facility outstanding as of March 31, 2017. We expect that the Marine Fleet Restructuring will further improve our competitiveness through the reduction of the charter day-rate for the X-bow Vessels and the 3D high-capacity seismic vessels and increase our cost-savings due to the reduction of charter liabilities of certain non-operated vessels and the externalization of cold-stacking costs, thus improving our liquidity in the short- and medium-term.

Proactive management of vessel charter costs

In addition to the Marine Fleet Restructuring, on January 20, 2017, we issued US\$58.6 million in aggregate principal amount of our 6.50% Senior Notes due 2021 to the relevant charter counterparties to reduce the cash burden of the charter agreements in respect of three cold-stacked seismic vessels, namely the *Pacific Finder*, the *Oceanic Phoenix*, and the *Viking Vanquish*. On March 13, 2017, we also issued US\$12.1 million in aggregate principal amount of our 6.50% Senior Notes due 2021 to the relevant charter counterparty to reduce the cash burden of the charter agreement in respect of the *Oceanic Champion*, an active seismic vessel.

Redelivery of the vessel Pacific Finder to her owner

On March 7, 2017, the seismic vessel *Pacific Finder* was returned to her owner, PT Swire Altus Shipping.

Our Strategy

We intend to continue to provide leading geological, geophysical and reservoir solutions and services to our broad base of customers primarily from the global oil and gas industry. Our goal is to capitalize on innovative opportunities resulting from the application of new technologies in every sector of the oil and gas business – from exploration to production and reservoir management – and from the worldwide presence of our three complementary business segments: Equipment, Contractual Data Acquisition, and GGR.

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To achieve this objective, we have adopted the following strategies:

Rebalance our profile towards more profitable and less capital intensive businesses

Our Contractual Data Acquisition businesses, which are cyclical, highly capital-intensive and have generated lower profitability in recent years, have been very significantly downsized with respect to marine operations. We position the Acquisition businesses more on the high-end of the market, where technological differentiation is a critical factor, in order to increase profitability. This also increases the relative weight of the Equipment and GGR segments' contributions to Group results, which we believe will increase our overall profitability, reduce the volatility of our earnings and improve our cash generation.

The capacity of our Marine Data Acquisition business was reduced as our operated fleet decreased from eleven to five 3D mid/high capacity vessels at the end of the first quarter of 2016, which led to a further reduction in fixed costs and capital expenditure. We have mostly repositioned our fleet towards the production of multi-client studies that are sufficiently pre-funded (at above 70%), which means operating five 3D vessels for the next years. The marine seismic acquisition activity and its high-end broadband capabilities will therefore be mainly a high technological tool for the acquisition of multi-client high-quality data.

In the Land Acquisition business, we intend to focus and concentrate our presence on high-end niche markets, adopting a technology provider business model to the extent possible. In the Multi-Physics Acquisition business, our plan is to focus on higher-margin market segments. In both businesses, we intend to achieve the expected results under the implemented cost savings and restructuring plans.

Improve our operational efficiency, profitability and cash generation

In line with what has been achieved over the last three years as a result of the performance plan that we launched at the end of 2013, we intend to continue our tight cost control, maintain a low level of general and administrative expenses and, more generally, reduce our fixed cost base. We expect notably to reduce our break-even point in line with the right-sizing of our Contractual Data Acquisition businesses and particularly our marine assets.

We will also continue to maintain a strong focus on operational performance and on cash generation through tight monitoring of working capital and capital expenditure.

Focus on growth areas

We intend to focus on developing our technological capabilities in emerging markets for geoscience-related services, including reservoir appraisal and production monitoring. We also believe that we have unique experience and expertise in very dense and productive seismic acquisition projects, such as high channel count land crews in the Middle East and full azimuth high resolution offshore surveys in the Gulf of Mexico, and have unique capabilities to partner with customers to develop customized solutions to address specific geophysical & geological challenges, as demonstrated by the recent development of our TopSeis acquisition technology. Furthermore, we believe our geographic footprint in various different geologies will allow us to respond to the growing demand for all kinds of seismic imaging and reservoir solutions.

We also intend to maintain our position in the onshore and offshore seismic multi-client markets by developing our multi-client data library. We believe that a strong position in this market segment enhances our global competitive position and may provide opportunities for continuing future sales. In developing our multi-client data library, we carefully select survey opportunities in order to maximize our return on investment. We also intend to apply the latest advances in depth imaging and wide azimuth technologies to a selected part of our existing library.

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Given the growing importance of geophysics in reservoir characterization, and the strong reputation of Jason and Robertson, we intend to further develop the synergies between our leading network of 31 data processing centers. We pursue continuous innovation to allow for increased integration of data processing into reservoir studies, which will provide enhanced reservoir knowledge and allow for improved exploitation. This approach places us in a better position to meet the requirements of our clients with an extensive range of integrated solutions.

With the increasing use of wide-azimuth and high resolution surveys and the growing demand for advanced imaging capabilities, we also intend to increase our processing capability in developing disciplines, such as reservoir description and monitoring, including wide-azimuth, multi-component and 4D studies. We also plan to continue promoting and developing our dedicated subsurface imaging centers within our clients' offices and developing our regional centers.

We plan as well to develop reservoir interpretative solutions, notably through our two Business Lines, GeoSoftware and GeoConsulting, within our GGR segment. GeoSoftware is the worldwide leader in advanced seismic reservoir characterization technology. It brings together CGG's commercial software, including Jason and Hampson-Russell, and the associated sales, marketing and product services, such as training, product support and product mentoring. GeoConsulting is a full-spectrum geological and geophysical consulting services organization. In addition to our seismic reservoir characterization services, GeoConsulting offers our unique line of Robertson geoscience consulting services and multi-client products, including a full range of geological, petroleum engineering and economic disciplines. It also contains NPA Satellite Mapping, a full range of Data Management Services such as Diskos (Norwegian petroleum database), and the global training services relating to GeoConsulting.

We expect to extend cross-divisional strengths within our organization and to leverage our relationships with external partners. We signed a technology alliance with Halliburton to develop next-generation geoscience workflows and we set up a joint venture with Wood Mackenzie (EV²) to provide a value modelling tool for undiscovered reserves, both in 2015.

Develop technological synergies for products and capitalize on new generation equipment

We believe Sercel is the leading manufacturer of land, marine and subsea geophysical equipment. We plan to continue developing synergies among the technologies available to Sercel and to capitalize fully on our position as a market leader. Through our research and development, we seek to improve existing products and maintain an active new product development program in all segments of the geophysical equipment market (land, marine and ocean-bottom).

Develop and utilize innovative technology

The significant technological developments in seismic services over the last decade have produced a marked change in the sector. The development of 4D and wide-azimuth techniques (providing time lapse views and enhanced illumination of the reservoir as well as improved image resolution) now allows operators to better locate and monitor reservoir performance. This possibility broadens the use of seismic techniques from pure exploration (early cycle) into a tool for reservoir development, management and production (late cycle).

During the last year, Marine has developed a portfolio of broadband technologies: CGG's BroadSeis solution delivers the most detailed high-resolution subsurface images with the best low frequencies from a combination of advanced equipment, proprietary variable-depth streamer profiles and innovative deghosting and imaging technology. As a consequence of the unique, streamer configuration, BroadSeis is able to deliver the deepest tow in the industry, up to 50 meters. Combining this with the exceptional low-noise characteristics of Sentinel solid streamers delivers the lowest frequencies with the best signal to noise ratio available. BroadSource, our synchronized multi-level broadband source complements BroadSeis by removing the source ghost notch and extending the high frequencies so that over 6 octaves of data (2.5-200Hz) are recorded.

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TopSeis is a next-generation marine towed-streamer acquisition solution, delivering a step-change in imaging for shallow to intermediate depth targets by providing massively increased near-offset coverage from a split spread with zero offsets. It is the latest addition to our broadband portfolio and is the most recent outcome from over eight years of technical collaboration between CGG and Lundin Norway AS.

We believe that demand for geophysical services will continue to be driven in part by the development of new technologies. The industry is increasingly demanding clearer seismic imaging and better visibility, particularly in complex geologies. We expect multi-azimuth, wide azimuth, multi-component (3C/4C) surveys and time-lapse (4D) surveys to become increasingly important for new production-related applications, particularly in the marine sector, and expect specialized recording equipment for difficult terrain to become more important in land seismic data acquisition, particularly in transition zones, shallow water and arctic areas. We believe that to remain competitive, geophysical services companies will need to combine advanced data acquisition technology with consistently improving processing capacity in order to further reduce delivery times for seismic services.

Our strategy is to continue our high level of investment in research and development to reinforce our technological leadership. We also intend to take advantage of our full range of integrated geoscience services to enhance our position as a market leader in:

manufacturing of land, marine and subsea data acquisition equipment;

innovative acquisition systems and services (Marine, Land, Airborne);

seismic imaging and reservoir services.

Emphasize client service

We believe it is important to operate in close proximity to our clients to develop a better understanding of their individual needs and to add measurable value to their business processes. We respond to these needs by creating new products or product enhancements that improve the quality of data and reduce the data delivery time to clients. We believe that our regional multi-client and dedicated data processing centers in our clients' offices provide us with an advantage in identifying contract opportunities, optimizing service to clients and developing products responsive to new market demands, such as seismic techniques applied to reservoir management. We believe that we are well positioned to benefit from the industry trend towards increased outsourcing. This trend is leading oil and gas companies to place greater emphasis on relationships and service quality (including health, safety and protection of the environment) in their selection of third party service providers, including geophysical services providers. The last Kimberlite independent survey ranked CGG first 1 in almost all criteria.

Provide integrated services

We are committed to providing clients with a full array of seismic data services, from acquisition and processing to data interpretation and management. We believe that integration of compatible technology and equipment increases the accuracy of data acquisition and processing, enhances the quality of our client service and thereby improves productivity in oil and gas exploration and production. Our clients increasingly seek integrated solutions to better evaluate known reserves and improve the ratio of recoverable hydrocarbons from producing fields. We are continuing to develop our ability to provide geoscience solutions through a combination of various exploration and production services, including reservoir characterization and interpretation of well information.

Develop well-positioned data libraries

We strive to develop large contiguous multi-client libraries located in key basins leveraging the Group technology portfolio. Historically, our libraries have been focused in the Deepwater US Gulf of Mexico, pre-salt

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Brazil and the Central Graben of the UK North Sea. We look for opportunities to design new libraries in areas where we can apply geologically appropriate advanced technology to develop a large position, such as our recent entry in Norway's North Viking Graben. In the US Gulf of Mexico, our StagSeis multi-client coverage of more than 20,000 square kilometers, provides unrivalled full wide-azimuth and long offsets, designed to illuminate complex subsalt geologies. CGG's multi-client business is uniquely advantaged due to the advanced processing and reservoir analysis capabilities of our SIR business when designing new surveys. A prime example is our 38,000 square kilometers survey in the newly opened Deepwater Perdido area of Mexico, where we are using the latest SIR technology to reprocess recent vintage seismic data into a state of the art product. In keeping with our strategy to expand our current libraries, this product is a large seamless extension of our US Gulf of Mexico footprint.

Onshore, our land library business offers excellent potential in North America, particularly in the new oil plays of West Texas (Permian and Delaware basins) and Oklahoma (SCOOP and STACK plays) where we have invested significantly during 2016. There is also significant customer interest in our recent large surveys aimed toward unconventional gas plays in the Haynesville (Louisiana) and the Marcellus (Pennsylvania) and we expect those to contribute to our revenue growth.

Develop reservoir applications

While seismic data was historically used primarily by oil and gas companies for exploration purposes, it has become a recognized tool for field development and reservoir management. We are progressively extending our core business towards compiling and analyzing seismic data of existing reservoirs in response to this trend. Through high-resolution images and our expertise in 4D seismic and permanent monitoring, we aim to assist hydrocarbon producers in better characterizing and predicting the static properties and dynamic behavior of their reservoirs.

Following the Geoscience Acquisition, we are now organized in three operational segments, including the GGR segment, which is fully dedicated to the development of reservoir software, services and applications. Through GeoSoftware, we intend to further improve our products and services, provide our customers with a better understanding of their reservoirs and deliver unsurpassed expertise to optimize our customers' decision-making. Through GeoConsulting, we intend to further enhance our geological and geophysical multi-client products and reports, and expand our high-end consulting services across the exploration and production value chain.

Industry conditions

2013 was a contrasting year with the first half of the year seeing growth in the oil services segment and, hence, the seismic sector, followed by a significant slowdown during the second half of the year, chiefly due to the majors deciding to cut investments in exploration and production projects to improve cash generation on a short-term basis. This trend should be considered in the global exploration and production context: projects were becoming increasingly costly due to their complexity; oil and gas prices remained relatively stable; and oil and gas companies were under constant pressure to maintain the expected level of dividends for their shareholders.

This situation escalated during 2014 with oil and gas companies pursuing their efforts to reduce costs in order to preserve their ability to maintain shareholder returns. Global exploration and production spending in 2014 was steady but fell by 10% in seismic.

During the second part of 2014, after Saudi Arabia decided to maintain its market share and let supply and demand set the market price, oil prices fell sharply and quickly. In the space of six months, the Brent oil price fell by 59% from US\$115 per barrel to US\$47 per barrel. This severe reduction had a large impact on the 2015 budgets that oil and gas companies were in the process of preparing, and consequently exploration and production spending for 2015 decreased by 23%, with a similar trend for seismic. In 2016, the fall in crude oil

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prices in the second half of 2015 has led to the oil companies to reduce by 23% exploration and production investments. For 2017, these investments should slightly increase by circa 3-5% driven by North American spending, outside North America spending could slightly decrease. After strong decline in prices all along the oil services chain, the oil price stability will be a key element for oil companies to move along in their investments.

Longer term, we believe that the outlook for a fully integrated geoscience company is fundamentally positive for a number of reasons:

First, oil and gas companies (including both international and national oil companies) and the large oil and gas consuming nations have perceived a growing and potentially lasting imbalance between reserves and future demand for hydrocarbons. A rapid rise in world consumption requirements, particularly in China and India, has resulted in a growth in demand for hydrocarbons that is expected to continue in the long term despite being slowed down in the short term. In response to this future growth, we expect oil and gas companies to restart their exploration and production investments in the future in order to improve existing reservoirs and regularly replace reserves.

Client demand is changing as clients use geophysical data in new ways. The geological and geophysical challenges they face require new geoscience solutions. From the very early exploration phase to the optimization of existing reservoirs, and throughout the entire development and production cycle, the demand for improved understanding of complex subsurface structure is increasing. This requires higher technology content, higher resolution, better illumination, and overall better imaging. In such a market environment, the CGG Group, with its assets, expertise, people and track record, is now firmly established on the three solid technological pillars represented by its Equipment, high-end Contractual Data Acquisition and GGR business segments. We benefit from the unique scope of our geoscience activities, the unrivalled expertise of our imaging teams, our modern worldwide fleet of recently built, high-capacity vessels, the cutting-edge leadership of Sercel on the Equipment market, and our strong commercial positions in key multi-client areas. We believe we are therefore well positioned to capitalize on our unique integrated portfolio and to meet our customers' needs for innovative products and services and for global solutions, as achieved recently with BroadSeis and StagSeis, with Sercel's 508^{XT} land acquisition system and now with TopSeis unique Marine acquisition solution.

Each year, three to four million barrels of new oil per day have to be produced in order to offset the declining rates of the existing reserves. Gas and oil production from shale rocks, where seismic studies are used to enhance the yield, has developed remarkably well in North America, and may expand to other continents. We expect these fundamental trends to continue to drive increased demand for high-end seismic equipment and services in the medium-term. We believe that we are in a strong position to benefit from these long term trends.

History and development of the Company

CGG was established on July 23, 1931 under the name 'Compagnie Générale de Géophysique', to develop and market geophysical techniques for appraising underground geological resources. Since that time, CGG gradually specialized in seismic techniques adapted to oil and gas exploration and production, while continuing to develop a broad range of other geophysical and geological activities. In 2007, CGG acquired Veritas DGC Inc. and was renamed "Compagnie Générale de Géophysique – Veritas". In 2013, CGG acquired Fugro's Geoscience Division and changed its name to "CGG". CGG is a *société anonyme* incorporated under the laws of the Republic of France and operating under the French Code de commerce, with a duration until 2030.

Over the course of the last three years, we have completed various acquisitions and divestitures which are described under "Item 5: Operating and Financial Review and Prospects – Factors Affecting our Results of Operations – Acquisitions and Divestitures" included elsewhere in this annual report. Our historical and ongoing capital expenditures and sales of tangible assets are described under "Item 5: Operating and Financial Review and Prospects – Liquidity and Capital Resources" included elsewhere in the annual report.

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Business overview

The following is an overview of the business activities of our Equipment, Contractual Data Acquisition and GGR business segments. Our views regarding the state of the market in 2016 and the outlook for 2017 are “forward-looking statements,” based upon information available to us on the date of this annual report and are subject to risks and uncertainties that may change at any time.

Operating Revenues Data

Revenues by Activity

The following table sets forth our consolidated operating revenues by activity in millions of dollars, and the percentage of total consolidated operating revenues represented thereby, for the periods indicated:

	2016	2015	2014
	MUS\$	MUS\$	(restated ⁽¹⁾)
	MUS\$	MUS\$	MUS\$
Marine Contractual Data Acquisition	133	439	778
Land and Multi-Physics Acquisition	105	177	279
Contractual Data Acquisition segment revenues	238	616	1,057
Multi-client Data	383	546	687
Subsurface Imaging and Reservoir	401	562	697
Geology, Geophysics & Reservoir segment revenues	784	1,108	1,384
Equipment segment revenues	255	437	802
Eliminated revenues and others	(81)	(60)	(148)
Total operating revenues	<u>1,196</u>	<u>2,101</u>	<u>3,095</u>

Note:

(1) Restated to reflect the new financial reporting as disclosed in note 19 to our consolidated financial statements.

Revenues by Region (by location of customers)

The following table sets forth our consolidated operating revenues by region in millions of dollars, and the percentage of total consolidated operating revenues represented thereby, for the periods indicated:

	2016		2015		2014	
	MUS\$	%	MUS\$	%	MUS\$	%
North America	357	30 %	528	25 %	782	25 %
Central and South Americas	170	14 %	233	11 %	366	12 %
Europe, Africa and Middle East	482	40 %	876	42 %	1,298	42 %
Asia Pacific	187	16 %	464	22 %	649	21 %
Total operating revenues	<u>1,196</u>	<u>100%</u>	<u>2,101</u>	<u>100%</u>	<u>3,095</u>	<u>100%</u>

The Group's clients can be broadly categorized as national oil companies, international oil companies (the “Majors”) and independent companies. In 2016, our top two clients represented respectively 6.7% and 6.4% of consolidated revenues, respectively.

Figures relating to the geophysical market and to the competitive positioning of the Group's Equipment, Contractual Data Acquisition and GGR segments or the activities of these segments provided in this section have been derived from internal Group data.

Contractual Data Acquisition

Our Contractual Data Acquisition activity encompasses our geophysical acquisition services offering, including land, marine, airborne and seabed, being operated either directly or through joint ventures. Our worldwide crews operate in all environments. In land and marine environments, they use the latest geophysical equipment manufactured by Sercel.

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In 2016, CGG changed the rules of its group reporting in order to give an accurate representation of the profitability of marine exclusive contracts, and of the costs and capital employed of Multi-client. The total revenues reported in 2015 and 2016 are therefore not directly comparable.

Total revenues of the “Contractual Data Acquisition” segment amounted to US\$238 million in 2016.

Marine Data Acquisition Business Line

Overview

Thanks to the fleet described below, CGG provides complete range of marine seismic 2D and 3D services, focusing on the Gulf of Mexico, the North Sea, West Africa and Brazil, as well as the Asia Pacific region. CGG also delivers marine seismic contract data acquisition in “frontier” areas.

Activity description

Marine seismic surveys are conducted through the deployment of submersible cables (streamers) and acoustic sources (airguns) from specialized vessels. These streamers are up to 12 kilometers long and carry hydrophone groups normally spaced 12.5 meters apart along the length of the streamer. The recording capacity of a vessel is dependent upon the number of streamers she tows and the number of acoustic sources she carries, as well as the configuration of her data recording system. By increasing the number of streamers and acoustic sources used, a vessel can perform surveys more rapidly and efficiently and acquire better resolution data.

The commercial business model of this business line consists of working on an exclusive contractual basis with the client. The contract generally stipulates that we shall be paid according to a fixed rate, such as a daily fee or a fee per square kilometer acquired. The contract may protect us against operational elements beyond our control, such as bad weather or interference from other activities carried out in the oil field. The client owns the acquired data and pays us on the agreed basis. Our operating income from this activity is the difference between the cost to us and the final price of the survey.

Group’s fleet of seismic vessels

On December 31, 2016, our operated fleet consisted of five 3D high capacity vessels (12 or more streamers), and two source vessels, down from 8 vessels at the end of 2015 as a result of our fleet reduction plan. This capacity is mainly dedicated to Multi-Client production (on average two-thirds).

All 3D high capacity vessels are equipped with Sentinel solid streamers, which provide several advantages over other industry streamers, such as acquiring surveys in tougher sea conditions, improving the frequency content and improving signal-to-noise ratio of the recorded data, and minimizing environmental impacts. All our vessels can deploy our broadband marine solutions, which combine industry-leading equipment, unique variable depth streamer acquisition techniques and proprietary deghosting and imaging technology. At the end of 2016, 100% of our fleet was also capable of deploying BroadSource, which, combined with BroadSeis, provides the ultimate in broad-bandwidth, ghost-free seismic data, achieving a bandwidth of 2-200 Hz. QuietSea, the most advanced passive acoustic monitoring (PAM) system designed to detect the presence of marine mammals during seismic operations, which enables superior performance in minimizing environmental impact, also equips two vessels.

In connection with the fleet downsizing plans initiated in 2014 and our adaptation to market conditions which remain extremely difficult, the following measures were taken during the year 2016:

The *CGG Alizé* and *Geo Celtic* halted operations in February 2016.

The *Pacific Finder* has been used as a source and halted operations in April 2016.

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The *Viking Vision* halted operations in January 2016 and was returned to its owner in October 2016.

The *Geowave Voyager* was used as a source and a crew boat and halted operations in September 2016.

Maritime management of the operated fleet

On December 31, 2016, in the current state of the downsizing plan, our operated seismic fleet (*Oceanic Sirius*, *Oceanic Vega*, *Geo Caspian*, *Oceanic Endeavour* and *Oceanic Champion*, which can deploy 14 or more streamers simultaneously) was managed by our joint venture ship managers CGG Eidesvik Ship Management AS which manages the majority of the fleet (80%) and by Volstad which manages one vessel (20%).

On June 13, 2016, CGG bought all the shares of Geofield Ship Management Services SAS, which was renamed on the same date as Geo Ship Management Services SAS. The Geofield ship management contracts for *Geo Celtic*, *Geo Caribbean*, *Geo Coral*, *Oceanic Phoenix*, *CGG Alizé* and *Oceanic Challenger* were terminated on June 14, and the management of these vessels in layup mode was contracted to O5 Marine, as layup manager. On December 8, 2016, the *Geo Coral* layup management contract was transferred to CGG Eidesvik Ship Management AS.

Bourbon Offshore operates six support and chase vessels (ancillary services including refueling, food and equipment delivery, crew change, storage, assistance and support during in-sea maintenance operations, protection of streamers from interactions with third party vessels and fishing devices), designed specifically for CGG, chartered individually for a minimum period of five years since their initial progressive deployment between 2013 and 2014.

Ownership status of the fleet

At December 31, 2016, we owned the *Oceanic Challenger*, *Geowave Voyager*, *Geo Coral*, *Geo Caribbean*, *Geo Celtic*, *CGG Alizé*, co-owned two ships (*Oceanic Sirius* and *Oceanic Vega*) at 49% and operated the rest of our fleet under charter agreements.

The following table provides certain information concerning the seismic vessels operated by us or cold stacked as of December 31, 2016.

Vessel name	Year built	Year upgraded	Year joined fleet	Time charter /		2D/3D	Maximum no. of streamers ⁽¹⁾	Vessel length (m)
				Bareboat expiry	Extension options			
<u>Operated vessels</u>								
<i>Oceanic Champion</i>	1994	2012	2009	June 2020	n.a.	3D	14	107
<i>Oceanic Endeavour</i>	2007	2011	2009	April 2018	2 × 5 years	3D	16	92
<i>Oceanic Vega</i>	2010	n.a.	2010	July 2022	4 × 5 years	3D	20	106
<i>Oceanic Sirius</i>	2011	n.a.	2011	October 2023	4 × 5 years	3D	20	106
<i>Geo Caspian</i>	2010	n.a.	2013	February 2018	5 × 1 or 2 year(s) ⁽³⁾	3D	16	108
<u>Cold stacked vessels</u>								
<i>Geowave Voyager</i>	2005	2009	2009	Owned	n.a.	3D	12	83
<i>Pacific Finder</i> ⁽²⁾⁽⁴⁾						3D/		
	2011	n.a.	2011	March 2019	1 × 8 years	2D	4	68
<i>CGG Alizé</i>	1999	n.a.	1999	Owned	n.a.	3D	16	101
<i>Geo Celtic</i>	2007	n.a.	2013	Owned	n.a.	3D	12	101
<i>Oceanic Phoenix</i>	2000	2011	2009	March 2019	10 × 1 year	3D	14	101
<i>Geo Caribbean</i>	2008	n.a.	2013	Owned	n.a.	3D	14	101
<i>Oceanic Challenger</i>	2000	2005	2005	Owned	n.a.	3D	12	91
<i>Geo Coral</i>	2010	n.a.	2013	Owned	n.a.	3D	16	108

<i>Viking Vanquish</i> ⁽²⁾	1999	2007	2007	November 2020	n.a.	3D	12	93
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⁽¹⁾ Tow points.

⁽²⁾ Includes a purchase option.

⁽³⁾ The extension of the charter for one year has been obtained in exchange for a strong decrease in the charter's costs and an important flexibility allowing us to suspend the charter for a maximum period of three months or to earlier terminate the charter at anytime during this year.

⁽⁴⁾ Please refer to "Item 4: Information on the Company – Recent Developments".

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As of December 31, 2016, the *Geo Caspian* was the only vessel under time charter. The other vessels were either fully owned or hired under bareboat charter. Among those under bareboat charter, the *Oceanic Sirius* and the *Oceanic Vega* were, as of the same date, co-owned within Oceanic Seismic Vessels AS and Eidesvik Seismic Vessels AS, respectively.

In the first quarter of 2017, we entered into agreements with the owners of (i) three of our cold-stacked seismic vessels (the *Pacific Finder*, the *Oceanic Phoenix* and the *Viking Vanquish*) and (ii) one of our active seismic vessels (the *Oceanic Champion*) in order to reduce the cash burdens under the charter agreements in respect of such vessels. In exchange for a reduction of the cash burden under such charter agreements, we issued 6.50% Senior Notes due 2021 in an aggregate principal amount of (i) US\$58.6 million to the relevant charter counterparties of the three cold-stacked vessels in January 2017 and (ii) US\$12.1 million to the relevant charter counterparty of the active vessel in March 2017. Following such issuances, the outstanding aggregate principal amount of our 6.50% Senior Notes due 2021 outstanding as of the date of this annual report was US\$675.6 million.

In April 2017, we carried out certain transactions in order to change the ownership structure of our marine fleet and restructure the related financial obligations under the Nordic credit facility related thereto. See “– Recent developments – Fleet ownership changes” for more information.

Competition and market

Four companies (CGG, PGS, WesternGeco and Polarcus) comprised 80% of the 3D marine market at the end of 2016.

The contraction in demand in the marine seismic acquisition market observed since 2014 continued in 2016 as a result of persisting low oil prices and the budget constraints of oil and gas companies. The imbalance between supply and demand observed in 2015 continued in 2016, despite the continued process of stacking, temporarily or permanently, and derigging of seismic vessels by most of the players. The low price levels observed in 2015 were sustained throughout 2016, and the lower fleet activity rates of 2015 similarly continued.

Total revenues of the Marine Contractual Data Acquisition Business Line amounted to US\$133 million in 2016, representing 56% of the total production of the “Contractual Data Acquisition” segment.

51% of our 3D fleet’s utilization was dedicated to exclusive marine acquisition contracts. 49% was dedicated to acquiring multi-client surveys.

2017 outlook

In 2016, we stabilized the size of our fleet at five vessels to adjust to the soft market conditions by retaining only our most high-end and recent vessels and leveraged our geographical positioning to minimize transits.

The Transformation Plan and cost saving initiatives at all levels of the organization continued in 2016, which allowed a significant reduction of our operational fixed costs and industrial investments.

The roadmap of our Marine Acquisition business is to continue the operational cost reduction linked to the implementation of the new maritime ownership set up and improvements of fleet performance in order to weather the persisting soft market conditions, while optimizing fleet utilization between Multi-Client and Contractual Acquisition to minimize transit times.

Land Data Acquisition and Multi-Physics Business Lines

Overview

Land Data Acquisition is principally focused on the acquisition and onsite processing of seismic data acquired on land areas. We are one of the main land seismic acquisition contractors operating worldwide,

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especially in desert areas, and particularly in areas requiring specific technologies, Health, Safety and Environment (“HSE”) excellence, highly qualified personnel and operational expertise. Our operations in high-resolution crews market in North Africa and the Middle East are good examples of our positioning. We now intend to reinforce on technological differentiation.

Multi-Physics acquisition is principally focused on the acquisition, processing and interpretation of airborne geophysical data on land or offshore, all over the world, and on providing marine gravity and magnetic acquisition services onboard seismic vessels or independently, as well as the processing and interpretation of such data. We are one of the largest airborne acquisition contractor, operating worldwide and offering a diverse portfolio of airborne geophysical technologies, with particular emphasis and expertise in electromagnetics and gravity. In 2016, our activities were conducted out of operational centers located in Canada, Brazil, South Africa and Australia, and are based on a foundation of HSE excellence.

In 2016, apart from operations in partnership, we operated on average one active land crews performing 3D and 2D seismic surveys (on exclusive contract surveys). Our Multi-Physics Business Line fleet was gradually reduced from 21 to 16 airplanes over the course of the year as some non-core aircrafts were sold.

Activity description

Land Data Acquisition

Land operations employ both surveying and recording crews. Surveying crews lay out the lines to be recorded and mark the sites for shot-hole placement or recording equipment location (except for “stackless” operations where the source locations are indicated through integrated GPS capabilities rather than on location by field personnel). Recording crews produce acoustic impulses and record the seismic signals via geophones or hydrophones. The acoustic sources used are mainly vibrators onshore, and explosives and air guns in transition areas. On a land survey where explosives are used as the acoustic source, the recording crew is supported by several drill crews. Drill crews operate ahead of the recording crew and bore shallow holes for explosive charges which, when detonated by the recording crew, produce the necessary acoustic impulse.

Land seismic crews are equipped with advanced equipment and software used for each step of the acquisition process. Also, patented high-end vibroseis technologies such as HPVA and V1 seek to increase significantly the productivity of a crew. EmphaSeis and CleanSweep seek to enhance the resolution of the data through broadening and cleaning the frequency content of the signal emitted.

By combining specific acquisition geometries and processing technologies as well as on-site processing software for acquired data, we have a unique capability to offer fully integrated solutions, improving both data quality and turn-around time, thus accelerating the exploration cycle.

Operations in the Middle East are conducted in partnership with the Saudi company TAQA through the Argas joint venture.

Seabed acquisitions are operated through Seabed GeoSolutions BV, a joint venture owned 60% by Fugro and 40% by us.

Multi-Physics

Multi-Physics Acquisition encompasses two segments of activity and provides services worldwide:

Airborne activity encompasses the collection, processing and interpretation of data related to the earth’s surface and the soils and rocks beneath, and provides advice based on the results to clients in

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the mineral, oil and gas, geothermal, governmental, engineering and environmental management sectors. We acquire electromagnetic, magnetic, radiometric and gravity data using fixed-wing airplanes and helicopter platforms. The airplanes we operate have been modified with integrated geophysical measurement systems incorporating elements of internal design and manufacture. Helicopter projects are supported using subcontracted or chartered helicopters, as the geophysical instrument systems designed for use on helicopters can be installed without significant modifications to the aircraft.

We also provide in-house acquisition and data processing of marine gravity and bathymetry in conjunction with seismic surveys or on a stand-alone basis.

We also offer advanced geophysical data processing, interpretation and consulting services in order to provide fully integrated services for our natural resource sector clients.

These services are offered on a global basis. Local knowledge, regulatory understanding, and proximity to the data collection sites are important factors in efficient aircraft operations, so the Business Line has operational units and aviation management facilities in Canada and Australia, with data collection supported locally by operational resources in Brazil, South Africa and other countries where CGG built a solid local expertise during the past years. In 2016, the management responsibility and the majority of operational resources remained located in Toronto and Perth.

In Multi-Physics Acquisition, we operate under two business models:

The first business model consists of working on an exclusive contractual basis with the client. The contract usually stipulates that we will receive a fixed remuneration per acquired linear kilometer, on client specifications. The client owns the acquired data and pays us on the agreed basis. Our operating income is the difference between the cost to us and the final price of the survey.

The second business model consists of operating under a multi-client model, with multiple clients prefunding the acquisition. In this case, the surveying and recording activities are performed by the Acquisition Business Line as an internal service for the Multi-Client & New Ventures Business Line, which among other things develops and sells a library of geophysical surveys. We remain the owner of the data thus acquired.

Competition and market

The land acquisition market is fragmented and extremely competitive with the presence of both international and local players. In addition to CGG, the other significant service providers in the land seismic market worldwide are BGP, Sinopec, Geokinetics, WesternGeco, SAE and Argas (our joint venture with TAQA in the Middle East), and in the seabed acquisition market are Seabed Geosolutions BV, Fairfield and Magseis.

In this market, we believe that technology, quality of the crews, services provided and prices are the main differentiators, while the relationship with local suppliers and the expertise of personnel in complex areas are additional advantages. Our offerings are based on a technology and geographical focus with high-end activities often operated through local partnerships. We have developed a unique expertise in the Middle-Eastern and North African deserts. In a context of degraded oil prices, those regions still hold the best potential for growth, driven by the demand for high-end seismic and high-channel count crews.

The airborne acquisition market is fragmented and extremely competitive with the presence of a handful of international players, as well as many smaller and regionally focused competitors. In general, primarily due to technical specialization, most competitors have their primary focus and activity in either the mining, oil and gas, or government sectors, but not in all.

CGG is the only market player with a strong position in all major market sectors and geographic regions. The diversified market sector and geographic region presence lessens the impact of the historically significant

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fluctuations in airborne market activity by sector and region. In 2016, we enhanced our offering with a Full Spectrum Falcon service, expanding our measurement bandwidth to provide superior long wavelength information over standard gravity gradiometers. These developments further strengthened our leading position in this important category.

In the mining and oil and gas sectors, technology, service capability and prices are the main differentiators. For governmental sector work, price and capacity are the main differentiators on projects which are typically large in size and require commoditized technologies.

In 2016, Land activities may be described by the following main elements:

In North Africa, the prudence of the operators in Tunisia, and program delays combined with fierce competition in Algeria did not allow us to reproduce the levels of activity in the region of the past years;

In the Middle East, certain national oil companies remained in waiting mode and continued their policy of delaying high channel count crews, whereas Saudi Aramco maintained a strong level of activity in Saudi Arabia;

In sub-Saharan Africa, CGG continued its presence in Angola with a 3D acquisition which will expand to a new 3D program in 2017; and

In South East Asia, activity in Papua New Guinea was affected by several transactions of assets between oil operators, but offers better prospects in 2017. Otherwise, CGG successfully entered Vietnam, with a 2D acquisition contract in partnership, which operations will start during the first quarter of 2017.

Activities for Multi-Physics in the mining sector remained at low levels in 2016, due to low levels of overall expenditure on exploration by both junior and major mining companies. However positive signs are slowly emerging in the mining sector with increased financing in the face of a strong gold prices and stable commodity prices, which we expect to deliver stronger opportunities in 2017. The oil and gas sector provided a weak level of airborne activity in direct relation with reduced exploration caused by weak oil prices. Governmental sector activities for airborne remained significant in South America, with low levels elsewhere.

The field of acquisition and data processing of marine gravity and bathymetry was generally affected by the overall reduction of the worldwide fleet of seismic vessels and remained at low levels of activity. The adjusted cost base reached after implementation of the 2015 restructuring plan allowed us to partly weather the impact of this generally weak market.

Total Land Data Acquisition and Multi-Physics production (both contract and multi-client surveys) accounted for US\$105 million in 2016, representing 44% of “Contractual Data Acquisition” operating revenues.

2017 outlook

Our land acquisition services still occupy a good position geographically (North and sub-Saharan Africa and niche markets in South East Asia) and technologically (high-end market) for the development of strong local partnerships. Our strategy in land acquisition remains focused on differentiation and operational excellence rather than market share, avoiding commoditized markets as much as possible. We intend to further reinforce this focus on differentiation and partnerships in 2017 in a market which remains very competitive.

In Multi-Physics acquisition, CGG remains geographically and technologically well placed, and should benefit from its strong presence in the mining, oil and gas and government sectors to seize any opportunity. Mining sector activity levels are expected to show some improvement and we expect to leverage our technological capabilities to differentiate ourselves from our competitors and exploit differentiation opportunities

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offered by fixed-wing and helicopter electromagnetic measurement systems. Airborne activities in the oil and gas sector are expected to be quite stable and primarily focused on areas of onshore frontier exploration. Our ability to offer both low and high resolution gravity measurement system technologies will allow us to present a range of options on projects, allowing clients to determine the most cost effective technique appropriate for the geological model in their exploration play. We will also continue our effort of optimization of cost base and our program of aircraft fleet rationalization.

Geology, Geophysics & Reservoir (“GGR”)

Overview

With its worldwide footprint, our GGR segment engages in many activities assisting our clients in identifying their exploration targets and characterizing their reservoirs. Among these are: developing and licensing multi-client seismic surveys; processing seismic data; selling seismic data processing and reservoir characterization software (primarily under the *geovation*, Hampson-Russell and Jason brands); providing geoscience and petroleum engineering consulting services; collecting, developing and licensing geological data (under the Robertson brand) and providing data management services and software to our clients.

With its extensive scope of competencies, our GGR segment is the cornerstone of the integrated geoscience services that we offer to our clients.

General description of activities

Multi-Client and New Ventures (“MCNV”)

The MCNV Business Line utilizes the resources of our other Business Lines as well as those of sub-contractors to acquire and process seismic data for itself and license that data to our clients. Additionally MCNV may contribute or otherwise use its multi-client data in certain ventures with third parties (the “new ventures” in the Business Line name) in order to achieve enhanced returns. Such new ventures may take different forms, provided that they will not expose CGG to any drilling or other typical oilfield operation risk.

The multi-client licenses are for lengthy terms, the maximum allowable under local law, typically ranging from 5 to 25 years. The licenses are non-transferable, and the data may not be shared with partners who do not own a license. Oil company partnerships of various forms are a common arrangement, especially in difficult and expensive exploration plays. The business model works well in venues where there is one or more of the following: significant levels of competition between oil companies exploring for assets; frequent lease turnover due to government lease rounds or lease trading activity between oil companies; frequent partnering between oil companies; and relatively high costs for seismic data.

The costs of the multi-client surveys are capitalized on MCNV’ s balance sheet and then amortized. Until the end of 2015 amortization was, generally, at a rate of 80% of revenue, subject to a maximum five or seven year straight-line depreciation. The depreciation method was adjusted in 2016 due to the requirements of the amendment of IAS 38, but the essential process was unchanged. Details of our multi-client accounting methods are fully described in note 1 to our consolidated financial statements included in this report. In 2016, MCNV capitalized US\$337 million of total costs, of which US\$295 million represented cash expenditures, and amortized US\$278 million to cost of sales.

MCNV operates in marine environments on a worldwide basis and on land in the United States. It has significant investments in the Gulf of Mexico, offshore Brazil, the North Sea and onshore United States. Maps and details of all surveys in our data library are available on our website. At the end of 2016, the library of 3D seismic surveys consisted of approximately 846,882 square kilometers of marine surveys across numerous basins and 73,821 square kilometers of land data, mostly in the United States and focused on shale plays. During the fourth quarter of 2015, MCNV sold its Canadian land data and exited that market.

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Subsurface Imaging and Reservoir (“SIR”)

Through its Subsurface Imaging and Reservoir activity, CGG transforms marine and land seismic data acquired in the field into high quality images of the subsurface that can then be used by our clients in their efforts to find and produce oil and gas. These images provide a means to understand the structure of the subsurface as well as deduce various qualities of the rocks and fluids in those structures. We process seismic data acquired by our land and marine seismic acquisition crews as well as seismic data acquired by non-affiliated third parties. In addition, we reprocess the previously processed data using new techniques to improve the quality of seismic images.

We conduct our seismic imaging operations out of 9 large centers located in Houston (USA), Calgary (Canada), Crawley (England), Massy (France), Singapore, Rio de Janeiro (Brazil), Oslo (Norway), Perth (Australia) and Kuala Lumpur (Malaysia) and from 12 smaller centers spread around the world. In addition to this network of open centers, serving all clients, we operate 10 centers each dedicated to serving a single specific client. This geographic spread of centers allows for a great amount of collaboration with our clients as we jointly seek to produce the best subsurface images.

In addition to subsurface imaging, we offer geophysical consulting services. Using seismic data in conjunction with other information such as well logs, we are able to determine various rock and fluid properties and thereby assist our clients in characterizing their oil and gas reservoirs.

In addition to geophysical data, the Group, under the Robertson brand, develops and maintains large libraries of various types of geological data covering most geographic areas of interest to petroleum and mining companies. We license this data to clients, who generally use it in the early stages of their exploration efforts, often as a precursor to seismic exploration. Our geologists and other geo-professionals also engage in many types of proprietary studies for clients.

CGG also sells seismic data processing software, under the *geovation* brand and sells software for reservoir characterization, interpretation, and modeling under the Hampson-Russell, Jason, Insight Earth and Velpro brands, allowing clients to produce reservoir studies.

Finally, CGG is engaged in the business of providing data storage & retrieval solutions, and data transformation services to oil companies and oil oriented government agencies. The explosion in volume of data of all types and the need to re-format large volumes of old data for use in current applications make this activity an interesting area for future growth.

CGG operates in those geographic and technical areas where its specific offerings can deliver significant value to customers. Based on customer feedback and industry surveys, we believe that our Subsurface Imaging & Reservoir activity is regarded as the technical leader in markets where it participates.

Competition and market

MCNV's main competition comes from Schlumberger (WesternGeco), PGS and TGS. Competition in the multi-client business is focused on location and availability of surveys, technology used in acquisition and processing, and price. The four main companies generally compete in all areas of the world where the multi-client business model is practical.

In November 2015, MCNV began reprocessing a massive dataset, over 38,000 square kilometers, from the Perdido fold belt area in both the US and Mexican Gulf of Mexico. The survey, named Encontrado, has significant pre-funding and processing was ongoing at the end of 2016. The success of the December 2016 deep-water bid round in Mexico bodes well for future sales of this survey.

In 2016, MCNV also developed marine surveys in Brazil, Scandinavia, Africa, Australia and Asia as well as land surveys in North America.

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The SIR sector is led by CGG and WesternGeco. Competition in the high end of seismic imaging, where SIR focuses its business, tends to be based on technology and service level, areas where we have an outstanding reputation.

Processing capacity has multiplied in recent years as a result of improvements in computing technology. This increase in computing power has allowed improved processing quality through the use of more complex and accurate algorithms. We believe SIR is the market leader in application of the most advanced processing techniques.

SIR occupies a strong position in the relatively narrow market of seismic reservoir characterization software (Hampson-Russell, Jason and Insight Earth). The overall seismic and geological interpretation software market is dominated by Schlumberger and Halliburton, with numerous small players competing with niche applications. Many of these, including SIR's, are designed to be compatible with the Schlumberger and Halliburton systems.

GGR revenues in 2016 amounted to US\$784 million, a decrease of 29% compared to 2015. GGR revenues represented 66% of the consolidated revenues in 2016. MCNV generated US\$383million of this revenue (a 30% decrease compared to 2015) and SIR generated US\$401 million (a 29% decrease compared to 2015).

MCNV invested US\$295 million in seismic data libraries in 2016, with a cash prefunding rate of 92%. After sales revenue, revenue from completed surveys, was US\$111 million in 2016. The net book value of the seismic multi-client library was US\$848 million at the end of the year.

2017 outlook

Lower exploration and production spending have driven GGR revenue down by 29% in 2016 as compared to 2015, with all service lines being affected. We are expecting a relatively flat market for most of our products and services in 2017. However, we expect some increase in MCNV sales in 2017, as we have good prospects for pre-funding revenue on our 2017 projects and believe our current survey portfolio fits well with particular areas of client interest, such as the Brazil pre-salt area. SIR expects to see a bottoming of demand during 2017, with a recovery beginning sometime in the second half of the year. We expect a slow but steady improvement in commodity prices, which should result in a substantially improved market for all GGR Business Lines in subsequent years.

Overall, our top line strategy for the GGR activities in 2017 is largely unchanged from that of 2016. We will strive to:

- Maintain our investment in new MCNV surveys, at an acceptable level of pre-funding;

- Continue to invest in research and development and people to maintain our lead in high end imaging and advance our software offering;

- Expand our reservoir and geological operations through increased multi-client / subscription product investment and the geographic expansion of certain technologies;

- Gain more value from integrated offerings.

Equipment Business Line

Overview

We conduct our equipment development and production operations through Sercel and its subsidiaries. Sercel is the market leader in the development and production of seismic equipment in the land and marine seismic markets. Sercel makes most of its sales to purchasers other than CGG. As of December 31, 2016, Sercel operated six seismic equipment manufacturing facilities, located in Nantes and Saint Gaudens in France, Houston and Tulsa in the US, Krimpen aan de Lek in The Netherlands and Singapore. In China, Sercel operates through

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Hebei Sercel-JunFeng Geophysical Prospecting Equipment Co. Ltd. (“Sercel-JunFeng”), based in Hebei, in which Sercel has a 51% equity stake. In addition, two sites in Toulouse and Brest (France) are dedicated to borehole gauges and submarine acoustic instrumentation, respectively.

General description of activities

Sercel sells its equipment and offers customer support services including training on a worldwide basis. Sercel offers a complete range of geophysical equipment for land or marine seismic data acquisition, including seismic recording equipment, software and seismic sources either for land (vibrators) or marine (air guns). Sercel also supplies its clients with integrated solutions.

With respect to land acquisition equipment, Sercel launched, in the fall of 2013, the latest generation of its recording system, the 508^{XT} system, which introduces a new paradigm in land seismic acquisition by offering high count channels crews the ability to record up to one million channels in real time, resulting in a new level of image resolution. First deliveries for this new system occurred during 2014 and in January 2016 the system achieved the one million VPs (Vibrated Points) on a high density survey with a high channel count. The 508^{XT} is the first member of Sercel’s new generation of state-of-the-art land seismic acquisition systems designed to drive crew productivity, operating flexibility and data quality to a new level.

The former generation of the recording systems, the 428 XL represents the market standard. The two have an adaptive architecture and the option of mixing different communication media (cable, radio, micro-wave, laser and fiber-optic) to form a true network allowing the user to define data routing and hence avoid obstacles in the field.

Like the 428XL, the 508^{XT} system can be used with the digital sensor unit (DSU) featuring one or three component digital sensors based on MicroElectroMechanicalSystems (MEMS). Sercel also introduced, along with its new acquisition system, QuietSeis, a new, high-performance digital sensor based on next-generation MEMS, allowing seismic signals to be recorded with three times less instrument noise than before.

The 508^{XT} architecture combines the best of both cabled and wireless technologies with the Unite Technology. Sercel launched a new and more compact version of the Unite in 2012 to meet the increasing popularity of wireless systems.

Sercel is also a market leader for vibroseismic vehicles used as seismic source in land and for vibrator electronic systems VE 464. Sercel’s latest vibrator family, called Nomad, offers high reliability and unique ergonomic features. Nomad is available with either normal tires or a tracked drive system. The track drive system allows Nomad vibrators to operate in terrain not accessible to vehicles with tires. In sand dunes or arctic conditions, this can improve crew productivity. The Nomad was designed to optimize reliability and maintenance in order to allow an intensive use on the field. As of December 31, 2016, 1,133 Nomad 65 were delivered since its market introduction. Sercel also offers the Nomad 90 which is capable of exerting a peak force of 90,000 pounds and is believed to represent the heaviest vibrator on the market. The Neo version of the Nomad 65 and 90 allows the generation of a wider range of seismic wave frequencies and is therefore a facilitator for broadband seismic land surveys and adds new functionalities that improve productivity and reliability. In June 2014, Sercel also launched the Nomad 15, a small and highly maneuverable version of a vibrator.

In addition to recording systems and vibrators, Sercel develops and produces a complete range of geophysical equipment for seismic data acquisition and other ancillary geophysical products such as geophones, cables and connectors. The acquisition of a 51% stake in Sercel-JunFeng, based in China, in 2004, reinforced our manufacturing capabilities for geophone, cables and connectors, as well as our presence on the Chinese seismic market. Sercel also offers the SG5 geophone featuring a low natural frequency.

In the down-hole domain, Sercel offers its latest generation VSP tool, MaxiWave, which has received positive reviews from clients. The Geowave II, launched in 2015, is the first digital multilevel borehole tool

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specifically designed for high temperature, high pressure wells. Sercel built on its diversification into the well environment and more specifically the artificial lift in acquiring Geophysical Research Corporation in January 2012.

With respect to marine equipment, the Seal system is currently the sole system with integrated electronics. In 2005, Sercel launched the Sentinel solid streamer that is the outcome of the technological synergies realized in acquisitions performed in recent years. The Sentinel cables have become a standard in the accessible market. The Sentinel RD is another generation of the Sentinel solid streamer which offers a reduced diameter and lower weight.

In June 2013, Sercel introduced the Sentinel MS, a Sentinel with multi-sensors together with two additional acceleration components, providing directive measurement for both cross line and vertical wave front. This streamer technology delivers multi-sensors data sets for enhanced broadband imaging.

The marine range of products has been further improved with the SeaProNav, a navigation software allowing the real-time positioning of streamers, the Nautilus, a totally integrated system for positioning seismic streamers and QuietSea, a passive acoustic monitoring system for detecting the presence of marine mammals during marine seismic surveys.

The SeaRay is an ocean bottom cable offered under several configurations for depth of 100 to 500 meters. This cable is based on the 428 family acquisition systems technology and allows multi-components recording owing to its DSU 3 components. In October 2015, Sercel launched the GeoTag product, an acoustic solution for seabed seismic acquisition up to 500 meters depth.

As a result of many acquisitions since 2000, Sercel is a market leader in the development and production of both marine and land geophysical equipment. It is a global provider for the seismic acquisition industry with a balanced industrial position in terms of both product range and geographical presence on the shores of the Atlantic and in Asia Pacific.

Competition and market

We estimate that the worldwide demand for geophysical equipment decreased by 41% in 2016 after a decrease of 45% in 2015. This decrease was due to a weakness of demand for land seismic equipment with the absence of high-channel count megacrews operating in the Middle East and to the collapse of the marine demand due to the reduction of the global seismic fleet. We estimate that Sercel's market share remains above 50%.

Our principal competitors for the manufacture of marine seismic equipment are Ion Geophysical Inc., Teledyne and WesternGeco, which now offers its streamers for sale to third parties. For land products, the main competitors are Inova (a joint venture between BGP and Ion Geophysical Inc), Geospace Technologies Corporation and WesternGeco. The market for seismic survey equipment is highly competitive and is characterized by continual and rapid technological change. We believe that technology is the principal basis for competition in this market, as oil and gas companies have increasingly demanded new equipment for activities such as reservoir management and data acquisition in difficult terrain. Oil and gas companies have also become more demanding with regard to the quality of data acquired. Other competitive factors include price and customers' support services.

The total production of the Equipment Business Line (Sercel), including internal and external revenues, amounted to US\$255 million, a 42% decrease compared to 2015.

Sercel external revenue amounted to US\$179 million, a decrease of 55% compared to 2015, and representing 15% of our consolidated revenue in 2016.

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2017 outlook

In 2017, Sercel' s revenue should remain quite similar to 2016, but with a different sales break down between land and marine. The marine market should reduce as no major order will be coming from CGG and due to the financing difficulties Sercel' s clients are facing. Marine contractors continue to face a difficult market, restricting their ability to invest in new equipment. However their current fleets are aging and their excess of equipment generated by the stacking of vessels is shrinking.

In contrast, the land market should increase in 2017, with a slight rebound of land activity worldwide in a more stabilized oil context than in 2016. CGG should benefit from the 508^{XT} advanced technology compared to aging systems.

In this market environment, and notably considering its important installed base, Sercel estimates that, for 2017, it should maintain its leading position in the seismic equipment market by capitalizing on growth opportunities resulting from the strength of its current product range, the application of new technologies in all of its products as well as from its diversified geographical presence.

Seasonality

We have historically experienced higher levels of activity in our equipment manufacturing operations in the fourth quarter as our clients seek to fully deploy annual budgeted capital. The same happens in our multi-client activity with oil and gas companies that seek to fully deploy their exploration budget in the last quarter of the year.

Intellectual property

We continually seek the most effective and appropriate protection for our products, processes and software and, as a general rule, will file for patent, copyright or other statutory protection whenever possible. Our patents, trademarks, service marks, copyrights, licenses and technical information collectively represent a material asset to our business. However, no single patent, trademark, copyright, license or piece of technical information is of material importance to our business when taken as a whole. These patents last up to 20 years, depending upon the date filed and the duration of protection granted by each country.

Competition

Most contracts are obtained through a competitive bidding process, which is standard for the industry in which we operate. Important factors in awarding contracts include service quality, technological capacity, performance, reputation, experience of personnel, customer relations and long-standing relationships, as well as price. While no single company competes with us in all of our segments, we are subject to intense competition with respect to each of our segments. We compete with large, international companies as well as smaller, local companies. In addition, we compete with major service providers and government-sponsored enterprises and affiliates. See “– Business Overview” for a discussion of the competitive factors in each of our business segments.

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Organizational structure

CGG SA is the parent company of the CGG Group. Its principal subsidiaries are as follows:

<u>Subsidiary</u>	<u>Jurisdiction of Organization</u>	<u>Head office</u>	<u>% of interest</u>
Sercel SAS	France	Carquefou, France	100.0
CGG Services SAS	France	Massy, France	100.0
CGG Holding B.V.	Netherlands	The Hague, the Netherlands	100.0
CGG Geo Vessels AS.	Norway	Oslo, Norway	100.0
CGG Services (Norway) AS	Norway	Oslo, Norway	100.0
Sercel Inc.	United States	Oklahoma, USA	100.0
CGG Holding (U.S.) Inc.	United States	Delaware, USA	100.0
CGG Services (U.S.) Inc.	United States	Delaware, USA	100.0
CGG do Brasil Participações Ltda.	Brazil	Rio de Janeiro, Brazil	100.0
CGG Services (UK) Ltd	UK	Crawley, UK	100.0

Property, plant & equipment

The following table sets forth certain information relating to the principal properties of CGG Group as of December 31, 2016:

<u>Location</u>	<u>Type of facilities</u>	<u>Size (sq.m.)</u>	<u>Owned/ Leased</u>	<u>Lease expiration date</u>
France, Paris	Headquarters of CGG SA	1,655	Leased	2018

Geophysical Services (Contractual Data Acquisition and GGR Segments)

Angola, Luanda	Offices of CGG Explo Branch and Data processing center	565	Leased	2018
Australia, Perth	Registered office of CGG Services (Australia) Pty Ltd and Data processing center	2,200	Leased	2024
Australia, Jandokot Airport, Perth	Warehouse	6,276	Leased	2017
Brazil, Rio de Janeiro	Registered office of CGG do Brasil Participacoes LTDA and Data processing center	1,522	Leased	2019
Brazil, Rio de Janeiro	Warehouse	470	Leased	2024
Canada, Calgary	Registered office of Hampson Russell Ltd Partnership and Data processing center	9,268	Leased	2018
China, Beijing	Office of CGG Services Technology (Beijing) Co, Ltd and Research and development center	1470	Leased	2018
England, Redhill	Administrative offices and Operations computer hub	1,884	Leased	2029
England, Crawley	Crompton Way Offices of CGG Services (UK) Ltd. and Data processing center	9,290	Leased	2028
France, Massy	Registered office of CGG Services SAS and Data processing center	17,850	Leased	2020

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<u>Location</u>	<u>Type of facilities</u>	<u>Size (sq.m.)</u>	<u>Owned/ Leased</u>	<u>Lease expiration date</u>
India, Mumbai	Registered office of CGG Services India Pvt Ltd and Data processing center	1,675	Leased	2018
Indonesia, Jakarta	Registered office of PT Veritas Mega Pratama and Data processing center	967	Leased	2017
Malaysia, Kuala Lumpur, Kuching	Registered office of CGG Services (Malaysia) Sdn Bhd and Data processing center	1,755	Leased	2020
Mexico, Villahermosa	Data processing center and offices	1,700	Leased	2017
Mexico, Mexico City	Registered office of CGG de Mexico SA de CV	142	Leased	2017
Netherlands, La Hague	Offices	3,160	Leased	2022
North Wales, Anglesey	Data management Solutions	4,362	Owned	N/A
North Wales, Llanrhos	Offices and laboratories	78,785	Leased	2024
North Wales, Conwy	Offices/storage facility	2,829	Owned	N/A
Norway, Oslo	Offices of CGG Services (Norway) AS, Wavefield Inseis AS, CGG Marine Resources Norge AS, Exploration Vessel Resources II AS, Exploration Investment Resources II AS, CGG Geo Vessels AS	5,200	Leased	2024
Russia, Moscow	Registered office of CGG Vostok and Data processing center	1,600	Leased	2018
Scotland, Aberdeenshire	Birchmoss offices	3,065	Leased	2018
Singapore	Registered office of CGG Services (Singapore) Pte. Ltd. and Data Processing Center	8,183	Leased	2019
Singapore	Logistic Marine Warehouse	6,550	Leased	2022
Switzerland, Geneva	Registered office of CGG International	606	Leased	2017
Thailand, Bangkok,	Offices of CGG Services SAS (branch)	567	Leased	2017
USA, Houston, Texas	Principal executive offices of CGG Services (U.S.) Inc. and data processing center	39,569	Leased	2024
USA, Schulenburg	Warehouse	28,230	Owned	N/A
Equipment Segment				
Canada, Calgary	Offices and warehousing premises of Sercel	3,995	Leased	2018
China, Xu Shui	Manufacturing and research and development facilities	59,247	Owned	N/A
France, Carquefou	Sercel manufacturing and research and development facilities recording equipment (land and marine)	25,005	Owned	N/A
France, Saint-Gaudens	Sercel manufacturing and research and development facilities	23,051	Owned	N/A
USA, Houston, Texas, (ParkRow)	Offices and manufacturing premises of Sercel	39,344	Owned	N/A

We also lease other offices worldwide to support our operations. We believe that our existing facilities are adequate to meet our current requirements.

Information concerning our seismic vessels is set out under “Business Overview – Contractual Data Acquisition – Marine Data Acquisition Business Line” above.

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Environmental matters and safety

CGG has a structured approach to Health, Safety, Security and Environment (HSE), built on our HSE Operating Management System (HSE-OMS). The HSE-OMS is consistent with the International Oil & Gas Producers (IOGP) guidelines for the Development and Application of Health, Safety and Environment management systems which has become a de facto industry standard. The HSE-OMS is implemented across our activities; it has a wide scope including the health, safety and security of our permanent employees, our seasonal employees and our sub-contractors working on our projects, as well as the environmental impact of all of our projects and facilities.

A dedicated HSE organization supports the operating divisions in all aspects of the management system, from risk identification and control through training and communication to emergency response in the event of an incident. This professional staff, which is widely distributed across our business, monitors the local regulatory environment in HSE and assists our line management in putting the necessary compliance measures in place.

Legal proceedings

From time to time we are involved in legal proceedings arising in the normal course of our business. We do not expect that any of these proceedings, either individually or in the aggregate, will result in a material adverse effect on our consolidated financial condition or results of operations.

Request for information from the Bureau of Industry and Security (BIS) of the United States Department of Commerce

Following an investigation by the BIS regarding some shipments to our vessels operating in or near Cuba that may not have complied fully with our internal policies and possibly violated applicable export controls and sanctions laws, a warning letter without any financial penalty was issued on September 10, 2015. On July 29, 2015, the U.S. Office of Foreign Assets Control (OFAC) issued a pre-penalty notice. On December 15, 2015, a settlement agreement was signed pursuant to which we paid a fine of US\$614,250.

ONGC arbitration

On March 18, 2013, CGG Services SAS, a fully owned subsidiary of CGG SA, initiated arbitration proceedings against ONGC, an Indian company, to recover certain unpaid amounts under three commercial contracts entered into by the two entities between 2008 and 2010. The proceedings are on-going. We believe that this arbitration proceeding will allow us to recover the receivables that are recorded on our balance sheet as unpaid receivables as of December 31, 2016.

Item 4A: UNRESOLVED STAFF COMMENTS

None.

Item 5: OPERATING AND FINANCIAL REVIEW AND PROSPECTS

Group organization

Since September 30, 2015, we have organized our activities in four segments for financial reporting: (i) Contractual Data Acquisition, (ii) GGR, (iii) Equipment and (iv) Non-Operated Resources. Financial information by segment is reported in accordance with our internal reporting system and provides internal segment information that is used by the chief operating decision maker to manage and measure performance.

Taking into account the long cyclical trough of the seismic market, we decided, during the third quarter of 2015, to implement new adaptation measures throughout the Group and to reduce our marine fleet to five 3D

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high-end vessels mainly dedicated to multi-client surveys. Going forward, the downsized CGG fleet will be dedicated on average two-thirds to multi-client surveys and only one-third to exclusive surveys. As a result of the reduction of the fleet, part of our owned vessels will not be operated for a certain period of time. The costs of these non-operated resources, as well as the costs of the Transformation Plan are reported, in the “Non-Operated Resources” segment.

A summary of our four segments is set out below:

Contractual Data Acquisition. This Operating segment comprises the following Business Lines:

Marine: offshore seismic data acquisition undertaken by us on behalf of a specific client;

Land and Multi-Physics: other seismic data acquisition undertaken by us on behalf of a specific client.

Geology, Geophysics & Reservoir (“GGR”). This operating segment comprises the Multi-client Business Line (development and management of seismic surveys that we undertake and license to a number of clients on a non-exclusive basis) and the Subsurface Imaging and Reservoir Business Lines (processing and imaging of geophysical data, reservoir characterization, geophysical consulting and software services, geological data library and data management solutions). Both Business Lines regularly combine their offerings, generating overall synergies between their respective activities. The GGR segment includes the costs, industrial capital expenditures and capital employed related to the vessels dedicated to multi-client surveys.

Equipment. This operating segment comprises our manufacturing and sales activities for seismic equipment used for data acquisition, both on land and marine. The Equipment segment carries out its activities through our subsidiary Sercel.

Non-Operated Resources. This segment mainly comprises the costs of the non-operated marine resources as well as all the costs of our Transformation Plan (mainly restructuring provisions and provisions for onerous contracts). The capital employed includes the non-operated marine assets and the provisions related to the Transformation Plan. In this segment, the recoverable value retained is the fair value less costs of disposal.

Operating Results

The following operating and financial review and prospects should be read in conjunction with our consolidated annual financial statements and the notes thereto included elsewhere in this annual report, which have been prepared in accordance with International Financial Reporting Standards (“IFRS”) and its interpretations as issued by the International Accounting Standards Board (IASB) and as adopted by the European Union at December 31, 2016.

Factors affecting our results of operations

Our operating results are generally affected by a variety of factors, including changes in exchange rates, particularly the value of the euro against the dollar, and changes in market environment. See “Trend Information” and “Geophysical market environment” herein.

Geophysical market environment

Overall demand for geophysical services and equipment is dependent on spending by oil and gas companies for exploration, development and production and field management activities. We believe the level of spending of such companies depends on their assessment of their ability to efficiently supply the oil and gas market in the future and the current balance of hydrocarbon supply and demand. The geophysical market has historically been extremely cyclical. We believe many factors contribute to the volatility of this market, such as the geopolitical uncertainties that can harm the confidence and visibility that are essential to our clients’ long-term decision-

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making processes and the expected balance in the mid to long term between supply and demand for hydrocarbons. Lower or volatile hydrocarbon prices tend then to limit the demand for seismic services and products. In 2015 and 2016, oil and gas companies reduced their exploration and production spending due to falling oil prices, affecting demand for our products and services as reflected in our results.

We expect that the challenging market conditions that we experienced in 2016 will remain similar in 2017 and will continue to weigh on our revenues. However we expect downward pressure on cash generation in 2017 compared to 2016. Due to this difficult environment, we believe that the market recovery will be delayed until 2018/2019.

See “Item 4: Information on the Company – Industry Conditions” for a discussion of developments in the geophysical industry.

Transformation Plan and fleet reduction

We have been undertaking a Transformation Plan since 2013 that has evolved over time. It includes in particular a refocus on high value-added activities and a reduction of our fleet to five 3D high-end vessels principally dedicated to multi-client activity, as well as the implementation of cost saving actions and a reduction of investments. We expect this Transformation Plan to permit us to confront a difficult market environment that could continue to deteriorate.

The financing of our Transformation Plan included an extension of certain of our debt maturities and a capital increase of approximately 350 million, which settled in February 2016.

Our fleet of marine seismic acquisition vessels has evolved in the past mainly in reaction to changes in the seismic contractual market and our marine strategy. In February 2014, we announced our intention to reduce the fleet from 18 to 13 3D high-end vessels before the end of 2016 and decided in mid-2014 to accelerate the implementation of this plan to have it completed by the end of 2014. Consequently, we stopped operating the *Symphony*, the *Princess*, the *Viking II* and the *Vantage* in 2014. The *Viking II* and the *Vantage* were returned to their owner at the end of their leasing period. The *Viking* and the *Geowave Voyager* have been converted into source vessels.

In February 2015, as the market environment deteriorated further, we announced our intention to reduce our operated fleet from 13 to 11 3D high-end vessels. Then in November 2015, when we announced the next step of our Transformation Plan, we stated our objective to reduce our operated fleet to five vessels, principally dedicated to multi-client production. As of December 31, 2015, our operational fleet was composed of eight 3D high-capacity vessels (12 or more streamers), one source vessel and one 3D/2D lower capacity vessel. We ceased operating the *CGG Alizé* and the *Geo Celtic* in early 2016 and the *Viking Vision* in fall 2016. As of December 31, 2016, the fleet is operating five 3D high capacity vessels as targeted. Restructuring changes and fixed assets impairments related to the fleet reduction amounted to US\$288 million in 2015 and US\$34 million in 2016.

Fleet ownership changes

In April 2017, we entered into agreements with Eidesvik, the lenders under our Nordic credit facility and the lenders under the credit facilities of Eidesvik Seismic Vessels AS (“ESV”) and Oceanic Vessels AS (“OSV”) for the implementation of a new ownership set up for our seismic fleet.

Under the new arrangements, Global Seismic Shipping AS (“GSS”), a company organized under the laws of Norway and 50% owned by us (through our subsidiary, Exploration Investment Resources II AS) and 50% owned by Eidesvik, holds (i) CGG Geo Vessels AS (to be renamed Geo Vessels AS), our former wholly-owned subsidiary, which owns the five previously cold-stacked vessels (*Geo Coral* (having been re-rigged), *Geo Caribbean*, *Geo Celtic*, *CGG Alizé* and *Oceanic Challenger*), and (ii) ESV and OSV (in which we previously

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held direct 49% stakes), which respectively own the *Oceanic Vega* and *Oceanic Sirius*. For more details related to the new ownership set up of our seismic fleet, see “Item 4: Information on the Company – Recent Developments – Fleet ownership changes”.

In connection with the new ownership set up of our seismic fleet, Geo Vessels AS continues to be the borrower of the loan outstanding under our Nordic credit facility. The removal of Geo Vessels AS from our consolidated perimeter is expected to result in a reduction of the gross debt of the Group by US\$182.5 million, corresponding to the principal amount of loans under the Nordic credit facility outstanding as of March 31, 2017. We expect that the new ownership set up of our seismic fleet will further improve our competitiveness through the reduction of the charter day-rate of our 3D high-capacity seismic vessels and the externalization of cold-stacking costs, thus improving our liquidity in the short- and medium-term.

Proactive management of marine liabilities

On January 20, CGG entered into agreements to substantially reduce the cash burden of the charter agreements in respect of three cold-stacked seismic vessels. As part of the agreements to settle those amounts on a non-cash basis, CGG issued US\$58.6 million of its 2021 Notes bearing a 6.5% interest to the relevant charter counterparties.

On March 13, CGG entered into an agreement to substantially reduce the cash burden of the charter agreement in respect of the “Oceanic Champion”, an active seismic vessel. As part of the agreements to settle those amounts on a non-cash basis, CGG issued US\$12.1 million of its 2021 Notes bearing a 6.5% interest to the relevant charter counterparties.

High fixed costs

We have high fixed costs and seismic data acquisition activities that require substantial capital expenditures. As a result, downtime or decreased productivity due to reduced demand, weather interruptions, equipment failures, permit delays or other circumstances that affect our ability to generate revenue could result in significant operating losses. In particular, we operate certain of our marine acquisition vessels under long-term bareboat charters, which generate significant fixed costs that cannot easily be reduced during the term of the charters. In 2016, we operated five vessels under bareboat charters until the fall for a fixed cost of US\$77 million.

Beginning of 2017, the implementation of measures reducing the maritime exposure will improve the fleet competitiveness. In particular, the new ownership set-up for the operated fleet described in paragraph immediately above will allow most of the operated vessels to be chartered at a materially reduced rate and back in line with present market conditions.

Write-downs

We have had in the past and may have in the future impairment losses as events or changes in circumstances occur that reduce the fair value of an asset below its book value. We may also have write-offs and non-recurring charges. For 2014, 2015 and 2016, such asset impairments, write-offs and non-recurring charges totaled US\$939 million, US\$1,177 million and US\$184 million, respectively. These losses and changes could have a material adverse effect on our results of operations and financial condition.

We have also been involved in a number of business combinations in the past, leading to the recognition of large amounts of goodwill on our balance sheet. Goodwill on our balance sheet totaled US\$1,229 million as of December 31, 2015 and US\$1,223 millions of dollars as of December 31, 2016 due to exchange rate variations. Goodwill is allocated to CGUs as described in note 11 to our consolidated financial statements for the year ended December 31, 2016. The recoverable amount of a CGU is estimated at each balance sheet date and is generally determined on the basis of a group-wide estimate of future cash flows expected from the CGU in question. The

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estimate takes into account, in particular, the removal from service of certain assets used in our business (such as decommissioning or coldstacking vessels), or change in purpose of a given asset (such as the use of a seismic vessel as a source-vessel), or any significant underperformance in cash generation relative to previously-expected results, which may arise, for example, from the underperformance of certain assets, a deterioration in industry conditions or a decline in the economic environment. At each balance sheet date, if we expect that a CGU' s recoverable amount will fall below the amount of capital employed recorded on the balance sheet, we may write down some value on given assets and/or the goodwill in part or in whole.

We wrote down US\$415 million of goodwill in our marine acquisition activity as of December 31, 2014 as a result of the deterioration in market conditions. Furthermore, as of December 31, 2015, in response to the continuing deterioration of market conditions and the drastic reduction of our fleet, we wrote down US\$365 million of goodwill in our marine acquisition activity and US\$439 million of goodwill in our GGR activity, for a total of US\$804 million for 2015. In 2016, we did not write down any goodwill.

Acquisitions and divestitures

Recent acquisitions and disposals have included:

– During 2017

See “ – Fleet ownership changes” above.

– During 2016

Termination of the agreement to sell the Multi-Physics Business Line

CGG announced on April 29, 2016, that it had entered into a binding agreement with NEOS for the sale of the Multi-Physics Business Line. On December 12, 2016, as the final terms of the discussion did not adequately reflect our view of the value and the prospects of the activity, the agreement was terminated and consequently, the Multi-Physics Business Line remains within the Group.

Sale of Gardline CGG Pte Ltd

On March 24, 2016, CGG sold its 49% stake in Gardline CGG Pte Ltd., which was accounted for using the equity method in our financial statements.

There were no other material acquisitions and divestures during 2016.

– During 2015

Transfer of our shares in Ardiseis FZCO to Argas

In accordance with the Framework Agreement signed in late 2013 with Industrialization & Energy Services Company (TAQA), 98% of Ardiseis FZCO' s capital was transferred to Argas by CGG and TAQA (49% by CGG and TAQA, respectively). Argas became the main shareholder of Ardiseis FZCO. As a combination of Argas and Ardiseis FZCO, the new Argas group has a stronger capital base and a larger business scope. Argas is 51% owned by TAQA and 49% owned by CGG.

Sale of Land Canadian Multi-Client Library

On October 31, 2015, CGG sold its Land Canadian Multi-Client Library for cash proceeds.

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– During 2014

Purchase option over Geomar with Louis Dreyfus Armateurs Group (LDA)

On November 27, 2013, we agreed with LDA to exercise a purchase option on the shares held by LDA in Geomar SAS, the company owning the *CGG Alizé* vessel. This purchase took effect on April 1, 2014.

This transaction had no impact on the consolidation method of this subsidiary which remains fully consolidated. The change of ownership interests was accounted for as an equity transaction as of December 31, 2013.

Framework agreement with TAQA and sale of 2% of Ardiseis FZCO

CGG and TAQA are shareholders of two joint ventures in the Middle East: Argas, a Saudi company established in 1966, which covers geophysical activities in the Kingdom of Saudi Arabia, and of which TAQA owns 51% and CGG owns 49%, and Ardiseis FZCO, a company established in 2006 in Dubai, which covers land and shallow water data acquisition activities in the rest of the Middle East, and of which CGG (until the transactions described below) owned 51% and TAQA owned 49%.

On December 31, 2013, CGG and TAQA entered into a Framework Agreement which strengthens and extends their historical and long-term partnership in the Middle East.

Through the Framework Agreement, Argas would become the sole shareholder of Ardiseis FZCO, with Argas and Ardiseis FZCO pooling all their resources to create a more efficient and powerful combined Argas Group. The new Argas group would have a stronger capital base, would cover a larger business scope, and would be 51% owned by TAQA and 49% owned by CGG.

In relation with this agreement, net assets of Ardiseis FZCO were reclassified in assets held for sale for an amount of US\$22 million as of December 31, 2013 (see note 5 to our consolidated annual financial statements).

In June 2014, CGG and TAQA signed a ‘share sale and purchase agreement’ under which CGG Services (UK) Ltd, a subsidiary of CGG, sold 2% of the share capital of Ardiseis FZCO to TAQA for a total consideration of US\$1.2 million. As a result of the transaction, CGG owns 49% of Ardiseis FZCO and does not control the company any longer. From June 30, 2014, Ardiseis FZCO is no longer fully consolidated in our consolidated financial statements but is accounted for under the equity method.

The net gain arising from this transaction amounted to US\$11.9 million and is recorded in the line item “Other revenues (expenses), net” in the 2014 consolidated statement of operations.

Agreement with Geokinetics Inc

On September 30, 2014, CGG sold its North American land contract assets and activities to Geokinetics Inc. against a minority equity stake in this company. Our stake in Geokinetics was presented as a non-consolidated investment for US\$49 million in our balance sheet since this date and was measured at its fair value (see note 7 to our consolidated financial statements). The net gain arising from this transaction was not significant.

Agreement with Alcatel-Lucent

On October 20, 2014, Sercel and Alcatel-Lucent Submarine Networks (ASN) signed a binding agreement for the sale of Optoplan AS, a fully consolidated subsidiary of CGG for a total consideration of US\$20.7 million. The closing of the transaction was completed on October 31, 2014.

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Backlog

Backlog estimates are based on a number of assumptions and estimates, including assumptions as to exchange rates between the euro and the US dollar and estimates of the percentage of completion contracts. Contracts for services are occasionally modified by mutual consent and in certain instances are cancelable by the customer on short notice without penalty. The historical relationships we have with many of our clients (most of which are large, well established companies) tend to reduce our exposure to the risk of early termination. Nevertheless, backlog as of any particular date may not be indicative of actual operating results for any succeeding period.

Backlog for our Contractual Data Acquisition and GGR segments represents the revenues we expect to receive from commitments for contract services we have with our customers and, in connection with the acquisition of multi-client data, represents the amount of pre-commitments for such data. Backlog for our Equipment segment represents the total value of orders we have received but not yet fulfilled.

Our backlog for our Contractual Data Acquisition, GGR and Equipment segments was US\$548 million as of January 1, 2017 compared to US\$719 million as of January 1, 2016.

Foreign exchange fluctuations

As a company that derives a substantial amount of its revenues from international sales, that are often denominated or linked to the US dollar but with costs that are to a certain extent denominated in euros, our results of operations are affected by fluctuations in currency exchange rates.

Changes between the US dollar and euro or other currencies may adversely affect our business by negatively impacting our results of operations and earnings. See “Trend Information” below for more information on the impact of currency fluctuations on our results of operations during the periods under review.

The exchange rates as of December 31, 2014, 2015 and 2016 were US\$1.2141, US\$1.0887 and US\$1.0541 respectively, per euro, and the average exchange rates for the years 2014, 2015 and 2016 were US\$1.3328, US\$1.1138 and US\$ 1.1057 respectively, per euro.

Critical Accounting Policies and Estimates

Our significant accounting policies, which we have applied consistently, are fully described in note 1 to our consolidated financial statements included elsewhere in this document. However, certain of our accounting policies are particularly important to the portrayal of our financial position and results of operations and these are described below.

The preparation of consolidated financial statements in accordance with IFRS requires management to make estimates, assumptions and judgments that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the consolidated financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ materially from those estimates due to the change in economic conditions, changes in laws and regulations, changes in strategy and the inherent imprecision associated with the use of estimates.

Our significant estimates relate mainly to the expected cash flows used to measure the recoverability of certain intangible assets such as deferred tax assets, our multi-client data library and goodwill and to determine the amortization rate of our multi-client surveys. To calculate the recoverable amount of our goodwill, we use estimates that are based on our outlook for the seismic industry, as well as the expected cash flows in our three-year plan and what we consider to be normative cash flows for the years thereafter. See note 11 to our consolidated financial statements included elsewhere in this document for the key assumptions used in our determination of asset recoverability and the sensitivity in changes in assumptions. Changed assumptions, in particular the discount rate and the normative cash flow, could significantly affect our impairment result.

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Operating revenues

Operating revenues are recognized when they can be measured reliably, and when it is likely that the economic benefits associated with the transaction will flow to the entity, which is at the point that such revenues have been realized or are considered realizable.

Multi-client surveys

Revenues related to multi-client surveys result from (i) pre-commitments and (ii) licenses after completion of the surveys (“after-sales”).

Pre-commitments – generally, we obtain commitments from a limited number of customers before a seismic project is completed. These pre-commitments cover part or all of the survey area blocks. In return for the commitment, the customer typically gains the right to direct or influence the project specifications, advance access to data as it is being acquired, and favorable pricing. We record payments that we receive during periods of mobilization as advance billing in the statement of financial position in the line item “Advance billings to customers”.

We recognize pre-commitments as revenue when production has started based on the physical progress of the project, as services are rendered.

After sales – generally, we grant a license entitling non-exclusive access to a complete and ready for use, specifically defined portion of our multi-client data library in exchange for a fixed and determinable payment. We recognize after sales revenue upon the client executing a valid license agreement and being granted access to the data.

In case after sales agreements contain multiple deliverable elements, the revenue is allocated to the various elements based on specific objective evidence of fair value, regardless of any separate allocations stated within the contract for each element.

After sales volume agreements – we enter into a customer arrangement in which we agree to grant licenses to the customer for access to a specified number of blocks of the multi-client library. These arrangements typically enable the customer to select and access the specific blocks for a limited period of time. We recognize revenue when the blocks are selected and the client has been granted access to the data and if the corresponding revenue can be reliably estimated.

Exclusive surveys

In exclusive surveys, we perform seismic services (acquisition and processing) for a specific customer. We recognize proprietary/contract revenues as the services are rendered. Revenue is recognized using the percentage of completion method or proportional performance method.

The billings and the costs related to the transit of seismic vessels at the beginning of the survey are deferred and recognized over the duration of the contract by reference to the technical stage of completion.

In some exclusive survey contracts and a limited number of multi-client survey contracts, we are required to meet certain milestones. We defer recognition of revenue on such contracts until all milestones before which the customer has a right of cancellation or refund of amounts paid have been achieved.

Equipment sales

We recognize revenues on equipment sales upon delivery to the customer when risks and rewards are fully transferred. Any advance billings to customers are recorded in current liabilities.

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Software and hardware sales

We recognize revenues from the sale of software and hardware products following acceptance of the product by the customer at which time we have no further significant vendor obligations remaining. Any advance billings to customers are recorded in current liabilities.

If an arrangement to deliver software, either alone or together with other products or services, requires significant production, modification, or customization of software, the entire arrangement is accounted for as a production-type contract, i.e. using the percentage of completion method.

If the software arrangement provides for multiple deliverables (e.g. upgrades or enhancements, post-contract customer support such as maintenance, or services), the revenue is allocated to the various elements based on specific objective evidence of fair value, regardless of any separate allocations stated within the contract for each element.

Maintenance revenues consist primarily of post contract customer support agreements and are recorded as advance billings to customers and recognized as revenue on a proportional performance basis over the contract period.

Other geophysical sales/services

Revenues from our other geophysical sales/services are recognized as the services are performed and, when related to long-term contracts, using the proportional performance method of recognizing revenues.

Customer loyalty programs

We may grant award credits to our main clients. These award credits are contractually based on cumulative services provided during the calendar year and attributable to future services.

These credits are considered as a separate component of the initial sale and measured at their fair value by reference to the contractual rates and the forecasted cumulative revenues for the calendar year. These proceeds are recognized as revenue only when the obligation has been fulfilled.

Multi-client surveys

Multi-client surveys consist of seismic surveys to be licensed to customers on a non-exclusive basis. All costs directly incurred in acquiring, processing and otherwise completing seismic surveys are capitalized into the multi-client surveys (including transit costs when applicable). The carrying amount of our multi-client library is stated on our statement of financial position at the aggregate of those costs less accumulated amortization. Whenever there is an indication that a survey may be impaired, an impairment test is performed. A systematic impairment test of all delivered surveys is performed at year end.

Each survey is amortized in a manner that reflects the pattern of consumption of its economic benefits during both prefunding and after-sale periods. An amortization rate of 80% corresponding to the ratio of capitalized costs to total expected sales over the accounting life of the survey is applied to each normative sale, unless specific indications lead to application of a different rate. If so, the amortization rate is adjusted to reflect the commercial effects of price elements. Given the life cycle of a multi-clients project, our surveys are generally fully depreciated or impaired within five years after delivery.

Multi-client surveys are classified into a same category when they are located in the same area with the same estimated sales ratio, such estimates generally relying on the historical patterns.

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Development costs

Expenditures on research activities undertaken with the prospect of gaining new scientific or technological knowledge and understanding are recognized in the income statement as expenses as incurred and are presented as “Research and development expenses – net”. Expenditures on development activities, whereby research findings are applied to a plan or design for the production of new or substantially improved products and processes, are capitalized if:

- the project is clearly defined, and costs are separately identified and reliably measured,
- the product or process is technically and commercially feasible,
- we have sufficient resources to complete development, and
- the intangible asset is likely to generate future economic benefits, either because it is useful to us or through an existing market for the intangible asset itself or for its products.

The capitalized expenditures include the cost of materials, direct labor and an appropriate proportion of overhead. Other development expenditures are recognized in the income statement as expenses as incurred and are presented as “Research and development expenses – net”.

Capitalized development expenditures are stated at cost less accumulated amortization and impairment losses.

Capitalized developments costs are amortized over five years.

Research and development expenses in our income statement represent the net cost of development costs that are not capitalized, of research costs, offset by government grants acquired for research and development.

Impairment

The carrying values of our assets (excluding inventories, assets arising from construction contracts, non-current assets classified as held for sale in accordance with IFRS 5, deferred tax assets, assets arising from employee benefits and financial assets) are reviewed at each statement of financial position date or if any indication exists that an asset may be impaired, in compliance with IAS 36 “Impairment of assets”. Factors we consider important that could trigger an impairment review include the following:

- significant underperformance relative to expected operating results based upon historical and/or projected data,
- significant changes in the manner of our use of the tested assets or the strategy for our overall business, and
- significant negative industry or economic trends.

The recoverable amount of tangible and intangible assets is the greater of their net fair value less costs of disposal and value in use.

Goodwill, assets that have an indefinite useful life and intangible assets are allocated to cash generating units or groups of cash generating units. We estimate the recoverable amount of these cash generating units at each statement of financial position closing date and whenever any indication exists that the cash generating unit may be impaired.

We determine the value in use by estimating future cash flows expected from the assets or from the cash generating units, discounted to their present value using the sector weighted average cost of capital (WACC) estimated on a yearly basis by the Group. When the recoverable value retained is a fair value less cost of disposal, the fair value is determined by reference to an active market.

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We recognize an impairment loss whenever the carrying amount of an asset exceeds its recoverable amount. For an asset that does not generate largely independent cash inflows, the recoverable amount is determined for the cash-generating unit to which the asset belongs.

Impairment losses are recognized in the statement of operations. Impairment losses recognized in respect of a group of non-independent assets allocated to a cash-generating unit are allocated first to reduce the carrying amount of any goodwill allocated to cash-generating units (group of units) and then, to reduce the carrying amount of the other assets in the unit (group of units) on a pro rata basis provided that the carrying amount of an individual asset is not reduced below its value in use or fair value less costs of disposal.

A previously recognized impairment loss is reversed only if there has been a change in the assumptions used to determine the asset's recoverable amount since the last impairment loss was recognized. The reversal is limited so that the carrying amount of the asset does not exceed its recoverable amount, nor exceed the carrying amount that would have been determined, net of depreciation or amortization, had no impairment loss been recognized for the asset in prior years. Such reversal is recognized in the income statement unless the asset is carried at a revalued amount, in which case the reversal is treated as a revaluation increase.

Impairment losses recognized on goodwill cannot be reversed.

Year ended December 31, 2016 compared to year ended December 31, 2015

Operating revenues

The following table sets forth our operating revenues by Business Lines and division for each of the periods stated:

	Year ended December 31, 2016 and 2015,	
	2016	2015
	(In millions of US\$)	
Marine Contractual Data Acquisition	133.1	438.3
Land and Multi-Physics Acquisition	104.9	177.2
Contractual Data Acquisition Revenues	238.0	615.5
Multi-client data	383.3	546.4
Subsurface Imaging and Reservoir	400.7	561.2
GGR Revenues	784.0	1,107.6
Equipment Revenues	255.0	437.3
Eliminated revenues and others	(81.5)	(59.5)
Total operating revenues	<u>1,195.5</u>	<u>2,100.9</u>

Our consolidated operating revenues in 2016 decreased 43% to US\$1,196 million from US\$2,101 million in 2015 mainly due to weak volumes in difficult market conditions and the reduction of the marine seismic fleet. The respective contributions from the Group's businesses in 2016 were 66% from GGR, 15% from Equipment and 19% from Contractual Data Acquisition.

Contractual Data Acquisition

Operating revenues for our Contractual Data Acquisition segment decreased 61% to US\$238 million in 2016 from US\$616 million in 2015, mainly due to the downsizing of the fleet, weak volumes and low pricing conditions.

Marine Contractual Data Acquisition

Operating revenues of our Marine Contractual Data Acquisition Business Line decreased 70% to US\$133 million in 2016 from US\$439 million in 2015, mainly due to reduction of the marine seismic fleet to five 3D high-end vessels and to weak prices conditions, despite our fleet's good operational performance with a high production rate at 94% compared to 92% in 2015.

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The availability rate increased to 92% in 2016 from 83% in 2015. 49% of the fleet was dedicated to multi-client programs in 2016 compared to 34% in 2015.

Land and Multi-Physics Acquisition

Operating revenues of our Land and Multi-Physics Acquisition Business Lines decreased 41% to US\$105 million in 2016 from US\$177 million in 2015, as a consequence of low levels of activity and delays in clients' decision processes.

GGR

Operating revenues from our GGR segment in 2016 decreased 29% to US\$784 million from US\$1,108 million in 2015 as a result of the overall market conditions, characterized by slowdown and delays in exploration spending by oil and gas companies.

Multi-client data

Multi-client revenues decreased 30% to US\$383 million in 2016 from US\$546 million in 2015 due to a very soft market environment. Our highest offshore multi-client sales were in Latin America and North Sea.

Prefunding revenues decreased at US\$272 million in 2016 from US\$290 million in 2015. Cash prefunding rate was of 92% in 2016 compared to 102% in 2015. After-sales decreased 56% to US\$111 million in 2016 from US\$256 million in 2015 due to lower overall exploration spending by our clients.

Subsurface Imaging & Reservoir

Operating revenues from our Subsurface Imaging & Reservoir Business Lines decreased 29% to US\$401 million in 2016 from US\$562 million in 2015 due to soft market conditions. However, we consider this to have been an overall resilient level of activity in the context of a significant decrease in data acquisition market volumes.

Equipment

Operating revenues from our Equipment segment, including internal and external sales, decreased 42% to US\$255 million in 2016 from US\$437 million in 2015 due to very low volumes driven by the weakness of the seismic acquisition market. Land equipment sales represented 56% of total revenue.

Internal sales represented 30% of total revenues in 2016 compared to 9% in 2015.

External revenues for our Equipment segment decreased 55% to US\$179 million in 2016, from US\$400 million in 2015.

Operating Expenses

Cost of operations, including depreciation and amortization, decreased 31% to US\$1,250 million in 2016, from US\$1,817 million in 2015, mainly due to the downsizing of the fleet, the overall contraction of activity (with historically low volumes in our Equipment segment) and the cost base reduction as a consequence of the progress of our Transformation Plan (see paragraph "Transformation Plan and fleet reduction" above for further details). The multi-client amortization expenses corresponded to 84% of multi-client revenues in 2016 before

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impairment of our multi-client data library compared to 60% (before impairment) in 2015. As a percentage of operating revenues, cost of operations were 105% in 2016 compared to 86% in 2015. Gross profit decreased 119% to US\$(53) million in 2016, from US\$285 million in 2015, representing (4)% of operating revenues in 2016 compared to 14% in 2015.

Research and development expenditures, net of Government grants received, decreased 80% to US\$14 million in 2016 from US\$69 million in 2015 mainly due to a higher level of US R&D tax credit. Research and development expenditures represented respectively 1% and 3% of operating revenues for 2016 and 2015.

Marketing and selling expenses decreased 29% to US\$62 million in 2016 from US\$87 million in 2015 mainly due to the progress of our Transformation Plan.

General and administrative expenses decreased 14% to US\$84 million in 2016, from US\$99 million in 2015 as a consequence of the progress of the Transformation Plan. As a percentage of operating revenues, general and administrative expenses represented respectively 7% and 5% of operating revenues for 2016 and 2015.

Other expenses amounted to US\$183 million in 2016, including mainly (i) US\$97 million impairment of multi-client surveys mainly related to our US offshore library (ii) US\$31 million impairment of vessels related to our Transformation Plan and (iii) US\$54 million restructuring costs being mainly vessel chart costs and redundancies, net of reversal of provisions. Out of these other expenses, the portion directly related to our Transformation Plan and to impairment amounted to US\$184 million in 2016.

Other expenses amounted to US\$1,188 million in 2015, including mainly (i) US\$804 million of impairment of goodwill in Marine Contractual Data Acquisition and GGR as a consequence of the reduction of the fleet and the revision of our financial forecasts (ii) US\$207 million of impairment of vessels and related equipment and other intangible assets (including US\$42 million of impairment of multi-client surveys); (iii) restructuring costs related to our Transformation Plan for US\$208 million mainly related to redundancies, facility exit costs and costs related to cold-stacked vessels, net of reversal of provisions and (iv) a US\$27 million net gain related to disposals of assets. Out of these other expenses, the portion directly related to our Transformation Plan and to impairment amounted to US\$1,219 million in 2015.

Operating income

Operating income amounted to US\$(397) million in 2016 (or US\$(213) million before impairment of assets and restructuring costs related to our Transformation Plan), compared to US\$(1,158) million in 2015 (or US\$61 million before impairment of assets and restructuring costs related to our Transformation Plan).

Operating income from our Contractual Data Acquisition segment amounted to US\$(99) million in 2016 (or US\$(98) million before impairment of assets), compared to US\$(675) million in 2015 (or US\$(156) million before impairment of assets).

Operating income from our GGR segment amounted to US\$(16) million in 2016 (or US\$81 million before impairment of assets), compared to US\$(204) million in 2015 (or US\$288 million before impairment of assets).

Operating income from our Equipment segment decreased to US\$(42) million in 2016 from US\$26 million in 2015.

Operating income from our Non-Operated Resources segment amounted to US\$(170) million in 2016 (or US\$(84) million before impairment of assets and restructuring costs related to our Transformation Plan), compared to US\$(236) million in 2015 (or US\$(28) million before restructuring costs related to our Transformation Plan).

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Equity in Income of Affiliates

Income from investments accounted for under the equity method amounted to US\$(8) million in 2016 compared to US\$21 million in 2015, mainly due to negative contribution from our Seabed JV suffering from low volumes in weak market.

Earnings before interest and tax ("EBIT")

EBIT, as disclosed in note 19 to our consolidated financial statements, amounted to US\$(405) million in 2016 (or US\$(221) million before impairment of assets and restructuring costs related to our Transformation Plan) compared to US\$(1,136) million in 2015 (or US\$82 million before impairment of assets and restructuring costs related to our Transformation Plan).

EBIT from our Contractual Data Acquisition segment amounted to US\$(105) million in 2016 (or US\$(104) million before impairment of assets), compared to US\$(653) million in 2015 (or US\$(134) million before impairment of assets). Our EBIT in 2016 included a US\$(6) million negative contribution from investments accounted for under the equity method, mainly the Seabed JV, compared to a positive contribution of US\$22 million for this line item in 2015.

EBIT from our GGR segment amounted to US\$(18) million in 2016 (or US\$79 million before impairment of assets) compared to US\$(204) million in 2015 (or US\$288 million before impairment of assets). Our EBIT in 2016 included a US\$(2) million negative contribution from investments accounted for under the equity method.

EBIT from our Equipment segment amounted to US\$(42) million in 2016 compared to US\$26 million in 2015.

EBIT from our Non-Operated Resources segment amounted to US\$(170) million in 2016 (or US\$(84) million before impairment of assets and restructuring costs related to our Transformation Plan) compared to US\$(236) million in 2015 (or US\$(28) million before restructuring costs related to our Transformation Plan).

See note 21 to our consolidated financial statements for further details on restructuring expenses related to our Transformation Plan.

Financial Income and Expenses

Cost of net financial debt decreased 2% to US\$174 million in 2016 from US\$179 million in 2015.

Other financial expense amounted to US\$11 million in 2016 compared to US\$55 million in 2015. This decrease was mainly due to the impairment of our shares in Geokinetics Inc. for US\$40 million in 2015.

Income Taxes

Income taxes was an income of US\$14 million in 2016, including an expense of US\$1 million of net deferred taxes expense on currency translation and an income of US\$15 million of other income taxes, mainly resulting from the impairment of our Data Library. See note 21 to our consolidated financial statements.

This compares to a US\$77 million expense in 2015, including US\$2 million of net deferred taxes expense on currency translation and US\$75 million of other taxes expenses mainly related to the depreciation of our deferred tax assets on past losses in our French and Norwegian tax groups, pursuant to the revision of our financial forecasts, for respectively US\$48 million and US\$4 million.

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Net Income

Net income amounted to US\$(577) million in 2016 compared to US\$(1,446) million in 2015 as a result of the factors discussed above. Earnings per share were US\$(27.57) in 2016 compared to US\$(238.50) in 2015.

Net income attributable to the shareholders of CGG SA was US\$(573) million ((519) million) in 2016 compared to US\$(1,450) million ((1,302) million) in 2015.

Unconsolidated financial statements of CGG SA

Operating revenues of CGG S.A. in 2016 were 49 million compared to 74 million in 2015. The level of services provided by the Company to its subsidiaries of the Acquisition and GGR segments decreased in 2016.

Operating loss in 2016 amounted to 43 million compared to 48 million in 2015.

Financial income in 2016 was (827) million compared to 586 million in 2015. This decrease is mainly due to dividends received for 2,007 million in 2015 related to the reorganization of the subsidiaries within our Sercel Group compared to 421 million in 2016.

The rest of the financial income includes mainly provision allowance on investments in affiliates for 1,197 million in 2016 compared to 1,280 million in 2015.

Extraordinary income and expense in 2016 amounted to 30 million mainly due to a 25 million reversal of provisions for risks of affiliates. Extraordinary income and expense in 2015 was (39) million mainly due to grants provided to affiliates for 56 million.

Net income in 2016, after a tax expense of 1 million was (841) million compared to a net income of 606 million in 2015, after a tax income of 106 million due to the French tax group effect.

The shareholders' equity as of December 31, 2016 amounted to 1.2 billion compared to 1.7 billion as of December 31, 2015.

No dividends have been distributed from 2014 to 2016.

Year ended December 31, 2015 compared to year ended December 31, 2014

Operating revenues

The following table sets forth our operating revenues by Business Lines and division for each of the periods stated:

	Year ended December 31, 2015 and 2014,	
	2015	2014 (restated) ⁽¹⁾
	(In millions of US\$)	
Marine Contractual Data acquisition	438.3	778.4
Land and Multi-Physics acquisition	177.2	278.5
Contractual Data Acquisition Revenues	615.5	1,056.9
Multi-client data	546.4	687.1
Subsurface Imaging and Reservoir	561.2	696.4
GGR Revenues	1,107.6	1,383.5
Equipment Revenues	437.3	801.9
Eliminated revenues and others	(59.5)	(146.9)
Total operating revenues	2,100.9	3,095.4

Notes:

(1) Restated to reflect the new financial reporting as disclosed in note 19 to our consolidated financial statements.

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Our consolidated operating revenues in 2015 decreased 32% to US\$2,101 million from US\$3,095 million in 2014 mainly as a consequence of downsized activities, reduction of perimeter and very difficult market environment, characterized by strong pricing pressure and significant slowdown in exploration spending by oil and gas companies.

Contractual Data Acquisition

Operating revenues for our Contractual Data Acquisition segment decreased 42% to US\$616 million in 2015 from US\$1,057 million in 2014, mainly due to the adverse market conditions with high pressure on marine prices, the downsizing of the fleet and the reduction in the land activity perimeter.

Marine Contractual Data Acquisition

Operating revenues from our Marine Contractual Data Acquisition Business Line decreased 44% to US\$439 million in 2015 from US\$778 million in 2014, mainly due to the fleet downsizing and to strong deterioration in pricing conditions.

Land and Multi-Physics Acquisition

Operating revenues of our Land and Multi-Physics Acquisition Business Lines (including internal sales), decreased 37% to US\$177 million in 2015 compared to US\$279 million in 2014. The decrease in revenues was mainly due to the reduction of our Land operations perimeter pursuant to the change in control of Ardiseis FZCO and the divestment of our North America Land contract business while our Multi-Physics Business Line was hampered by adverse market conditions.

GGR

Operating revenues from our GGR segment in 2015 decreased 20% to US\$1,108 million from US\$1,384 million in 2014 as a result of the overall market conditions, characterized by slowdown and delays in exploration spending.

Multi-client Data

Multi-client revenues decreased 21% to US\$546 million in 2015 from US\$687 million in 2014 in a context of strong reduction of multi-client capital expenditures.

Prefunding revenues were US\$290 million in 2015 compared to US\$502 million in 2014. The lower prefunding revenue is correlated to the 51% reduction in multi-client capital expenditures. The prefunding rate was 102% in 2015 compared to 86% in 2014. After-sales increased 38% to US\$256 million in 2015 from US\$185 million in 2014.

Subsurface Imaging & Reservoir

Operating revenues from our other GGR Business Lines decreased 19% to US\$562 million in 2015 from US\$697 million in 2014 mainly due to slowdown and delays in clients' spending.

Equipment

Operating revenues for our Equipment segment, including intra-group sales, decreased 46% to US\$437 million in 2015 from US\$802 million in 2014. Land equipment sales represented 69% of total revenue. Internal sales represented 9% of total revenue in 2015, compared to 14% in 2014.

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Excluding intra-group sales, operating revenues for our Equipment segment decreased 42% to US\$400 million in 2015, from US\$687 million in 2014.

The depressed seismic acquisition market translated further into lower volumes across all the regions.

Operating Expenses

Cost of operations, including depreciation and amortization, decreased 28% to US\$1,817 million in 2015, from US\$2,511 million in 2014, as a result of the downsizing of the fleet, the reduction in perimeter of our Contractual Data Acquisition activities and the reduction in volume in our Equipment segment. The multi-client amortization expenses corresponded to 60% of multi-client revenues before impairment of multi-client surveys for US\$42 million in 2015 compared to 66% in 2014. As a percentage of operating revenues, cost of operations were 86% in 2015 compared to 81% in 2014. Gross profit decreased 51% to US\$285 million in 2015, from US\$586 million in 2014, representing 14% of operating revenues in 2015 compared to 19% in 2014.

Research and development expenditures, net of Government grants received, decreased 32% to US\$69 million in 2015, from US\$101 million in 2014, representing 3% of operating revenues for both periods.

Marketing and selling expenses decreased 24% to US\$87 million in 2015 from US\$114 million in 2014.

General and administrative expenses decreased to US\$99 million in 2015, from US\$147 million in 2014, corresponding to a 33% decrease year-on-year as a consequence of the progress of the Transformation Plan and favorable foreign exchange environment. As a percentage of operating revenues, general and administrative expenses represented 5% of operating revenues for both periods.

Other expenses amounted to US\$1,188 million in 2015, including mainly (i) US\$804 million of impairment of goodwill in Marine Contractual Data Acquisition and GGR as a consequence of the reduction of the fleet and the revision of our financial forecasts (see note 11 to our consolidated financial statements for further details on goodwill impairment) (ii) US\$207 million of impairment of vessels and related equipment and other intangible assets (including US\$42 million of impairment of multi-client surveys); (iii) restructuring costs related to our Transformation Plan for US\$208 million mainly related to redundancies, facilities exit costs and costs related to cold-stacked vessels, net of reversal of provisions and (iv) a US\$27 million net gain related to disposals of assets. Out of these other expenses, the portion directly related to our Transformation Plan and impairment of assets amounted to US\$1,219 million in 2015.

Other expenses amounted to a net expense of US\$922 million in 2014, mainly due to (i) the impairment of Marine goodwill for US\$415 million as a consequence of the fleet downsizing and the deterioration of market conditions (ii) the Transformation Plan, being redundancies costs, facilities exit costs, provision for onerous contracts and asset impairments for US\$283 million (iii) the impairment of multi-client surveys for a total of US\$113 million (iv) the impairment of our investment in our Seabed JV accounted for under the equity method and of intangible assets for a total of US\$129 million, and (v) US\$12 million net gain arising from the change in control of Ardiseis FZCO. Out of these other expenses, the portion directly related to our Transformation Plan and to impairment of assets amounted to US\$940 million in 2014.

Operating income

Operating income amounted to US\$(1,158) million in 2015 (or US\$61 million before impairment of assets and restructuring costs related to our Transformation Plan) as a result of the factors described above, compared to US\$(698) million in 2014 (or US\$242 million before restructuring charges relating to the Transformation Plan and impairment).

Operating income from our Contractual Data Acquisition segment was US\$(675) million in 2015, compared to US\$(654) million in 2014. Before impairment of assets, operating income from our Contractual Data Acquisition segment was a loss of US\$156 million in 2015, compared to US\$(67) million in 2014.

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Operating income from our GGR segment was US\$(204) million in 2015 compared to US\$215 million in 2014. Before impairment of assets, operating income from our GGR segment was US\$288 million in 2015, compared to US\$328 million in 2014.

Operating income from our Equipment segment decreased to US\$26 million in 2015 from US\$143 million in 2014 (or US\$164 million before impairment) as a consequence of seismic market downturn and lower volumes. In this context, it showed some resilience due to efficient cost management and manufacturing flexibility.

Operating income from our Non-Operated Resources segment was US\$(236) million in 2015 (or US\$(28) million before restructuring costs related to our Transformation Plan) compared to US\$(235) million in 2014 (or US\$(17) million before restructuring costs relating to our Transformation Plan).

Equity in Income of Affiliates

Income from investments accounted for under the equity method amounted to US\$21 million in 2015 compared to US\$(82) million in 2014, mainly as a result of improved operational performance and restructuring measures carried out at Seabed JV level.

EBIT

EBIT, as disclosed in note 19 to our consolidated financial statements, amounted to US\$(1,136) million in 2015 compared to US\$(779) million in 2014 as a result of the factors described above. EBIT before impairment of assets and restructuring costs related to our Transformation Plan amounted to US\$82 million in 2015 compared to US\$160 million in 2014.

EBIT from our Contractual Data Acquisition segment was a loss of US\$653 million in 2015, compared to US\$(730) million in 2014. Before impairment of assets, EBIT from our Contractual Data Acquisition segment was US\$(134) million in 2015, compared to US\$(143) million in 2014. Our EBIT 2015 included a US\$22 million positive contribution from investments accounted for under the equity method, mainly the Seabed JV, compared to a negative contribution of US\$(76) million for this line item in 2014.

EBIT from our GGR segment was US\$(204) million in 2015 compared to US\$210 million in 2014. Before impairment of assets, EBIT from our GGR segment was US\$288 million in 2015 and US\$323 million in 2014.

EBIT from our Equipment segment decreased to US\$26 million in 2015 from US\$143 million in 2014 (or US\$164 million before impairment) as a consequence of significant volume reduction as described above. EBIT margin was 6% in 2015.

EBIT from our Non-Operated Resources segment was US\$(236) million in 2015 (or US\$(28) million before restructuring costs related to our Transformation Plan) compared to US\$(235) million in 2014 (or US\$(17) million before restructuring costs relating to our Transformation Plan).

See note 21 to our consolidated financial statements for further details on restructuring expenses related to our Transformation Plan.

Financial Income and Expenses

Cost of net financial debt decreased 11% to US\$179 million in 2015 from US\$201 million in 2014.

This decrease is driven by the fact that 2014 cost of net financial debt included expenses for an aggregate amount of US\$11 million related to refinancing operations realized in the second semester; namely the

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accelerated amortization of deferred expenditures following early repayment of our US\$350 million 9.50% Senior Notes due 2016, our US\$400 million 7.75% Senior Notes due 2017 and our 360 million convertible bonds due 2016.

Other financial expenses amounted to US\$55 million in 2015 compared to US\$43 million in 2014. This increase was mainly due to the impairment of our shares in Geokinetics Inc. for US\$40 million in 2015.

Income Taxes

Income taxes amounted to US\$77 million in 2015, including US\$2 million of net deferred taxes expense on currency translation and US\$75 million of other taxes expenses mainly related to the depreciation of our deferred tax assets on past losses in our French and Norwegian tax groups, pursuant to the revision of our financial forecasts, for respectively US\$48 million and US\$4 million.

This compares to US\$124 million in 2014, including a US\$16 million net deferred taxes expenses on currency translation and US\$108 million of other taxes expenses.

Net Income

Net income amounted to US\$(1,446) million in 2015 compared to US\$(1,147) million in 2014 as a result of the factors discussed above. Earnings per share were US\$(238.5) in 2015 compared to US\$(189.95) in 2014.

Net income attributable to the shareholders of CGG SA was US\$(1,450) million ((1,302) million) in 2015 compared to US\$(1,154) million ((866) million) in 2014.

Unconsolidated financial statements of CGG SA

Operating revenues of CGG S.A. in 2015 were 74 million compared to 92 million in 2014. The level of services provided by the Company to its subsidiaries of the Acquisition and GGR segments decreased in 2015.

Operating loss in 2015 amounted to 48 million compared to 39 million in 2014.

Financial income in 2015 was 586 million compared to (1,021) million in 2014. This increase is mainly due to dividends received for 2,007 million in 2015 related to the reorganization of the subsidiaries within our Sercel Group, compared to 209 million in 2014.

The rest of the financial income is mainly the result of the combination of the following main effects: net provision allowance for 1,509 million in 2015 compared to 1,244 million in 2014 and foreign exchange gain for 124 million compared to 35 million in 2014.

Extraordinary income in 2015 was (39) million due to the grants provided to affiliates. Extraordinary loss in 2014 amounted to 153 million mainly due to the depreciation of investments in affiliates for 100 million.

Net income in 2015, after a tax income of 106 million due to the French tax group effect, was 606 million compared to (1,270) million in 2014 (embedding a tax loss of 57 million).

The shareholders' equity as of December 31, 2015 amounted to 1.7 billion compared to 1.1 billion as of December 31, 2014.

No dividends have been distributed in the last three fiscal years.

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Liquidity and Capital Resources

Our principal financing needs are for the funding of ongoing operations, capital expenditures, investments in our multi-client data library and our latest transformation steps, as well as debt service.

We intend to fund these financing requirements through cash generated by operations and liquidity on hand. Our ability to make scheduled payments of principal, or to pay the interest or additional amounts, if any, or to refinance our indebtedness, or to fund planned capital expenditures will depend on our future performance, which, to a certain extent, is subject to general economic, financial, competitive, legislative, regulatory and other factors that are beyond our control.

Going concern assumptions

As of March 2, 2017, in light of the Group's cash flow projections based on the current operations and in the absence of any acceleration of the Group's financial debt repayment discussed below, CGG had enough cash liquidity to fund its operations until at least December 31, 2017, provided that some specific actions, which are subject to negotiation with other parties, are successfully implemented during this period. As of April 27, 2017, the main specific actions, being the proactive management of marine liabilities and the fleet ownership changes (see note 30 to our consolidated financial statements), have been already successfully implemented.

The Group is, however, facing material uncertainties that may cast substantial doubt upon its ability to continue as a going concern, including likely future non-compliance with certain ratios included in maintenance covenants, and other limitations contained in the outstanding (drawn) Credit Facilities and the Nordic Facility. If such non-compliance with ratios were to occur and not be timely remediated, it would trigger, also through the cross-default clauses of the Senior Notes indentures, the immediate acceleration of repayment of substantially all of CGG's senior debt. CGG would not then have sufficient cash liquidity to fulfill these payment obligations, nor – in the current economic environment and given its financial situation – be in a position to raise the required additional refinancing.

In the recent past, CGG requested and obtained several consents from its Credit Facilities and Nordic Facility lenders, particularly related to the disapplication of the maintenance covenants as of December 31, 2016 (obtained before 2016 year-end) and the appointment of a '*mandataire ad hoc*' (a French facilitator for creditor negotiations) to support the financial restructuring process that CGG is entering into with the aim of significantly reducing debt levels. The proposed debt reduction would involve the conversion of unsecured debt into equity and the extension of the secured debt maturities.

Looking forward, in the context of the discussions with the lenders about the financial restructuring necessary to allow the Group to face its capital structure constraints, the Management intends particularly to obtain the appropriate standstill agreement or covenants' relief to prevent any future events of default on the Group's credit agreements. The disapplication of maintenance covenants as of March 31, 2017 was thus requested and obtained shortly before March 31, 2017. If discussions with lenders are unsuccessful, and to avoid the risk of any liquidity shortfall or an accelerated reimbursement of the Group's financial debt, the Company will consider all available legal options to protect the Group's operations while negotiating the terms of its financial restructuring.

Having carefully considered the above, the Board of Directors held on March 2, 2017 concluded that preparing the 2016 consolidated financial statements on a going concern basis is an appropriate assumption. Considering the main specific actions already achieved, the Board of Directors held on April 27, 2017, confirmed that a going concern basis is again an appropriate assumption.

See "Item 3: Key Information – Risks Related to Our Financial Restructuring" and "Item 4: Information on the Company – Recent developments – Financial restructuring discussions" for more information on our financial restructuring and associated risks.

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Considering the progress of the negotiations of the financial restructuring of CGG and the timeline of the options contemplated, we have reclassified our financial debt as current liabilities in accordance with IAS 1 for the financial statements authorized for issue by the Board of Directors on April 27, 2017. For more information, see “Item 4: Information on the Company – Recent developments – Reclassification of financial debt as a current liability”.

Cash Flows

Operating activities

Net cash provided by operating activities was US\$355 million in 2016 compared to US\$408 million for 2015, and US\$864 million for 2014. Before changes in working capital, net cash provided by operating activities in 2016 was US\$157 million compared to US\$453 million for 2015 and US\$894 million for 2014. Changes in working capital had a positive impact on cash from operating activities of US\$198 million in 2016 compared to a negative impact of US\$45 million for 2015, and a negative impact of US\$30 million for 2014.

Investing activities

Net cash used in investing activities was US\$381 million in 2016 compared to US\$423 million in 2015 and US\$894 million in 2014.

In 2016, our industrial capital expenditures, inclusive of the Sercel lease pool, and net of asset suppliers’ variance, were significantly reduced to US\$71 million (US\$66 million excluding asset suppliers’ variance), mainly as a consequence of fleet reduction and tight cash spending discipline in all segments. The capitalized development costs were US\$34 million.

In 2015, our industrial capital expenditures, inclusive of the Sercel lease pool, and net of asset suppliers’ variance, were significantly reduced to US\$104 million (US\$89 million excluding asset suppliers’ variance), mainly as a consequence of fleet reduction and tight cash spending discipline in all segments. The capitalized development costs were US\$42 million.

In 2014, our industrial capital expenditures, inclusive of the Sercel lease pool, and net of asset suppliers’ variance, were of US\$225 million (US\$222 million excluding asset suppliers’ variance), mainly related to the purchase of maritime equipment for marine and Sercel seismic equipment for land and marine. The capitalized development costs were US\$57 million.

In 2016, we invested US\$295 million in multi-client data, primarily offshore in Brazil, in Western Africa and in the Norwegian North Sea.

In 2015, we invested US\$285 million in multi-client data, primarily in Western Africa, in North Sea and Asia Pacific.

In 2014, we invested US\$583 million in multi-client data, primarily in the Gulf of Mexico, in Brazil and in the Norwegian North Sea.

As of December 31, 2016, the net book value of our multi-client data library was US\$848 million compared to US\$927 million as of December 31, 2015 and US\$947 million as of December 31, 2014.

Financing activities

Our net cash provided by financing activities in 2016 was US\$176 million compared to net cash provided of US\$63 million in 2015, and net cash used of US\$103 million in 2014.

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In 2016, we repaid a net amount of US\$31 million from our French revolving facility, leading to an amount outstanding as of December 31, 2016 under this facility of US\$294 million. We also drew a net amount of US\$35 million from our US revolving facility, leading to an amount outstanding as of December 31, 2016 under this facility of US\$165 million.

As of December 31, 2016, the outstanding amount of our Nordic credit facility stood at US\$190 million compared to US\$220 million as of December 31, 2015 after repayment of US\$30 million in 2016.

On February 12, 2016, we fully repaid the outstanding US\$6.1 million of our US\$45 million Voyager AS (renamed Exploration Vessel Resources II AS) Secured Term Loan Facility.

In 2016, we also received net proceeds of 337 million from our capital increase.

In 2015, we drew a net amount of US\$167 million from our French revolving facility, leading to an amount outstanding as of December 31, 2015 under this credit facility of US\$325 million. We also drew a net amount of US\$55 million from our US revolving facility leading to an amount outstanding as of December 31, 2015 under this credit facility of US\$130 million.

In 2014, we drew a net 20 million (or US\$27 million converted at the average exchange rate of US\$1.3328) from our French revolving facility, leading to an amount outstanding as of December 31, 2014 under this credit facility of 130 million (or US\$158 million converted at the closing exchange rate of US\$1.2141). We also drew a net amount of US\$75 million from our US revolving facility.

On December 16, 2014, we completed the amendment and extension of our Nordic credit facility up-to US\$250 million. The amount drawn was then increased from US\$175 million to US\$200 million as of December 31, 2014.

Financing Arrangements

The following is a description of the terms of our material financing arrangements.

US\$165 million Revolving Credit Agreement (US revolving facility)

On July 15, 2013, we entered into a US revolving facility of up to US\$165 million with a five-year maturity which was last amended and restated on February 4, 2016. The borrower is CGG Holding (U.S.) Inc. ("CGG US") with Credit Suisse acting as administrative agent and collateral agent.

Proceeds of loans under the US revolving facility may be used for the general corporate purposes of the borrower and other subsidiaries of CGG. Revolving loans may be made at any time prior to the final maturity of the US revolving facility.

The obligations of CGG US as borrower under the US revolving facility are guaranteed by us and certain of our subsidiaries. We have pledged first-priority security in the shares of CGG US and certain of our other first-tier subsidiaries. In addition, certain guarantors have provided first-priority security interests in certain of their respective tangible and intangible assets, including (without limitation) certain marine equipment, deposit accounts and intellectual property. This security is shared with the French revolving facility and the 2019 secured term loans.

In addition, the US revolving facility agreement contains affirmative and negative covenants that affect our ability, among other things, to borrow money, incur liens, dispose of assets and make acquisitions and pay dividends or redeem shares. Events of default under the US revolving facility include, among other things, payment and covenant breaches, insolvency of us or our subsidiaries, the occurrence of certain events constituting a "change of control" and certain defaults in respect of other material financial indebtedness.

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In January 2016, we agreed amendments to our financial covenants under our US revolving facility, effective from February 2016. Pursuant to such amendments:

the Group must maintain a minimum liquidity amount (cash and cash equivalents plus certain undrawn credit facilities) of US\$175 million at each quarter end;

the maximum leverage ratio (defined as total net financial debt to EBITDAS) was increased to a ratio of 5.00x for each rolling 12-month period ending quarterly in 2016, 4.75x for the rolling 12-month period ending on March 31, 2017, 4.25x for the rolling 12-month period ending on June 30, 2017, 4.00x for the rolling 12-month period ending on September 30, 2017, 3.50x for the rolling period ending on December 31, 2017, 3.25x for the rolling period ending on March 31, 2018 and 3.00x for each rolling 12-month period ending quarterly thereafter; and

the minimum interest cover ratio (defined as consolidated EBITDAS to total interest costs) was set at 3.00:1.

On December 31, 2016 and March 31, 2017 we obtained consent from the requisite majority of the lenders to disapply the leverage ratio and the interest cover ratio threshold as of December 31, 2016 and March 31, 2017, respectively under our US revolving facility. In December 2016, we also negotiated further amendments to our US revolving facility allowing issuance of additional unsecured bonds up to US\$90 million, and consent to enable us to appoint a 'mandataire ad hoc' without such action constituting an event of default. As consideration for such consents and amendments, we agreed to increase the applicable margin under the US revolving facility by 3.00% per annum.

This facility was drawn in an amount of US\$165 million as of December 31, 2016.

US\$325 million Revolving Credit Agreement (French revolving facility)

On July 31, 2013, we entered into a French revolving facility of up to US\$325 million with a three-year maturity with two extension options of one year each. The borrower is CGG with Natixis (subsequently replaced by Wilmington Trust (London) Limited) as Agent. The French revolving facility may be drawn in dollars or in euros, and may be used for the general corporate purposes of the borrower.

In December 2015, we agreed amendments to our financial covenants under our French revolving facility, effective from February 2016. Pursuant to such amendments:

the Group must maintain a minimum liquidity amount (cash and cash equivalents plus certain undrawn credit facilities) of US\$175 million at each quarter end;

the maximum leverage ratio (defined as total net financial debt to EBITDAS) was increased to a ratio of 5.00x for each rolling 12-month period ending quarterly in 2016, 4.75x for the rolling 12-month period ending on March 31, 2017, 4.25x for the rolling 12-month period ending on June 30, 2017, 4.00x for the rolling 12-month period ending on September 30, 2017, 3.50x for the rolling 12-month period ending on December 31, 2017, 3.25x for the rolling 12-month period ending on March 31, 2018 and 3.00x for each rolling 12-month period ending quarterly thereafter; and

the minimum interest cover ratio (defined as consolidated EBITDAS to total interest costs) was set at 3.00:1.

Our French revolving facility amendment has also led to an extension of maturity with a new schedule of the total commitments as follows:

US\$325 million until July 2016;

US\$300 million from July 2016 to July 2017; and

US\$275 million from July 2017 to July 2018.

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Our obligations under the French revolving facility are guaranteed by the same guarantors that guarantee the US revolving facilities (including CGG Holding (U.S.) Inc.), and are secured by the same security interests granted to secure the obligations under the US revolving facilities.

The rate of interest on each loan for each interest period is the percentage rate per annum which is the aggregate of the applicable margin and the higher of one per cent. (or, in certain circumstances, zero) and in relation to any loan in US dollars, LIBOR or in relation to any loan made in euros, EURIBOR.

On December 31, 2016 and March 31, 2017, respectively we obtained consent from the requisite majority of the lenders under our French revolving facility to disapply the leverage ratio and the interest cover ratio threshold as of December 31, 2016 and March 31, 2017 under our French revolving facility. In December 2016, we also negotiated further amendments to our French revolving facility allowing the issuance of additional unsecured bonds up to US\$90 million, and consent to enable us to appoint a ‘mandataire ad hoc’ without such action constituting an event of default.

This facility was drawn in an amount of US\$294 million as of December 31, 2016.

2019 secured term loans

On November 19, 2015, CGG S.A. announced that its subsidiary, CGG Holding (U.S.) Inc. (“CGG US”), had launched an Exchange Offer in relation to CGG S.A.’s 7.75% Senior Notes due 2017, 6.50% Senior Notes due 2021 and 6.875% Senior Notes due 2022 (the “Notes”). CGG US offered senior secured term loans due 2019 in exchange for any and all of the 7.75% Senior Notes due 2017 and a combined total of up to US\$135 million of the 6.5% Senior Notes due 2021 and/or 6.875% Senior Notes due 2022 if accompanied by the concurrent tender of an equal or greater corresponding amount of the 7.75% Senior Notes due 2017. US\$135 million of the 7.75% Senior Notes due 2017 was outstanding as of September 30, 2015.

On December 18, 2015, CGG announced that:

US\$126.7 million out of US\$135 million outstanding 2017 notes were replaced by a secured term loan due 2019.

US\$45.1 million out of US\$650 million outstanding 2021 notes were replaced by a secured term loan due 2019.

US\$80.4 million out of US\$500 million outstanding 2022 notes were replaced by a secured term loan due 2019.

In addition of the Exchange Offer the 84.4 million Fugro loan was also replaced by a secured term loan due 2019 amounting to US\$90 million.

The 2019 secured term loans will mature on May 15, 2019 and bear an interest, at the option of CGG US, of adjusted LIBOR plus 5.50% per annum or adjusted base rate plus 4.50% per annum. Adjusted LIBOR had a floor of 1.00% and adjusted base rate shall not be less than 2.00%.

The 2019 secured term loans are secured indebtedness ranking pari passu with the existing US and French revolving facilities sharing the same security package encompassing notably the fleet streamers, the US Multi-Client Library, the shares of the main Sercel operating entities (Sercel SAS and Sercel Inc), the shares of significant GGR operating entities, and some intercompany loans.

The outstanding value at December 31, 2016, is US\$332.8 million net of issuing fees.

On March 31, 2017, we obtained consent from the requisite majority of lenders under our 2019 secured term loans to disapply the leverage ratio and the interest coverage ratio threshold as of March 31, 2017 under our 2019 secured term loans.

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Debt Securities

High Yield bonds – (US\$400 million, 7.75% Senior Notes due 2017)

On February 9, 2007, we issued US\$400 million in aggregate principal amount of 7.75% Senior Notes due 2017. These notes are guaranteed on a senior basis by the same guarantors that guarantee our senior facilities (including CGG Holding (U.S.) Inc.). We used the net proceeds from the notes to repay part of the US\$700 million outstanding under the bridge loan facility used to finance the Veritas acquisition.

On June 2, 2014, we redeemed US\$265 million of our 7.75% Senior Notes due 2017. This redemption was financed through the US\$500 million Senior Notes issuance described below. The notes were redeemed at 101.292% of their principal amount. Accelerated amortization of deferred expenditures was recorded for US\$2.3 million in the line item “Cost of financial debt net” in our consolidated statement of operations. Premium for early repayment was recorded for US\$3.4 million in the line item “Other financial income (loss)” in our consolidated statement of operations.

Following the debt exchange offer closed in December 2015, the outstanding aggregate principal amount of our Senior Notes due 2017 was US\$8.3 million as of December 31, 2016 (see 2019 secured term loans above).

On February 24, 2017, we fully discharged the outstanding US\$8.3 million of our 7.75% Senior Notes due 2017.

High Yield bonds – (US\$650 million, 6.50% Senior Notes due 2021)

On May 31, 2011 we issued US\$650 million in aggregate principal amount of 6.50% Senior Notes due 2021. These notes are guaranteed on a senior basis by the same guarantors that guarantee our senior facilities (including CGG Holding (U.S.) Inc.). We used the proceeds from the notes to repay the US\$508 million remaining outstanding under the term loan B facility of our US senior facilities and to redeem the US\$70 million principal amount remaining outstanding under our 7.50% Senior Notes due 2015. On December 8, 2011, these notes were exchanged for identical notes registered with the SEC.

Following the debt exchange offer closed in December 2015, the outstanding aggregate principal amount of our Senior Notes due 2021 was US\$604.9 million as of December 31, 2016 (see Term Loans above).

On January 20, 2017, we issued US\$58.6 million in aggregate principal amount of our 6.50% Senior Notes due 2021 to the relevant charter counterparties to reduce the cash burden of the charter agreements in respect of three cold-stacked seismic vessels, namely the *Pacific Finder*, the *Oceanic Phoenix*, and the *Viking Vanquish*.

On February 23, 2017, we announced the execution of a supplemental indenture in respect of our 6.50% Senior Notes due 2021 to allow for appointment of a ‘mandataire ad hoc’. The supplemental indenture also provides for certain information undertakings by us.

On March 13, 2017, we issued US\$12.1 million in aggregate principal amount of our 6.50% Senior Notes due 2021 to the relevant charter counterparty to reduce the cash burden of the charter agreement in respect of the *Oceanic Champion*, an active seismic vessel.

High Yield bonds – (400 million, 5.875% Senior Notes, maturity 2020)

On April 23, 2014, we issued 400 million (or US\$546.3 million, converted at closing exchange rate of US\$1.3658) principal amount of our 5.875% Senior Notes due 2020. These notes are guaranteed on a senior basis by the same guarantors that guarantee our senior facilities (including CGG Holding (U.S.) Inc.).

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The Senior Notes were issued at a price of 100% of their principal amount. We used most of the net proceeds from the notes to fully repurchase our 1.75% convertible bonds due 2016 amounting to 360 million. The remaining net proceeds were used to reimburse the 28.1 million installment due in 2015 of the vendor loan granted by Fugro.

On February 23, 2017, we announced the execution of a supplemental indenture in respect of our 5.875% Senior Notes due 2020 to allow for appointment of a 'mandataire ad hoc'. The supplemental indenture also provides for certain information undertakings by us.

High Yield bonds – (US\$500 million, 6.875% Senior Notes, maturity 2022)

On May 1, 2014, we issued US\$500 million principal amount of our 6.875% Senior Notes due 2022.

The Senior Notes were issued at a price of 100% of their principal amount. These notes are guaranteed on a senior basis by the same guarantors that guarantee our senior facilities (including CGG Holding (U.S.) Inc.). We used the net proceeds from the notes to redeem the entire US\$225 million outstanding principal amount of our 9.50% Senior Notes due 2016 and to repay US\$265 million in principal amount of our 7.75% Senior Notes due 2017. On November 13, 2014, these notes were exchanged for identical notes registered with the SEC.

Following the debt exchange offer closed in December 2015, the outstanding aggregate principal amount of our Senior Notes due 2022 was US\$419.6 million as of December 31, 2016 (see Term Loans above).

On February 23, 2017, we announced the execution of a supplemental indenture in respect of our 6.875% Senior Notes due 2022 to allow for appointment of a 'mandataire ad hoc'. The supplemental indenture also provides for certain information undertakings by us.

Convertible bonds

Convertible bonds – (325 million, 1.75% Senior Notes, maturity 2020)

In May 2015, CGG initiated a simplified public exchange offer for its outstanding 11,200,995 bonds convertible into and/or exchangeable for new or existing shares of the Company (convertible bonds) due 2019, with the intention to issue new convertible bonds due 2020 at a ratio of five 2020 convertible bonds for two 2019 convertible bonds tendered into the offer.

On June 26, 2015, holders exchanged 90.3% of the principal amount of the existing 2019 convertible bonds (or 10,114,014 bonds). In consideration, CGG issued 25,285,035 convertible bonds maturing on January 1, 2020 for a total nominal amount of 325.1 million (or US\$363.7 million converted at the historical closing exchange rate of US\$1.1189).

The 2020 convertible bonds' nominal value was set at 12.86 per bond (versus 32.14 for the 2019 convertible bonds). The new bonds bear interest at a rate of 1.75% payable semi-annually in arrears on January 1 and July 1 of each year (versus 1.25% for the 2019 convertible bonds). The bonds entitle the holders to receive new and/or existing CGG shares at the ratio of one share per one bond, subject to adjustments. Under certain conditions, the bonds may be redeemed prior to maturity at our option.

As of June 30, 2015, as a result of this transaction, we derecognized the financial liability and equity components related to the 2019 convertible bonds that were exchanged and we recognized the 2020 convertible bonds at their fair value. The impact of the transaction on the net income of the period is not significant. The impact on equity amounts to US\$8.6 million, net of taxes. The financial liability component was assessed using a 6.63% interest rate and amounted to 265.4 million (or US\$296.9 million).

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Following the reverse split and the change of nominal value of ordinary shares (see note 15 to our consolidated financial statements) the conversion ratio is now 0.044 share per one bond.

As of December 31, 2016 the debt related to 2020 convertible bonds amounted to 283.6 million (or US\$298.9 million).

Convertible bonds – (previously 360 million, now 35 million, 1.25% Senior Notes, maturity 2019)

As a result of the simplified public exchange offer (see Convertible bonds – 360 million, 1.25% Senior Notes, maturity 2020 above), the outstanding amount of the financial liability that corresponds to the 2019 convertible bonds that were not exchanged amounted to 30.3 million (or US\$34 million) in the consolidated statement of financial position as of December 31, 2015.

On November 20, 2012, we issued 11,200,995 bonds convertible into and/or exchangeable for new or existing shares of our company to be redeemed on January 1, 2019 for a total nominal amount of 360 million. We used the net proceeds of the issuance to finance a portion of the 1.2 billion acquisition price for the Geoscience Acquisition.

The bonds' nominal value was set at 32.14 per bond, representing an issue premium of 40% of the CGG's reference share price on the regulated market of NYSE Euronext in Paris. The bonds bear interest at a rate of 1.25% payable semi-annually in arrears on January 1 and July 1 of each year. The bonds entitle the holders to receive new and/or existing CGG shares at the ratio of one share per one bond, subject to adjustments. Under certain conditions, the bonds may be redeemed prior to maturity at our option.

As of November 20, 2012, the financial liability component was US\$359 million (277 million) and the equity component was US\$98 million (75 million), net of issuing fees. The fair value of the financial liability was assessed using a 5.47% interest rate.

Following the reverse split and the change of nominal value of ordinary shares (see note 15 to our consolidated financial statements) the conversion ratio is now 0.044 share per one bond.

As of December 31, 2016 the debt related to 2019 convertible bonds amounted to 32.2 million (or US\$33.9 million).

US\$250 million Nordic credit facility

The Nordic credit facility described below was replaced in full as part of our fleet ownership changes in April 2017. See “– Operating Results – Factors affecting our results of operations – Fleet ownership changes” above.

On July 1, 2013, CGG Geo Vessels AS entered into a five-year US\$200 million financing secured by vessel assets (*Geo Coral*, *Geo Caribbean*, *Oceanic Challenger*) split into two tranches of US\$100 million each, the proceeds of which were used in part to reimburse the 2013 tranche of the vendor loan granted by Fugro, and in part to redeem US\$125 million aggregate principal amount of our US\$350 million 9.50% Senior Notes due 2016. We entered into an interest rate swap to fix the effective rate at 4.4%.

On December 16, 2014, we completed the amendment and extension of this Nordic credit facility. The credit amount confirmed was increased to US\$250 million (out of which US\$50 million were undrawn as of December 31, 2014) and the maturity extended from May 2018 to December 2019. The new amount is split into a US\$100 million authorized revolving facility and a US\$150 million term loan. We entered into an interest rate swap to fix the annual rate at 4.3%.

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In December 2015, we revised our financial covenants under our Nordic credit facility, effective from February 2016. Pursuant to such amendment:

cash plus cash equivalents must not be less than US\$100 million at all times;

the maximum leverage ratio (defined as total net financial debt to EBITDAS) was increased to a ratio of 5.00x for each rolling 12-month period ending in 2016, 4.75x for the rolling period ending in March 2017, 4.25x for the rolling period ending in June 2017, 4.00x for the rolling period ending in September 2017, 3.50x for the rolling period ending in December 2017, 3.25x for the rolling period ending in March 2018 and 3.00x thereafter; and

the minimum interest cover ratio (defined as EBITDAS to total interest costs) was set at 3.00:1.

On December 31, 2016 and March 31, 2017, we obtained consent from the requisite majority of the lenders to waive the leverage ratio and the interest cover ratio threshold as of December 31, 2016 and March 31, 2017 under our Nordic credit facility. In January 2017, we also obtained consent from the requisite majority of the lenders to enable us to pursue certain negotiations with our creditors, and to appoint a 'mandataire ad hoc', in each case without such actions constituting an event of default.

The outstanding amount under this facility at December 31, 2016 was US\$190 million.

Financial Debt

Gross financial debt was US\$2,850.4 million as of December 31, 2016, US\$2,884.8 million as of December 31, 2015, and US\$2,778.9 million as of December 31, 2014. Net financial debt was US\$2,311.6 million as of December 31, 2016, US\$2,499.5 million as of December 31, 2015, US\$2,419.8 million as of December 31, 2014. The ratio of net debt to equity for the years ended December 31, 2016, 2015 and 2014 was 206%, 191%, and 90%, respectively.

"Gross financial debt" is the amount of bank overdrafts, plus current portion of financial debt, plus financial debt, and "net financial debt" is gross financial debt less cash and cash equivalents. Net financial debt is presented as additional information because we understand that certain investors believe that netting cash against debt provides a clearer picture of our financial liability exposure. However, other companies may present net financial debt differently than we do. Net financial debt is not a measure of financial performance under IFRS and should not be considered as an alternative to any other measures of performance derived in accordance with IFRS.

The following table presents a reconciliation of net financial debt to financing items of the balance sheet at December 31, 2016, 2015 and 2014 (according to IFRS standards):

	Year ended December 31,		
	2016	2015	2014
	(In millions of US\$)		
Bank overdrafts	1.6	0.7	2.9
Current portion of financial debt ⁽¹⁾	2,782.1	96.5	75.7
Financial debt	66.7	2,787.6	2,700.3
Gross financial debt	2,850.4	2,884.8	2,778.9
Less cash and cash equivalents	(538.8)	(385.3)	(359.1)
Net financial debt	2,311.6	2,499.5	2,419.8

⁽¹⁾ Out of the US\$2,782.1 million of financial debt classified as current liabilities, only US \$100.1 million has a maturity of less than 12 months. The rest of it – not due as the Group never breached its financial covenants and having a maturity greater than 12 months – is explained by a pure accounting reclassification due to the application of IAS 1. See note 13 to our consolidated financial statements, included elsewhere in this document for further explanations.

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EBIT and EBITDAS

EBIT is defined as operating income plus our share of income in companies accounted for under the equity method. EBIT is used by management as a performance indicator because it captures the contribution to our results of the significant businesses that we manage through our joint ventures.

EBITDAS is defined as earnings before interest, tax, depreciation, amortization net of amortization expense capitalized to Multi-client, and share-based compensation cost. Share-based compensation includes both stock options and shares issued under our share allocation plans. EBITDAS is presented as additional information because we understand that it is one measure used by certain investors to determine our operating cash flow and historical ability to meet debt service and capital expenditure requirements.

However, other companies may present EBIT and EBITDAS differently than we do. EBIT and EBITDAS are not a measure of financial performance under IFRS and should not be considered as an alternative to cash flow from operating activities or as a measure of liquidity or an alternative to net income as indicators of our operating performance or any other measures of performance derived in accordance with IFRS.

The following table presents a reconciliation of EBITDAS and EBIT to net income for the periods indicated:

	Year ended December 31, 2016, 2015 and 2014		
	2016	2015	2014
	(In millions of US\$)		
EBITDAS	273.6	452.8	775.7
Depreciation and amortization	(293.2)	(1,310.6)	(1,031.3)
Multi-client surveys depreciation and amortization	(417.2)	(369.5)	(565.8)
Depreciation and amortization capitalized to multi-client surveys	42.3	72.8	130
Stock based compensation expenses	(2.0)	(3.1)	(6.1)
Operating income	(396.5)	(1,157.6)	(697.5)
Share of (income) loss in companies accounted for under equity method	(8.2)	21.4	(81.7)
EBIT	(404.7)	(1,136.2)	(779.2)
Cost of financial debt, net	(174.2)	(178.5)	(200.6)
Other financial income (loss)	(11.4)	(54.5)	(43.0)
Total income taxes	13.7	(77.0)	(123.8)
Net income (loss)	(576.6)	(1,446.2)	(1,146.6)

For 2016, EBIT at the Group level was a loss of US\$405 million, corresponding to a loss of US\$221 million before impairment of assets and restructuring costs related to our Transformation Plan and to a loss of US\$137 million excluding Non-Operated Resources.

For 2015, EBIT at the Group level was a loss of US\$1,136 million, corresponding to an income of US\$82 million before impairment of assets and restructuring costs related to our Transformation Plan and an income of US\$110 million excluding Non-Operated Resources.

For 2014, EBIT at the Group level was a loss of US\$779 million corresponding to an income of US\$160 million before restructuring costs related to our Transformation Plan and to an income of US\$177 million excluding Non-Operated Resources.

For 2016, Group EBITDAS was US\$274 million, representing 23% of operating revenues, US\$328 million before restructuring expenses relating to our Transformation Plan, representing 27% of operating revenues and US\$350 million excluding Non-Operated Resources.

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For 2015, Group EBITDAS was US\$453 million, representing 22% of operating revenues, US\$661 million before restructuring expenses relating to our Transformation Plan, representing 31% of operating revenues and US\$661 million excluding Non-Operated Resources.

For 2014, Group EBITDAS was US\$776 million, representing 25% of operating revenues, US\$994 million before restructuring expenses relating to our Transformation Plan, representing 32% of operating revenues and US\$994 million excluding Non-Operated Resources.

The following table presents EBITDAS by segment:

	Year ended December 31,		
	2016	2015	2014
	(In millions of US\$)		
EBITDAS			
Contractual Data Acquisition	(35.9)	(23.8)	(96.3)
Non Operated Resources	(76.5)	(207.2)	(218.0)
GGR	460.4	680.9)	850.8
Equipment	(6.4)	67.9	209.7
Eliminations and other	(68.0)	(65.0)	(163.1)
Consolidated Total	<u>273.6</u>	<u>452.8</u>	<u>775.7</u>

For 2016, Non-Operated Resources EBITDAS included US\$(54) million of restructuring expenses relating to our Transformation Plan.

For 2015, Non-Operated Resources EBITDAS included US\$(207) million of restructuring expenses relating to our Transformation Plan.

For 2014, Non-Operated Resources EBITDAS included US\$(218) million of restructuring expenses relating to our Transformation Plan.

The following table presents a reconciliation of EBITDAS to net cash provided by operating activities, according to our cash flow statement, for the periods indicated:

	Year ended December 31,		
	2016	2015	2014
	(In millions of US\$)		
EBITDAS	273.6	452.8	775.7
Other financial income (loss)	(11.4)	(54.5)	(43.0)
Variance on Provisions	(105.6)	98.5	116.1
Net gain on disposal of fixed assets	0.1	(27.2)	(7.3)
Dividends received from affiliates	13.0	5.1	30.7
Other non-cash items	0.3	(3.0)	44.8
Income taxes paid	(12.6)	(19.2)	(22.9)
Change in trade accounts receivables	320.2	76.8	7.6
Change in inventories and work-in-progress	60.2	53.2	40.3
Change in other current assets	(27.3)	25.7	12.8
Change in trade accounts payables	(98.2)	(144.1)	(73.4)
Change on other current liabilities	(58.2)	(33.5)	(36.3)
Impact of changes in exchange rate	1.0	(22.5)	19.1
Net cash provided by operating activities	<u>355.1</u>	<u>408.1</u>	<u>864.2</u>

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Free cash flow

We define “free cash flow” as cash flow from operations including “Proceeds from disposals of tangible and intangible assets” minus (i) the net of “Total net capital expenditures”; “Investments in multi-client surveys” set out in our consolidated statement of cash flows under “Investing”, and (ii) “Financial expenses paid” set out in our consolidated statement of cash flows under “Financing”.

Free cash flow amounted to outflows of US\$174 million in 2016 compared to outflows of US\$130 million in 2015 and outflows of US\$137 million in 2014. Before restructuring charges relating to the Transformation Plan, free cash flow amounted to outflows of US\$7 million in 2016, compared to outflows of US\$9 million in 2015 and outflows of US\$76 million in 2014.

Contractual obligations

The following table presents payments in future periods relating to contractual obligations as of December 31, 2016:

	Payments due by period				
	Less than			After	
	1 year	2-3 years	4-5 years	5 years	Total
	(In millions of US\$)				
Long-term debt obligations:					
– Repayments: fixed rates	20.3	37.4	1,440.0	419.6	1,917.3
– Repayments: variables rates ^(a)	22.8	775.3	–	–	798.1
– Bonds and facilities interests	163.7	252.7	138.6	14.4	569.4
Total Long-term debt obligations	206.8	1,065.4	1,578.6	434.0	3,284.8
Finance leases:					
– Finance lease Obligations: fixed rates	8.2	14.0	13.7	3.5	39.4
– Finance lease Obligations: variables rates ^(a)	–	–	–	–	–
Total Finance lease obligations	8.2	14.0	13.7	3.5	39.4
Bareboat agreements	78.9	121.3	94.2	239.5	533.9
Other operating lease agreements	59.4	71.8	42.3	61.2	234.7
Total Contractual Obligations^(b)	353.3	1,272.5	1,728.8	738.2	4,092.8

Note: For the purposes of the table above, the various components of the financial debt are presented at their normal maturities even though these debts – except finance lease debt – are presented entirely as current due to the application of IAS 1 (see note 13 to our consolidated financial statements, included elsewhere in this document).

^(a) Payments are based on the variable rates applicable as of December 31, 2016.

^(b) Payments in foreign currencies are converted in US\$ at December 31, 2016 exchange rates.

Off-Balance Sheet Arrangements

We have not entered into any other off-balance sheet arrangements that have or are reasonably likely to have a current or future material effect on our financial condition, changes in financial condition, revenues or expenses, results of operations, liquidity, capital expenditures or capital resources that are material to investors.

See note 18 to our consolidated financial statements for further details on current off-balance sheet obligations.

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Trend information

Currency Fluctuations

We face foreign exchange risks because a large percentage of our revenues and cash receipts are denominated in US dollars, while a significant portion of our operating expenses and income taxes accrue in euro and other currencies. Movements between the US dollar and euro or other currencies may adversely affect our operating results. More than 74% of our turnover was denominated in US dollars in 2016, 2015 and 2014.

Fluctuations in the exchange rate of the US dollar against other currencies, particularly the euro, have had in the past and will have in the future a significant effect upon our results of operations, which are reported now in US dollars. Since we participate in competitive bids for data acquisition contracts that are denominated in US dollars, the depreciation of the US dollar against the euro harms our competitive position against companies whose costs and expenses are denominated to a greater extent in US dollars. While we attempt to reduce the risks associated with such exchange rate fluctuations through our hedging policy, we cannot assure you that we will maintain our profitability level or that fluctuations in the values of the currencies in which we operate will not materially adversely affect our future results of operations. As of December 31, 2016, we estimated our annual fixed expenses in euros to be approximately 400 million and as a result, an unfavorable variation of US\$0.2 in the average yearly exchange rate between the US dollar and the euro would reduce our profit before tax and our shareholders' equity by approximately US\$80 million.

As of December 31, 2016, we and our subsidiaries whose functional currency is the euro had dollar denominated assets and liabilities of US\$1,794.5 million and US\$1,853.8 million, respectively. Our net exchange rate exposure was US\$(59.3) million after hedging.

This is the case for several Norwegian, French or Dutch subsidiaries that own offshore assets (vessels and equipment) for which the functional currency is the US dollar, whereas the taxable currency is the Norwegian kroner, or the Euro. We attempt to match foreign currency revenues and expenses in order to balance our net position of receivables and payables denominated in foreign currencies. For example, most of our vessels charter costs, as well as our most important computer hardware leases, are denominated in US dollars. Nevertheless, during the past five years such dollar-denominated expenses have not equaled dollar-denominated revenues principally due to personnel costs payable in euros.

As of December 31, 2016 we have no forward exchange contracts outstanding.

Interest Rates

Drawings under our credit revolving facilities incur interest at variable rates that are reset at each interest period (generally between one and 12 months). As a result, our interest expenses vary in line with movements in short term interest rates. However, 71% of our debt consists of fixed-rate bonds, as well as a number of fixed-rate finance leases and fixed-rate medium-term bank credit facilities with variable maturities. This debt is not exposed to interest rate fluctuations.

As of December 31, 2016, our net variable-rate assets due in less than one year totaled US\$132 million. Our variable interest rate indebtedness carried an average interest rate of 5.1% in 2016 and our investments and other financial assets earned interest at an average rate of 0.8%. As a result, a 1% increase in interest rates would increase our income before tax and shareholders' equity by US\$1.3 million, whereas a 1% decrease in interest rates would decrease our income before tax and shareholders' equity by US\$(1.3) million.

Inflation

Inflation has not had a material effect on our results of operations during the periods presented. We operate in and receive payments in the currencies of, certain countries with historically high levels of inflation, such as

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Mexico and Brazil. We attempt to limit such risk by, for example, indexing payments in the local currency against, principally, the US dollar exchange rate at a certain date to account for inflation during the contract term.

Income Taxes

We conduct the majority of our activities outside of France and pay taxes on income earned or deemed profits in each foreign country pursuant to local tax rules and regulations.

We have significant tax losses carried forward that are available to offset future taxation on income earned in certain OECD countries. We recognize deferred tax assets only when the recovery is considered as probable. When financial forecast are revised downward, we consider the depreciation of our deferred tax assets recognized on prior period.

Seasonality

Our land and marine seismic acquisition activities are usually seasonal in nature as a consequence of weather conditions in the Northern Hemisphere and of the timing chosen by our principal clients to commit their annual exploration budget to specific projects. We have historically experienced higher levels of activity in our equipment manufacturing and multi-client operations in the fourth quarter as our clients seek to fully deploy annual budgeted capital.

Our land and marine seismic data acquisition revenues, in particular in the marine market, are usually seasonal in nature. In the marine market notably, certain basins can be very active and absorb higher capacity during a limited period of the year (such as the North Sea between April and September), triggering significant volatility in demand and price in their geographical markets throughout the year. The marine data acquisition business is, by its nature, exposed to unproductive interim periods due to vessel maintenance and repairs or transit time from one operational zone to another during which revenue is not recognized. Other factors that cause variations from quarter to quarter include the effects of weather conditions in a given operating area, the internal budgeting process of some important clients for their exploration expenses, and the time needed to mobilize production means or obtain the administrative authorizations necessary to commence data acquisition contracts.

Item 6: DIRECTORS, SENIOR MANAGEMENT AND EMPLOYEES

Directors and Senior Management

Board of Directors

Under French law, the Board of Directors determines our business strategy and monitors its implementation. The Board of Directors deals with any issues relating to our affairs, pursuant to the powers granted to it by the Ordinary Shareholders' Meeting. In particular, the Board of Directors prepares and presents our year-end accounts to our Ordinary Shareholders' Meeting. Our Board of Directors consists of between six and fifteen members elected by our shareholders. Under French law, a Director may be an individual or a legal entity for which an individual is appointed as permanent representative.

Our *statuts* (memorandum and Articles of Association) provide that each Director is elected for a four-year term by the Ordinary Shareholders' Meeting. There is no obligation for Directors to be French nationals. According to French corporate law, a physical person may simultaneously hold the office of Director in no more than five *sociétés anonymes* whose registered offices are located on French territory, subject to certain exceptions. The Board's internal regulations provide that each Director is required to own at least 156 of our shares.

Directors are required to comply with applicable law and our *statuts*. Under French law, Directors are responsible for actions taken by them that, *inter alia*, are contrary to the Company's interests. They may be held liable for such actions both individually and jointly with the other Directors.

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The following table sets forth the names of our current Directors, their positions, the dates of their initial appointment as Directors and the respective expiry dates of their current term.

Name	Independent ^(a)	Position	Age	Nationality	Initially appointed ^(c)	Term expires	Number of shares/ ADS held as of December 31, 2016	Number of shares/ ADS held as of March 31, 2017
Remi Dorval ⁽¹⁾	Yes	Chairman ^(f)	66	French	2005	2018	749 shares	749 shares
Jean-Georges Malcor	No	Chief Executive Officer & Director ^(b)	60	French	2011	2019	7,609 shares	7,609 shares
Loren Carroll ⁽²⁾	Yes	Director	73	US	2007	2017	156 ADS	156 ADS
Michael Daly ⁽¹⁾⁽⁴⁾	Yes	Director	63	English	2015	^(d) 2017 ^(f)	156 shares	156 shares
Anne Guérin, permanent representative of Bpifrance Participations ⁽¹⁾⁽²⁾	No	Director	48	French	2016	2020	2,069,530 shares held by Bpifrance Participations And 156 shares held by Anne Guérin	2,069,530 shares held by Bpifrance Participations And 156 shares held by Anne Guérin
Didier Houssin ⁽¹⁾⁽³⁾	No	Director	60	French	2015	^(e) 2020	156 shares	156 shares
Agnès Lemarchand ⁽²⁾⁽³⁾	Yes	Director	62	French	2012	2017	187 shares	187 shares
Gilberte Lombard ⁽²⁾⁽⁴⁾	Yes	Director	72	French	2011	2019	635 shares	635 shares
Hilde Myrberg ⁽⁴⁾	No	Director	59	Norwegian	2011	2019	156 ADS	156 ADS
Robert Semmens ⁽¹⁾⁽³⁾	No	Director	59	US	1999	2019	781 shares	781 shares
Kathleen Sendall ⁽³⁾⁽⁴⁾	Yes	Director	64	Canadian	2010	2018	156 ADS	156 ADS

⁽¹⁾ Member of Technology/Strategy Committee.

⁽²⁾ Member of Audit Committee.

⁽³⁾ Member of Appointment-Remuneration Committee.

⁽⁴⁾ Member of HSE/Sustainable Development Committee.

^(a) Independent Director within the meaning of the Governance Code of the Association Française des Entreprises Privées – Mouvement des Entreprises de France. See “Item 6: Directors, Senior Management and Employees – Board Practices”.

^(b) His term as Chief Executive Officer expires in 2017.

^(c) All current Directors have been appointed pursuant to Article L.225-17 of the French Commercial Code.

^(d) Mr. Daly was appointed by cooptation by the Board of Directors’ meeting held on September 30, 2015 in place of Mr. Terence Young. Ratification of this appointment was approved at the Combined General Meeting held on January 11, 2016.

^(e) Mr. Houssin was appointed by cooptation by the Board of Directors’ meeting held on July 30, 2015 in place of Mr. Olivier Appert. Ratification of this appointment was approved at the Combined General Meeting held on January 11, 2016.

^(f) Term of office was renewed on May 27, 2016 pursuant to Section 9 § 1 of the Articles of Association authorizing the Board to further extend the office of the Chairman, once or several times for a total period not exceeding three years.

Mr. Remi Dorval is a graduate of the *École Centrale de Paris*, the *Institut d’ Études Politiques* and the *École Nationale d’ Administration*. He has been Chairman of our Board of Directors since June 4, 2014. He served as a civil Board member of the *Direction des Hydrocarbures* of the Industry Ministry from 1979 to 1984 and a civil Board member of the *Direction du Trésor* of the Economy and Finance Ministry from 1984 to 1986. Between 1986 and 1990, he was successively, within the International Bank of Western Africa, General Manager of the US Branch in New York, then Managing Director of a subsidiary in Gabon and then Executive Vice President in charge of Treasury, Financial Markets Department and Asset Management. Until 2010, he was Chief Executive Officer and Director of Soletanche-Bachy Entreprise, Senior Executive Vice President of Soletanche Freyssinet, Director, Chairman and Chief Executive Officer of Solétanche Bachy France, Chairman of Forsol, Chairman of SB 2007, a Director of SHPIC, Bachy

Soletanche Holdings, SBUSA, Soldata Iberia and Nicholson. He was also a member of the Supervisory Board of CGG Holding BV. He was Executive Vice President of Vinci, a Euronext Paris-listed company from 2010 to 2015. He also served as Chairman of *La Fabrique de la Cité* and is now a Member of the Advisory Board of the latter.

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Mr. Jean-Georges Malcor is a graduate of the *École Centrale de Paris*, holds a Doctorate from the *École supérieure des Mines de Paris* and a Master in Science from Stanford University. He has been Chief Executive Officer of CGG SA since June 30, 2010 and a Director of CGG SA since May 4, 2011. From January 1, 2010 to June 30, 2010, he served as President of CGG. Mr. Malcor began his career at the Thales group as an acoustic engineer (1983-1987) in the Underwater Activities division, where he was in charge of hydrophone and geophone design and towed streamer programs. He then moved to Sydney-based Thomson Sintra Pacific Australia, becoming Managing Director of the company in 1990. Mr. Malcor became Director of Marketing & Communications (1991), then Director, Foreign Operations, of Thomson Sintra Activités Sous-Marines (1993). In 1996, he was appointed Managing Director of Thomson Marconi Sonar Australia which was, in addition to its military activities, the lead developing company for the solid geophysical streamer. In 1999, he became the first Managing Director of the newly formed joint venture Australian Defense Industry. During this time, he operated the Sydney based Woolloomooloo Shipyard (the largest dry dock in the southern hemisphere). In 2002, he became Senior Vice President, International Operations, at Thales International. From 2004 to 2009, he was Senior Vice President in charge of the Naval Division, supervising all naval activities in Thales, including ship design, building and maintenance. In January 2009, he became Senior Vice President in charge of the Aerospace Division. In June 2009, he moved to the position of Senior Vice President, Continental Europe, Turkey, Russia, Asia, Africa, Middle East, and Latin America. He also serves as Chairman of the Board of Directors of Sercel Holding SA, and as a member of the Board of Directors of the Arabian Geophysical and Surveying Company (ARGAS), a company 49% held by the CGG Group. He is also a Director, member of the Audit Committee and member of the Supervisory Board of STMicroelectronics (a company listed on Euronext Paris, the New York Stock Exchange and Borsa Italiana), a member of the Supervisory Board of Fives SA, General Manager of SCI l' Australe, Chairman of the Board of Directors of *Universcience Partenaires*, Director of *Oceanides* association and of the *École Centrale Supélec*, and an active member of *EVOLLEN* and of *Cluster Maritime Français*.

Mr. Loren Carroll joined our Board of Directors on January 12, 2007. Until that date, Mr. Carroll had been a Director of Veritas since 2003. Mr. Carroll is currently a financial and strategic business consultant. Until his retirement in April 2006, Mr. Carroll was President and Chief Executive Officer of M-I Swaco LLC. and was also Executive Vice President of Smith International, Inc. Mr. Carroll joined Smith International in December 1984 as Vice President and Chief Financial Officer. In January 1988, he was appointed Executive Vice President and Chief Financial Officer of Smith International and served in that capacity until March 1989. Mr. Carroll then rejoined Smith International in 1992 as Executive Vice President and Chief Financial Officer. Smith International held a 60% interest in M-I Swaco L.L.C. Until 2010, he was a Director of Smith International and a member of the Supervisory Board of CGG Holding BV. Mr. Carroll currently serves as Chairman of the Board of Directors of KBR Inc.

Mr. Michael Daly is a graduate of The University College of Wales, Leeds University (PhD) and Harvard Business School (PMD). Mr. Daly is a British geologist, oil and gas executive and academic. He joined the Geological Survey of Zambia in 1976, mapping the remote Muchinga Mountains of northeast Zambia. He began his business career with BP in 1986 as a research geologist. After a period of strategy work and E&P positions in Venezuela, the North Sea and London, he became President of BP's Middle East and S. Asia E&P business. In 2006, Mr. Daly became BP's Global Exploration Chief and a Group Vice President. He served on BP's Group Executive Team as Executive Vice President from 2010, and retired in 2014 after 28 years with the company. He currently serves as Senior Director at Macro Advisory Partners, Non-Executive Director with Tullow Oil, as Visiting Professor in Earth Sciences at The University of Oxford and Director of Daly Advisory and Research Ltd.

Ms. Anne Guérin, permanent representative of Bpifrance Participations, is a graduate of ESCP EUROPE Business School. She joined *Banque du Développement des PME* in 1991, first as associate in a regional office, setting up medium and long term loans for SME's, and then in the Marketing Division in the headquarters. In 2000 she joined Avenir Entreprises (Private Equity - Investment in small caps) where she was Investment Director until 2005. After a 3-year stay in Ireland where she dedicated her time to non-profit organizations such as Irish Blind Sports and ATD Fourth World, she became Regional Director of Bpifrance Ile-de-France Ouest in 2008. In 2014, she became Head of Export Finance for Bpifrance in charge of setting up

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and launching this new activity for the group. She currently also serves as Board member of *VoisinMalin*, a French non-profit organization working on social empowerment in poor districts.

Mr. Didier Houssin graduated from the *École nationale d'administration* and has a Master's degree in International Law from Université de Paris 1 - La Sorbonne. He also has a degree in Political Science from the *Institut d'études politiques de Paris*. On April 8, 2015, Didier Houssin was appointed Chairman and CEO of IFP Energies Nouvelles. Prior to that, in December 2012, he was appointed Director of Sustainable Energy Policy and Technology at the International Energy Agency (IEA). In this role, he was responsible for the development of low-carbon technologies and energy transition (ETP scenarios to 2050, technology roadmaps, carbon capture and sequestration and the IEA's international RD&D network). From July 2007 to October 2012, he was Director of Energy Markets and Security at the IEA. In this role, he was responsible for analyzing energy markets, in particular oil, gas, electricity and renewable energies, and overseeing security of supply. Before joining the IEA, Mr. Houssin had wide-ranging experience in numerous posts both in the French Government and the private industrial sector. From 1997 to 2004, he was Director of Energy and Mineral Resources in the French Ministry of Economy and Finances, and from 2004 to 2007, he was Managing Director of BRGM, the French Geological Survey, with extensive management responsibilities over the 850-strong group. From 1987 to 1990, Mr. Houssin held a position in European Affairs at Total, where he was responsible for developing EU strategy. He currently also serves as Chairman of Tuck Foundation (France) and Chairman of the ANCRE (*Alliance Nationale de Coordination de la Recherche pour l'Énergie*)

Ms. Agnès Lemarchand joined our Board of Directors on September 21, 2012. She graduated from ENSCP (French engineering school) and holds a Master's degree from MIT (chemical engineering) and an MBA from INSEAD. She started her career in various positions within the Rhone-Poulenc group, where she worked from 1980 to 1985. In 1986, she was appointed Chief Executive Officer of Industrie Biologique Française, a company in the Health segment of the Rhone Poulenc Group in the US. In 1991, she joined the group Ciments Français as Chief Executive Officer of Prodical, the industrial minerals segment, from 1991 to 1996. In 1997, she joined the Lafarge Group, and was Head of Strategy for the Specialty products segment. From 1999 to 2004, she was Chief Executive Officer of Lafarge Lime, where she developed the lime business in Europe and North America. In 2004, she led a management buyout of the UK lime business and in 2005, she founded Steetley Dolomite Ltd, and was its Executive Chairman until 2014, when the company was sold to Lhoist. She has served as member of the Supervisory Board (representing Bpifrance Participations), member of the Audit Committee, member of the Appointment and Remuneration Committee of Vivescia Industries (formerly named SICLAE). She currently serves as Director and member of the Financial Statements Committee of Saint Gobain, and as member of the Board of Directors and the Audit Committee of Biomérieux (two companies listed on Euronext Paris). She is Chairman of Orchard SAS.

Ms. Gilberte Lombard joined our Board of Directors on May 4, 2011. She held various financial positions within HSBC France (formerly Credit Commercial de France) from 1990 until her retirement in February 2011. She began her career as a financial analyst and then joined the M&A department of Credit Commercial de France. After Credit Commercial de France was privatized in 1987, she became the Investor Relations Officer in charge of relationships with financial analysts and institutional investors. She also coordinated the information policy for both major bank shareholders and individual bank shareholders from 1987 to 2000. In 2000, she was appointed as head of financial transactions in charge of structuring and implementing sales, acquisitions and mergers for HSBC France (which by now had taken over Credit Commercial de France) and managing its industrial and financial portfolio. She was appointed a member of the Board and the Audit Committee of several companies within the HSBC group in France. She was also appointed as Secretary of the Board of Directors in 1990. Ms. Lombard continues to serve as a member of the Supervisory Board, member of the Audit Committee and member of the Remuneration Committee of Zodiac Aerospace, and as Director, Chairman of the Remuneration Committee and member of the Strategic Committee of Robertet SA, two Euronext Paris-listed companies. She is a Director of the *Vernet Retraite* association. Ms. Lombard holds a Masters degree in Economic Sciences and is a graduate of the INSEAD Advanced Management Program. She is *Chevalier de la Légion d'Honneur*.

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Ms. Hilde Myrberg joined our Board of Directors on May 4, 2011. Until her retirement in 2012, she held the positions of Senior Vice President of Corporate Governance and Compliance at Orkla ASA, a Norwegian company listed on the Oslo Stock Exchange and operating in branded consumer goods, aluminum solutions, materials, renewable energy and financial investments, where she also served as Secretary of the Board until her retirement in 2012. From 2006 to 2011, she was Executive Vice President at Orkla ASA where she was the head of corporate functions, including human resources, communication, legal and internal audit. Previously, she served as head of the markets sector at Hydro Oil & Energy until 2006, where she oversaw activities ranging from platform to market oil and gas and the power and renewable energy business. From 2005 to 2007, she was a Board member of Kongsberg Automotive ASA. From 2006 to 2011, she served as Board member of Borregaard AS, Sapa AB and Orkla Brands AS (Orkla subsidiaries). She also served as a Director of Renewable Energy Corporation ASA from 2009 to 2012 and as a member of the Supervisory of Jotun AS. She served as a Director and Vice-Chairman of the Board of Petoro AS from 2006 to 2016, and as Chairman of the Appointment-Remuneration Committee of CGG. She now also serves as a Director of Norges Bank (the Central Bank of Norway and the Norwegian Bank Investment Management), as a Director of Nordic Mining ASA (listed on the Oslo Stock Exchange) and she is a member of the Nomination Committee of Det Norske Oljeselskap ASA (listed on the Oslo Stock Exchange) and NBT AS. Ms. Myrberg holds a law degree from the University of Oslo and an MBA from INSEAD. She also studied French civilization at the Sorbonne in Paris.

Mr. Robert Semmens is a private investor and adjunct professor of finance at the Leonard N. Stern School of Business (New York University). He holds a law degree from Northwestern University School of Law and an MBA in Finance and Accounting from the J.L. Kellogg Graduate School of Management at Northwestern University. He was Vice President of Goldman Sachs & Co. in Investment Banking, and at J. Aron and Principal Investing, all in energy related businesses. He was co-founder of The Beacon Group, where he raised and co-managed private equity funds in the energy business. Mr. Semmens joined the Board of CGG in connection with an investment made by the Beacon Group in CGG in 1999. At CGG, he has served on the Audit, Appointment-Remuneration and Strategic Committees of the Board and has been a Director of Sercel. He has served on more than 15 boards, all in the energy business. He currently serves as a Director of MicroPharma Ltd (Canada) and Bronco Holdings LLC (USA).

Ms. Kathleen Sendall joined our Board of Directors on May 5, 2010. She is a mechanical engineering graduate of Queen's University (Ontario), holds an Honorary Doctorate from the University of Calgary and is a graduate of the Western Executive Program. She began her career as a junior process engineer for Petro-Canada in 1978, and then was a project engineer for compressor station design and construction at Nova, an Alberta corporation for two years. Ms. Sendall held various positions within Petro-Canada between 1984 and 1996. From 1996 to 2000, she was Vice President Engineering & Technology, and was Vice President, Western Canada Development & Operations until 2002. Ms. Sendall was appointed Senior Vice President, North American Natural Gas of Petro-Canada from 2002 to 2009. She was also a Governor on the Board of Governors of the University of Calgary until 2010 and Governor and Chair of the Board of the Canadian Association of Petroleum Producers. Mrs. Sendall is a member of the Association of Professional Engineers and Geoscientists of Alberta (APEGA). She also serves as a Director of ENMAX, as trustee of the Ernest C. Manning Awards Foundation and as Chairman of the Board of Directors of Emission Reductions Alberta. Ms. Sendall was invested as a member of the Order of Canada in 2011 and was awarded the Queen's Jubilee Medal in 2012.

Executive Officers

Under French law and our current *statuts*, the Chief Executive Officer has full executive authority to manage our affairs and has full power to act on our behalf and to represent us in dealings with third parties, subject only to (i) the corporate purpose of the Company, (ii) those powers expressly reserved by law to the Board of Directors or our shareholders and (iii) limitations that the Board of Directors may resolve, such limitations not being binding on third parties. The Chief Executive Officer determines and is responsible for the implementation of the goals, strategies and budgets for our different businesses, which are reviewed and monitored by the Board of Directors. The Board of Directors has the power to appoint and remove the Chief

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Executive Officer at any time. In accordance with French corporate law, our current *statuts* provide that the Board of Directors may either elect one person to assume both the position of Chairman and the position of Chief Executive Officer or it may elect two different people to fill the positions. The Board of Directors decided to separate the roles of Chairman and Chief Executive Officer. Since June 4, 2014, Mr. Dorval has held the position of Chairman, and since June 30, 2010, Mr. Malcor has held the position of Chief Executive Officer. Our current *statuts* also allow that the Board of Directors to appoint up to five Corporate Officers (*Directeurs Généraux Délégués* or Corporate Officers) upon proposal of the Chief Executive Officer, whether or not this person is also the Chairman of the Board. Stéphane-Paul Frydman, Pascal Rouiller and Sophie Zurquiyah were each appointed as Corporate Officers by our Board of Directors. Their role as Corporate Officer was terminated on January 4, 2017 upon decision of the Board of Directors.

The following table sets forth the names of members of our Corporate Committee and their current positions with us.

<u>Name</u>	<u>Current position</u>
Jean-Georges Malcor	Chief Executive Officer
Stéphane-Paul Frydman	Group Chief Financial Officer
Pascal Rouiller	Chief Operating Officer
Sophie Zurquiyah	Chief Operating Officer
David Dragone	Executive Vice President, Human Resources

Mr. Stéphane-Paul Frydman, 53, is a graduate of the *École Polytechnique* of Paris and the *École des Mines* of Paris. He has been Group Chief Financial Officer since January 2007 and served as Corporate Officer from February 29, 2012 to January 4, 2017. Before that time, he had been Group Controller, Treasurer and Deputy Chief Financial Officer since September 2005, Deputy Chief Financial Officer of the CGG Group since January 2004 and Vice President in charge of corporate financial affairs reporting to the Chief Financial Officer since December 2002. Prior to joining CGG, Mr. Frydman was, from April 2000 to November 2002, an Investor Officer of Butler Capital Partners, a private equity firm and from June 1997 to March 2000, Industrial Advisor to the French Minister of the Economy and Finances. Mr. Frydman is currently a Director of CGG Holding (U.S.) Inc. and Chairman of the Board of Directors of CGG International SA. He is in charge of the Finance and General Secretary Functions, as well as the Strategy and Investors' relations departments.

Mr. Pascal Rouiller, 63, is a graduate of the *École Centrale de Paris*. He served as Corporate Officer from February 29, 2012 to January 4, 2017. Before that time, Mr. Rouiller served as Vice President for the Asia-Pacific region from May 1992 to September 1995, then as Vice President of our Product segment from October 1995 to December 1999. In 1999, he was appointed Chief Operating Officer of the Sercel Group and has acted as Chairman and Chief Executive Officer of Sercel SAS since September 2005. Mr. Rouiller is now Chairman of Sercel SAS, Sercel Holding SAS and CGG Services SAS, Chairman of the Board of Directors of Sercel (Beijing) Technological Services Co. Ltd. and of Sercel Australia Pty. Ltd., Chairman of the Board of Sercel Canada Ltd., Chairman of the Board of Directors of Hebei Sercel Junfeng Geophysical Prospecting Equipment Co. Ltd., Director of Sercel Singapore Private Ltd., Director and Chief Executive Officer of Sercel Inc., and Director of Seabed Geosolutions B.V. (a Dutch company 40% held by the CGG Group). He is in charge of the Acquisition and Equipment Business Lines and of Risk Management/HSE/Sustainable Development for the Group.

Ms. Sophie Zurquiyah, 50, served as Corporate Officer from September 1, 2015 to January 4, 2017. She has also been Senior Executive Vice President, GGR segment since February 4, 2013. She joined CGG after 21 years in the oilfield services industry, working for Schlumberger in P&L and in positions covering R&D and Operations, in France, the United States and Brazil. Her most recent roles include Chief Information Officer (CIO), President of Data and Consulting Services that provided Processing, Interpretation and Consulting services for most of Schlumberger's Business Lines, and Vice President of Sustaining Engineering that included

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all support and improvements to commercial products, services and technologies worldwide. She serves as Senior Executive Vice President of CGG Services (U.S.) Inc. She is in charge of the GGR Business Lines, Global Operational Excellence and Technology.

Mr. David Dragone, 41, is Executive Vice President, Human Resources, a position he has held since April 2013. Based in Paris, Mr. Dragone leads CGG's HR Corporate Function which assists and advises CGG management in their missions of developing the women and men of CGG, designing and implementing organizational changes, and supporting the business and its employees. Prior to this appointment David served as SVP, Talent Management & People Development. He began his career working for Schlumberger where he held various HR positions over a period of seven years, ranging from his first assignment as Compensation and Benefits Analyst to his last assignment with Schlumberger as HR Director for the EMEA region and for all the Product Centers of WesternGeco. He then worked for Areva for six years, where he held the position of VP, HR, first for its Mining Division and then for its Front End Division. Mr. Dragone graduated with a Master's in Economics from Paris Panthéon-Sorbonne University and a Master's in Human Resources from Paris Assas University.

Compensation

a) General principles

Pursuant to Article L.225-37 of the Commercial Code, the compensation of the Chairman of the Board, the Chief Executive Officer and the Corporate Officers (*Directeurs Généraux Délégués*) is defined by the Board of Directors upon proposal from the Appointment-Remuneration Committee.

The Chairman of the Board of Directors, the Chief Executive Officer and the three Corporate Officers who served over the 2016 fiscal year (*Directeurs Généraux Délégués*) will be hereinafter referred to as the "Executive Officers".

The positioning of the compensation of the Executive Officers of the Company is regularly reviewed against the Company's sector and comparable compensation markets on the basis of studies carried out by specialized external firms.

Chairman of the Board of Directors

The compensation of Mr. Remi Dorval, who has been Chairman of the Board of Directors since June 4, 2014, is composed of a fixed element and a fixed amount of Directors' fees. He does not benefit from any other kind of compensation.

Chief Executive Officer and Corporate Officers

The Board of Directors and the Appointment-Remuneration Committee pay particular attention to ensure that the compensation policy applied is linked to the performance of the Company and focuses on creating long-term value and the fulfillment of annual financial objectives. Consequently, significant weight is given to the variable component of the compensation package, in both the short term and the long term, whereas a lower weight is assigned to the fixed component, as compared to general market practice.

The annual short term aggregate compensation includes a fixed element, a variable bonus and benefits in kind (company car). The bonus for a given fiscal year is determined and paid during the first semester of the following fiscal year. The target amount of the short term variable incentive (the target being paid when 100% of the quantitative and qualitative objectives are achieved) applied to the Chief Executive Officer and the Corporate Officers is expressed as a percentage of the fixed part of the compensation. It is equal to 100% of the fixed salary for the Chief Executive Officer and to 75% of the fixed salary for the Corporate Officers.

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Finally, in case of financial overachievement, the allocation of short term variable incentive compensation may involve:

the quantitative criteria (financial objectives) for a maximum of 133.3% of the fixed salary for the Chief Executive Officer and of 100% of the fixed salary for the Corporate Officers, and

the qualitative criteria (individual objectives) for a maximum of 66.6% of the fixed salary for the Chief Executive Officer and of 50% of the fixed salary for the Corporate Officers.

The long term compensation (incentive plans) is based on the multi-annual performance of the Company.

b) Annual fixed and variable compensation of the Executive Officers for 2015 and 2016 fiscal years

Compensation of Mr. Remi Dorval, Chairman of the Board of Directors

The gross fixed compensation earned by and paid by the Company and its subsidiaries to Mr. Remi Dorval, Chairman of the Board of Directors, for fiscal years 2015 and 2016, is set forth in the table below.

For fiscal year 2015, during a meeting held on March 26, 2015, the Board of Directors resolved that Mr. Dorval would benefit, as Chairman of the Board of Directors, from a fixed amount of Directors' fees, set at 65,000, and from a fixed remuneration set at 115,000. In addition, he benefited from a benefit in kind (company car), the value of which was deducted from his fixed compensation.

For fiscal year 2016, the Board of Directors resolved that Mr. Dorval would benefit, as Chairman of the Board of Directors, from a fixed amount of Directors' fees, set at 57,200 per year, and from a fixed remuneration set at 109,750 per year. In addition, he benefited from a benefit in kind (company car), corresponding to 3,360 per year, in addition to his fixed compensation.

Remi Dorval <u>Chairman of the Board of Directors</u>	2015		2016	
	Amounts earned	Amounts paid	Amounts earned	Amounts paid
Fixed compensation	112,001.22	112,001.22	109,750.00	109,750.00
Annual variable compensation	N/A	N/A	N/A	N/A
Multi-annual variable compensation	N/A	N/A	N/A	N/A
Exceptional compensation	N/A	N/A	N/A	N/A
Retirement Indemnity	N/A	N/A	N/A	N/A
Director' s fees	65,000.00 ⁽¹⁾	78,395.82 ⁽²⁾	57,700.00 ⁽³⁾⁽⁴⁾	65,000.00 ⁽¹⁾
Benefits in kind	2,560.00	2,560.00	3,360.00	3,360.00
Total	179,561.22	192,957.04	170,810.00	178,110.00

⁽¹⁾ Paid in January 2016 for fiscal year 2015.

⁽²⁾ Paid in January 2015 for fiscal year 2014.

⁽³⁾ Paid in February 2017 for fiscal year 2016.

⁽⁴⁾ Includes an amount of 500 as travel indemnity according to the Directors' compensation principles described below.

For fiscal year 2017, upon the recommendation of the Appointment-Remuneration Committee, during a meeting held on April 6, 2017, the Board of Directors resolved that Mr. Dorval would benefit, as Chairman of the Board of Directors, from a fixed remuneration set at 115,000 per year, to which the actual amount borne by the Company with respect to his company car will be deducted. This benefit in kind (company car) amounts to 3,360. The fixed amount of Directors' fees for the 2017 fiscal year will be set at 57,200, subject to the approval of the global envelope of Directors' fees by the General Meeting to be convened to approve the 2016 financial statements.

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Compensation of Mr. Jean-Georges Malcor, Chief Executive Officer

The variable part of the Chief Executive Officer's compensation is based on qualitative criteria (individual objectives), accounting for a third of the variable compensation, and quantitative criteria (financial objectives), accounting for two-thirds of the variable compensation. His target amount was set at 100% of his fixed compensation.

For fiscal year 2015, during a meeting held on March 26, 2015, the Board of Directors resolved that the variable compensation of Mr. Malcor would be composed as follows:

Quantitative criteria based on the achievement of budget objectives: Group free cash flow (25% weighting), Group external revenues (25% weighting), Group EBIT (25% weighting), and EBITDAS minus tangible and intangible investments made in the course of the fiscal year (25% weighting);

Qualitative criteria based on the achievement of individual objectives, related to Group governance, implementation of our Group transformation plan, relations with our major customers, shareholders and financial market, our promotion and development in the industry, operational performance and human resources.

The level of achievement for each objective was determined by the Board of Directors but is not disclosed for confidentiality reasons.

In 2015, Mr. Jean-Georges Malcor's objectives were achieved at 76% of the target amount of his variable compensation and of his fixed compensation.

For fiscal year 2016, during a meeting held on March 24, 2016, the Board of Directors resolved that the variable compensation of Mr. Malcor would be composed as follows:

Quantitative criteria based on the achievement of budget objectives: Group free cash flow (25% weighting), Group external revenues (25% weighting), Group operating income (25% weighting), and EBITDAS minus tangible and intangible investments made in the course of the fiscal year (25% weighting);

Qualitative criteria based on the achievement of individual objectives, related to the implementation of the Group transformation plan, the relations with our major customers, the relations with the Board of Directors, the shareholders and the financial community, strategy and development of the Group in the industry and outside the oil and gas industry, human resources and the improvement of the Group HSE performance.

The level of achievement for each objective was determined by the Board of Directors but is not disclosed for confidentiality reasons.

In 2016, Mr. Jean-Georges Malcor's objectives were achieved at 61% of the target amount of his variable compensation and of his fixed compensation. The gross fixed and variable compensations paid by the Company and its subsidiaries to Mr. Jean-Georges Malcor in fiscal years 2015 and 2016 are set forth below:

Jean-Georges Malcor Chief Executive Officer	2015		2016	
	Amounts earned	Amounts paid	Amounts earned	Amounts paid
Fixed compensation	630,000.00	630,000.00	630,000.00	630,000.00
Annual variable compensation	480,087.00	233,100.00 ⁽¹⁾	384,216.00 ⁽²⁾	480,087.00 ⁽³⁾
Multi-annual variable compensation ⁽⁴⁾	N/A	N/A	N/A	N/A
Exceptional compensation	N/A	N/A	N/A	N/A
Director's fees	N/A	N/A	N/A	N/A
Benefits in kind	11,880.00	11,880.00	11,880.00	11,880.00
Total	1,121,967.00	874,980.00	1,026,096.00	1,121,967.00

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- (1) *Paid in March 2015 for fiscal year 2014.*
- (2) *Paid in March 2017 for fiscal year 2016.*
- (3) *Paid in March 2016 for fiscal year 2015.*
- (4) *Additional details on the multi-annual variable compensation implemented on June 25, 2015 and June 23, 2016 are provided below. No compensation was earned or paid pursuant to this mechanism in 2015 and 2016.*

For fiscal year 2017, upon the recommendation of the Appointment-Remuneration Committee, during a meeting held on April 6, 2017, the Board of Directors decided to maintain the amounts of the fixed compensation and benefit in kind (company car) for Mr. Malcor, which were set at 630,000 and 11,880, respectively. With respect to his variable compensation for 2017, the quantitative criteria will be based on the achievement of budget objectives, as follows: Group free cash flow (25% weighting), Group external revenues (25% weighting), Group EBITDAS minus tangible and intangible investments made during the fiscal year (25% weighting), and Group operating income (25% weighting). The level of achievement for each objective will be precisely determined by the Board of Directors but is not disclosed for confidentiality reasons.

Corporate Officers (Directeurs Généraux Délégués)

Stéphane-Paul Frydman

The variable part of Mr. Frydman's compensation is based on qualitative criteria (individual objectives), accounting for a third of the variable compensation, and quantitative criteria (financial objectives), accounting for two-thirds of the variable compensation. His target amount was set at 75% of his fixed compensation.

For fiscal year 2015, during a meeting held on March 26, 2015, the Board of Directors resolved that the variable compensation of Mr. Frydman would be composed as follows:

Quantitative criteria based on the achievement of budget objectives: Group free cash flow (25% weighting), Group external revenues (25% weighting), Group EBIT (25% weighting), and EBITDAS minus tangible and intangible investments made in the course of the fiscal year (25% weighting);

Qualitative criteria based on the achievement of individual objectives, related to Group governance, internal control, management of our financial resources, relations with investors and the financial market as a whole, strategy and management of our capital employed and human resources.

The level for achievement of each objective was determined by the Board of Directors but is not disclosed for confidentiality reasons.

In 2015, Mr. Frydman's objectives were achieved at 76% of the target amount of his variable compensation and 57% of his fixed compensation.

For fiscal year 2016, during a meeting held on March 24, 2016, the Board of Directors resolved that the variable compensation of Mr. Frydman would be composed as follows:

Quantitative criteria based on the achievement of budget objectives: Group free cash flow (25% weighting), Group external revenues (25% weighting), Group operating income (25% weighting), and EBITDAS minus tangible and intangible investments made in the course of the fiscal year (25% weighting);

Qualitative criteria based on the achievement of individual objectives, related to Group governance, internal control, management of our financial resources, relations with investors and the financial market as a whole, strategy and management of our capital employed and human resources.

The level for achievement of each objective was determined by the Board of Directors but is not disclosed for confidentiality reasons.

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In 2016, Mr. Frydman's objectives were achieved at 61% of the target amount of his variable compensation and 46% of his fixed compensation.

The gross fixed and variable compensations paid by the Company and its subsidiaries to Mr. Frydman in fiscal years 2015 and 2016 are set forth below:

Stéphane-Paul Frydman Corporate Officer	2015		2016	
	Amounts earned	Amounts paid	Amounts earned	Amounts paid
Fixed compensation	346,080.00	346,080.00	346,080.00	346,080.00
Fixed compensation as Executive Officer	80,000.00	80,000.00	80,000.00	80,000.00
Annual variable compensation	243,522.00	131,020.00 ⁽¹⁾	194,892.00 ⁽²⁾	243,522.00 ⁽³⁾
Multi-annual variable compensation ⁽⁴⁾	N/A	N/A	N/A	N/A
Exceptional compensation	N/A	N/A	N/A	N/A
Director's fees	N/A	N/A	N/A	N/A
Benefits in kind	4,800.00	4,800.00	4,800.00	4,800.00
Total	674,402.00	561,900.00	625,772.00	674,402.00

⁽¹⁾ Paid in March 2015 for fiscal year 2014.

⁽²⁾ Paid in March 2017 for fiscal year 2016.

⁽³⁾ Paid in March 2016 for fiscal year 2015.

⁽⁴⁾ Additional details on the multi-annual variable compensation implemented on June 25, 2015 and June 23, 2016 are provided below. No compensation was earned or paid pursuant to this mechanism in 2015 and 2016.

Pascal Rouiller

The variable part of Mr. Rouiller's compensation is based on qualitative criteria (individual objectives), accounting for a third of the variable compensation, and quantitative criteria (financial objectives), accounting for two-thirds of the variable compensation. His target amount was set at 75% of his fixed compensation.

For fiscal year 2015, during a meeting held on March 26, 2015, the Board of Directors resolved that the variable compensation of Mr. Rouiller would be composed as follows:

Quantitative criteria based on the achievement of budget objectives: Group free cash flow (25% weighting), Group external revenues (12.5% weighting), Group EBITDAS minus tangible and intangible investments made during the fiscal year (12.5% weighting), Equipment EBITDAS minus tangible and intangible investments made during the fiscal year (12.5% weighting), Equipment segment production (12.5% weighting), Group EBIT (12.5% weighting), and Equipment segment EBIT (12.5% weighting);

Qualitative criteria based on the achievement of individual objectives, related to HSE, our Group performance plan, technology, strategic development of the Equipment segment and human resources.

The level of achievement for each objective was determined by the Board of Directors but is not disclosed for confidentiality reasons.

In 2015, Mr. Rouiller's objectives were achieved at 67% of the target amount of his variable compensation and 50% of his fixed compensation.

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For fiscal year 2016, during a meeting held on March 24, 2016, the Board of Directors resolved that the variable compensation of Mr. Rouiller would be composed as follows:

Quantitative criteria based on the achievement of budget objectives: Group free cash flow (25% weighting), Group external revenues (25% weighting), Group operating income (25% weighting), and EBITDAS minus tangible and intangible investments made in the course of the fiscal year (25% weighting);

Qualitative criteria based on the achievement of individual objectives, related to the execution of the Group transformation plan, the relations with the customers, the Board of Directors, shareholders and investors, strategy and future development of the Group, human resources and HSE performance.

The level of achievement for each objective was determined by the Board of Directors but is not disclosed for confidentiality reasons.

In 2016, Mr. Rouiller's objectives were achieved at 61% of the target amount of his variable compensation and 46% of his fixed compensation.

The gross fixed and variable compensations paid by the Company and its subsidiaries to Mr. Pascal Rouiller, in fiscal years 2015 and 2016 are set forth below:

Pascal Rouiller	2015		2016	
	Amounts earned	Amounts paid	Amounts earned	Amounts paid
Corporate Officer				
Fixed compensation	346,080.00 ⁽¹⁾	346,080.00 ⁽¹⁾	346,080.00 ⁽¹⁾	346,080.00 ⁽¹⁾
Fixed compensation as Executive Officer	80,000.00	80,000.00	80,000.00	80,000.00
Annual variable compensation	213,844.00	120,368.00 ⁽²⁾	194,892.00 ⁽³⁾	213,844.00 ⁽⁴⁾
Multi-annual variable compensation ⁽⁵⁾	N/A	N/A	N/A	N/A
Exceptional compensation	N/A	N/A	N/A	N/A
Director's fees	N/A	N/A	N/A	N/A
Benefits in kind	5,280.00	5,280.00	5,280.00	5,280.00
Total	645,244.00	551,728.00	626,252.00	645,244.00

⁽¹⁾ Including 12,000 paid pursuant to his position as Executive Officer in Sercel SAS.

⁽²⁾ Paid in March 2015 for fiscal year 2014.

⁽³⁾ Paid in March 2017 for fiscal year 2016.

⁽⁴⁾ Paid in March 2016 for fiscal year 2015.

⁽⁵⁾ Additional details on the multi-annual variable compensation implemented on June 25, 2015 and June 23, 2016 are provided below. No compensation was earned or paid pursuant to this mechanism in 2015 and 2016.

Sophie Zurquiyah

Ms. Sophie Zurquiyah has been appointed Corporate Officer from September 1, 2015 to January 4, 2017. The Board of Directors resolved that, in addition to her duties as Corporate Officer, she would continue her employment contract with CGG Services (U.S.) Inc. (a US subsidiary of CGG SA), i.e. the supervision of the Subsurface Imaging, Multi-client New Ventures, GeoSoftware and GeoConsulting Business Lines. Such position being technically distinct from her position as Corporate Officer, she continued to benefit from a distinct compensation for such services. The compensation due in respect of her employment contract with CGG Services (U.S.) Inc. was not amended after her appointment as Corporate Officer. The Board of Directors resolved to allocate a fixed compensation amounting to 80,000.00 per year to Ms. Sophie Zurquiyah for her position as Corporate Officer.

For fiscal years 2015, Ms. Sophie Zurquiyah did not receive any other variable compensation than the one due for her position as Chief Operating Officer.

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For fiscal year 2016, the variable part of Ms. Sophie Zurquiyah's compensation is based on qualitative criteria (individual objectives), accounting for a third of the variable compensation, and quantitative criteria (financial objectives), accounting for two-thirds of the variable compensation. Her target amount was set at 75% of her fixed compensation. The variable compensation of Ms. Zurquiyah was composed as follows:

Quantitative criteria based on the achievement of budget objectives: Group free cash flow (25% weighting), Group external revenues (25% weighting), Group operating income (25% weighting), and EBITDAS minus tangible and intangible investments made in the course of the fiscal year (25% weighting);

Qualitative criteria based on the achievement of individual objectives, related to the operational, financial, quality and HSE performance of the GGR Business Lines, the execution of the Group transformation plan, the strategic development of GGR, the proper operation of the technology and shared support functions of CGG, and human resources.

The level of achievement for each objective was determined by the Board of Directors but is not disclosed for confidentiality reasons.

In 2016, Ms. Zurquiyah's objectives were achieved at 61% of the target amount of her variable compensation and 45.5% of her fixed compensation.

The gross fixed and variable compensations paid by the Company and its subsidiaries to Ms. Zurquiyah, in fiscal years 2015 and 2016 are set forth below:

Sophie Zurquiyah	2015		2016	
	Amount searned	Amount spaid	Amount searned	Amount spaid
Corporate Officer				
Fixed compensation	448,915.00 ⁽¹⁾	448,915.00 ⁽¹⁾	452,200.00 ⁽²⁾	452,200.00 ⁽²⁾
Fixed compensation as Executive Officer	26,668.00 ⁽³⁾	26,668.00 ⁽³⁾	80,000.00	80,000.00
Annual variable compensation	248,073.81 ⁽⁴⁾	206,051.00 ⁽⁴⁾⁽⁵⁾	242,164.00 ⁽⁶⁾	249,898.00 ⁽⁷⁾
Multi-annual variable compensation ⁽⁸⁾	N/A	N/A	N/A	N/A
Exceptional compensation	N/A	N/A	N/A	N/A
Director's fees	N/A	N/A	N/A	N/A
Benefits in kind	N/A	N/A	N/A	N/A
Total	723,656.81	681,634.00	774,364.00	782,098.00

⁽¹⁾ The fixed compensation of Ms. Zurquiyah pursuant to her employment agreement is paid in US dollars. The above information is presented in euros, based on an average US\$/ exchange rate of 0.8978 over the fiscal year 2015.

⁽²⁾ The fixed compensation of Ms. Zurquiyah pursuant to her employment agreement is paid in US dollars. The above information is presented in euros, based on an average US\$/ exchange rate of 0.9044 over the fiscal year 2016.

⁽³⁾ Ms. Zurquiyah was appointed as Corporate Officer as of September 1, 2015. Therefore, the fixed compensation in this respect was paid on a prorated basis as of September 1, 2015.

⁽⁴⁾ The annual variable compensation of Ms. Zurquiyah relating to 2015 was paid in US dollars. The above information is presented in euros, based on an average US\$/ exchange rate of 0.8978 over the fiscal year 2015.

⁽⁵⁾ Paid in March 2015 for fiscal year 2014. This annual variable compensation relates to her employment agreement only.

⁽⁶⁾ Paid in March 2017 for fiscal year 2016. This annual variable compensation relates to her employment agreement only. No annual variable compensation was paid to Ms. Zurquiyah in the course of 2017 pursuant to her position as Corporate Officer which was terminated on January 4, 2017. The annual variable compensation paid in 2017 to Ms. Zurquiyah was paid in US dollars. The above information is presented in euros, based on an average US\$/ exchange rate of 0.9044 over the fiscal year 2016.

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- (7) *Paid in March 2016 for fiscal year 2015. This annual variable compensation relates to her employment agreement only. No annual variable compensation was paid to Ms. Zurquiyah in the course of 2016 pursuant to her position as Corporate Officer. The annual variable compensation paid in 2016 to Ms. Zurquiyah was paid in US dollars. The above information is presented in euros, based on an average US\$/ exchange rate of 0.9044 over the fiscal year 2016.*
- (8) *Additional details on the multi-annual variable compensation implemented on June 25, 2015 and June 23, 2016 are provided below. No compensation was earned or paid pursuant to this mechanism in 2015 and 2016.*

Multi-annual bonus plan in the form of performance units

On June 25, 2015, and June 23, 2016, the Board of Directors of the Company, upon the Appointment-Remuneration Committee' s proposal, implemented a multi-annual bonus system in the form of performance units, replacing the performance shares plans with a twofold objective:

Implementation of a globally harmonized remuneration mechanism consistent with the growing internalization of our Group, and

Establishment of a closer link between the remuneration of the main senior executives and the share price and overall economic performance of the Group taken as a whole on a mid-term basis (three years).

The Corporate Committee members (including the Chief Executive Officer and the Corporate Officers) along with the senior executives of the Group and certain additional employees that contributed to the Group performance or that have strong evolution potential within the Group are eligible for the plan.

The performance units vest upon the expiry of a three-year period from the allocation date subject to a presence condition in the Group at the time of vesting and achievement of certain performance conditions. These performance conditions are based on precise and predetermined qualitative criteria, which are not described in this report for confidentiality concerns. These performance conditions, each conditioning the vesting of 50% of the allocation, are based on the achievement of Group objectives related to the return on capital employed and balance sheet structure along with achievement of business segments' financial objectives aligned with the Group strategic orientations over a three-year period.

The number of vested performance units under these two plans is based on achievement of the Group objectives up to 60% of the global allocation. The balance is allocated based on the achievement of the segments' objectives.

The valuation of each vested performance unit under these two plans shall be equal to the average closing price of CGG shares on Euronext over the five trading days prior to the vesting date. The vested performance units will be paid half in cash and half in existing CGG shares.

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The performance units allocated to the Chief Executive Officer and the Corporate Officers by the Board of Directors on June 25, 2015 and June 23, 2016 are set forth below:

<u>Name of the Executive Officer</u>	<u>Date of Board meeting</u>	<u>Maximum number of Performance Units</u>	<u>Valuation of performance units pursuant to the method used for consolidated financial statements ()</u>	<u>Acquisition date</u>
Jean-Georges MALCOR <i>Chief Executive Officer</i>	06.25.2015	27,500	68,000	06.25.2018
Stéphane-Paul FRYDMAN <i>Corporate Officer</i>	06.25.2015	12,500	31,000	06.25.2018
Pascal ROUILLER <i>Corporate Officer</i>	06.25.2015	12,500	31,000	06.25.2018
Sophie ZURQUIYAH <i>Corporate Officer</i>	06.25.2015 ^(a)	10,000	25,000	06.25.2018
Jean-Georges MALCOR <i>Chief Executive Officer</i>	06.23.2016	108,960	63,000	06.23.2019
Stéphane-Paul FRYDMAN <i>Corporate Officer^(b)</i>	06.23.2016	49,600	29,000	06.23.2019
Pascal ROUILLER <i>Corporate Officer^(b)</i>	06.23.2016	49,600	29,000	06.23.2019
Sophie ZURQUIYAH <i>Corporate Officer^(b)</i>	06.23.2016	49,600	29,000	06.23.2019

^(a) As of the date of this plan, Ms. Zurquiyah was not yet Executive Officer of the Company.

^(b) The Board of Directors, in its meeting held on January 4, 2017, resolved to terminate the office of Messrs. Frydman and Rouiller and of Ms. Zurquiyah as Corporate Officers.

Corporate Committee

As of December 31, 2016, the compensation of the members of Corporate Committee consists of a fixed element and a bonus.

The variable part of this compensation is based on the achievement of Group's financial objectives such as the operating income, free cash flow and external revenues of the Group, as well as on the achievement of commercial and financial objectives within each segment of the Group and their respective heads. This variable part is also based on the achievement of qualitative individual objectives.

Considering the importance of this variable part, the amount of the Corporate Committee members' compensation may significantly vary from one year to another. The variable part is set and paid the following year, in March.

The aggregate compensation of our Corporate Committee, including the Executive Officers paid in fiscal year 2016 was 3,548,207 including the benefits in kind but excluding Directors' fees, if any.

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Contractual indemnity in case of termination

Chief Executive Officer

Agreement in force until January 4, 2017

On June 4, 2014, the Board of Directors renewed the term of office of Mr. Jean-Georges Malcor for a three-year period, and also renewed, for the duration of his term in office, the terms and conditions of the advantages granted to Mr. Jean-Georges Malcor in case of termination of his term of office, which were previously approved by the Board of Directors on May 10, 2012 and ratified at the General Meeting of May 3, 2013. The renewal of the advantages was ratified at the General Meeting held on May 29, 2015.

These advantages are the following:

Mr. Jean-Georges Malcor does not benefit from any contractual termination indemnity, except in case of a forced departure relating to a change of control or a change of strategy. In such case, his indemnity shall be equal to the difference between:

- (i) a gross amount of 200% of the gross fixed compensation paid by the Company to Mr. Jean-Georges Malcor during the 12-month period preceding his departure date, to which is added the annual average of the variable compensation paid by the Company to Mr. Jean-Georges Malcor over the 36-month period preceding his departure date, (hereinafter “the Reference Annual Compensation”), and
- (ii) any sum to which Mr. Jean-Georges Malcor may be entitled as a result of his departure from the Group, including any sums to be paid pursuant to his non-competition agreement.

The indemnity global amount shall not exceed 200% of the Reference Annual Compensation.

Pursuant to Article L.225-42-1 of the Commercial Code, the payment of the special termination indemnity referred to hereinabove shall remain subject to the achievement of the following performance conditions, related to the Company’s performance:

The average, calculated over the 60 trading days preceding the departure date, of the ratio of the CGG ADS price over the PHLX Oil Service SectorSM (OSXSM) index shall equal at least two-thirds of the same average ratio over the same 60-day period four years before the date on which Mr. Malcor leaves the Group;

The average, calculated over the 60 trading days preceding the departure date, of the ratio of the CGG share price over the SBF 120 index shall equal at least two-thirds of the same average ratio over the same 60-day period four years before the date on which Mr. Malcor leaves the Group;

The average margin rate of the Group EBITDAS over the four years preceding the date on which Mr. Malcor leaves the Group shall be at least 25%.

Payment of the full amount of the special termination indemnity is subject to the fulfillment of two out of three aforementioned conditions. If only one condition is fulfilled, then Mr. Jean-Georges Malcor will be entitled to receive only 50% of the special termination indemnity.

Finally, pursuant to said Article L.225-42-1 of the French Commercial Code in particular, the Board of Directors shall verify prior to the payment of the special severance payment (i) that the performance conditions described above are duly fulfilled and (ii) that the payment of such special termination indemnity complies with the Corporate Governance Code applicable at the date of departure.

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Amended agreement dated January 4, 2017:

On January 4, 2017, the Board of Directors amended the triggering events and the performance conditions of the advantages granted to Mr. Jean-Georges Malcor in case of termination of his term of office. They are now as follows:

Mr. Jean-Georges Malcor is entitled to receive the special termination indemnity in case of dismissal, non-renewal of his term of office or in any other event of a forced departure linked to a change of control resulting in a substantial change in situation or a change of strategy.

The payment of the special termination indemnity will depend on the level of the average rate of achievement of the objectives relating to Mr. Jean-Georges Malcor's variable compensation calculated over the three financial years preceding his departure date as follows:

If such average rate is below 40%, no special termination indemnity will be paid;

If such average rate is higher than 40%, the special termination indemnity will be equal to 100% of the Reference Annual Compensation.

The other provisions of the agreement remain unchanged.

Pursuant to said Article L.225-42-1 of the French Commercial Code, this amended agreement shall be subject to the ratification of the General Meeting convened to approve the 2016 financial statements.

Corporate Officers (Directeurs Généraux Délégués)

The benefits to be granted to Messrs. Frydman and Rouiller in the case of their departure from the Group were renewed by the Board of Directors on February 25, 2015 upon renewal of their term of office and were ratified by the General Meeting of May 29, 2015.

The benefits to be granted to Ms. Zurquiyah in the case of departure from the Group were approved by the Board of Directors on July 30, 2015 and were ratified during the General Meeting of May 27, 2016.

These benefits include the following:

Messrs. Frydman and Rouiller and Ms. Zurquiyah will benefit from a special termination indemnity in the event of a forced departure relating to a change of control or a change of strategy. The amount of such indemnity shall be equal to the difference between:

- (i) a gross amount of 200% of the gross fixed compensation paid by the Company and/or any of its affiliates during the 12-month period preceding their departure date, to which is added the annual average of the variable compensation paid by the Company and/or any of its affiliates over the 36-month period preceding their departure date (hereinafter "the Reference Annual Compensation"), and
- (ii) any other amounts to which they may claim in case of departure from the Group, particularly, the indemnities that could be paid in connection with their non-compete agreement referred to below.

The global amount of such special termination indemnity shall not exceed 200% of the Reference Annual Compensation.

In accordance with Article L.225-42-1 of the French Commercial Code, payment of the special termination indemnity is subject to performance conditions to be assessed with regard to the Company's performance based on the fulfillment of at least two of the following three objectives:

The average of the ratio between the CGG ADS price over the PHLX Oil Service SectorSM (OSXSM) index over the 60 trading days preceding the date of departure shall equal at least two-thirds of the same average ratio assessed over the same period of 60 trading days four years before the beneficiary leaves the Group;

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The average of the ratio of the CGG share price over the SBF 120 index over the 60 trading days preceding the date of departure shall equal at least two-thirds of the same average ratio assessed over the same period of 60 trading days four years before the beneficiary leaves the Group;

The average Group EBITDAS margin over the four years preceding the date of departure shall be at least 25%.

Payment of the full amount of the special termination indemnity is subject to the fulfillment of two out of three aforementioned conditions. Should only one of the conditions be fulfilled, then the beneficiary would only be entitled to 50% of his/her special termination indemnity.

Finally, pursuant to said Article L.225-42-1 of the French Commercial Code in particular, the Board of Directors shall verify prior to the payment of the special severance payment (i) that the performance conditions described above are duly fulfilled and (ii) that the payment of such special termination indemnity complies with the Corporate Governance Code applicable at the date of departure.

Non-compete agreement

Chief Executive Officer

On June 30, 2010, the Board of Directors approved, in accordance with procedures applicable to related party agreements and provided for by Article L.225-38 et seq. of the French Commercial Code, the signature of a non-compete agreement between the Company and Mr. Jean-Georges Malcor. This agreement was ratified by the General Meeting held on May 4, 2011.

This non-compete agreement applies to any geophysical data acquisition, processing or interpretation services or the provision of equipment or products designed for the acquisition, processing or interpretation of geophysical data. Mr. Jean-Georges Malcor has agreed that he will not contribute to projects or activities in the same field as those in which he was involved at CGG for period of 18 months starting on the date on which he leaves the Group.

In consideration for this undertaking, Mr. Jean-Georges Malcor will be entitled to receive compensation corresponding to 100% of his Reference Annual Compensation as defined in the protection letters related to payment of the contractual indemnity in case of termination of his office.

Corporate Officers (Directeurs Généraux Délégués)

On February 29, 2012, the Board of Directors approved, in accordance with procedures applicable to related party agreements and provided for by Article L.225-38 et seq. of the French Commercial Code, the signature of a non-compete agreement between the Company and Messrs. Frydman and Rouiller.

This non-compete agreement applies to any geophysical data acquisition, processing or interpretation services or the provision of equipment or products designed for the acquisition, processing or interpretation of geophysical data. Messrs. Frydman and Rouiller have agreed that they will not contribute to projects or activities in the same field as those in which they were involved within the Group.

In consideration of this non-compete agreement, for a period of 18 months starting on the day on which they leave the Group, Messrs. Frydman and Rouiller would receive compensation corresponding to 100% of their annual reference remuneration as defined in their protection letter. This agreement was ratified by the General Meeting on May 10, 2012.

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Ms. Zurquiyah benefits from the same non-compete provision in the framework of her employment contract with CGG Services (U.S.) Inc.

General benefits plan

Chairman of the Board of Directors

On March 26, 2015, the Board of Directors approved, in accordance with procedures applicable to related party agreements and provided for by Article L.225-38 et seq. of the French Commercial Code, the extension of the Group's general benefits plan (applicable to all employees) to Mr. Remi Dorval. This agreement was ratified during General Meeting held on May 29, 2015.

Chief Executive Officer

On June 30, 2010, the Board of Directors approved, in accordance with procedures applicable to related party agreements and provided for by Article L.225-38 et seq. of the French Commercial Code, the extension of the Group's general benefits plan (applicable to all employees) to Mr. Jean-Georges Malcor. This agreement was ratified by the General Meeting held on May 4, 2011.

Corporate Officers (Directeurs Généraux Délégués)

On February 29, 2012, the Board of Directors approved, in accordance with procedures applicable to related party agreements and provided for by Article L.225-38 et seq. of the French Commercial Code, the application of the collective benefit plan applicable to all employees of the Group to Messrs. Frydman and Rouiller. This agreement was ratified during the General Meeting on May 10, 2012.

On March 2, 2016, the Board of Directors approved, in accordance with procedures applicable to related party agreements and provided for by Article L.225-38 et seq. of the French Commercial Code, the application of the collective benefit plan applicable to all employees of the Group to Ms. Zurquiyah. Accession to this benefit plan is compulsory since, as Corporate Officer, Ms. Zurquiyah receives a remuneration from the Company. This agreement was ratified during the General Meeting held on May 27, 2016.

Individual insurance covering loss of employment

Pursuant to the procedure applicable to related-party agreements set forth by Article L.225-38 et seq. of the French Commercial Code, the Board of Directors authorized, on June 30, 2010, the Company to subscribe with GSC Gan, as from July 1, 2010, an individual insurance policy covering loss of employment, in favor of Mr. Jean-Georges Malcor. The annual subscription fee payable by the Company amounts to 10,571.13 for 2016. This insurance provides for the payment of a maximum of 13.4% of his 2016 target compensation (corresponding to 169,910), for a duration of 12 months. This agreement was ratified during the General Meeting held on May 4, 2011.

Supplemental Retirement Plan

A supplemental retirement plan for the members of the Executive Committee of the Group (as composed prior to February 1, 2013) and the Management Board of Sercel Holding (as composed prior to April 19, 2012) (whom we refer to here as the "Beneficiaries") was implemented on December 8, 2004. This plan was closed to new comers on July 1, 2014.

The Chief Executive Officer and the Corporate Officers (except Ms. Zurquiyah) benefit from this plan. It is an additive defined benefit plan with a cap. Accruals are acquired per year of service, with a double limit:

potential rights are applied in addition to the mandatory basic and supplementary pension schemes but cannot, however, procure in aggregate for all schemes, a replacement rate exceeding 50%;

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potential rights are calculated on the basis of seniority with an upper limit of 20 years. They are accrued up to:

- 1.5% of the remuneration used as reference, per seniority year within the company and up to 20 years, for the portion of remuneration below 20 times the French Social security upper limit,
- 1% of the remuneration used as reference, per seniority year within the company and up to 20 years, for the portion of remuneration above 20 times the French Social security upper limit.

The remuneration used as reference is composed of the average fixed remuneration received by the beneficiary over the last three years of activity, increased by the short-term variable remuneration based on annual performance, pursuant to current policies in place within the Company.

In light of the cyclical nature of the seismic market, which may result in volatility in the variable component of remuneration, the average used for purposes of the plan is composed of the three highest payments received during the seven years preceding the date of retirement.

Furthermore, to participate in the plan, beneficiaries must comply with the following cumulative conditions:

have liquidated their social security pension and all possible other rights to pensions;

have at least five years of service as member of the Executive Committee of the Group (as composed prior to February 1, 2013) or of the Management Board of Sercel Holding (as composed prior to April 19, 2012) and until they were 55 years of age; and

end their professional career when leaving the Company.

The conditions relating to the age and length of service are assessed taking into account the service continuity within the new governance bodies of the Group.

As of December 31, 2016, the Company's commitment under the supplemental retirement plan for Mr. Jean-Georges Malcor, Chief Executive Officer, Mr. Stéphane-Paul Frydman and Mr. Pascal Rouiller, Corporate Officers, corresponds to an annual pension equal to 17%, 30% and 26% of their annual 2016 target compensation, respectively.

The aggregate present benefit value of this supplemental plan as of December 31, 2016 was 12,295,566 of which 833,983 has been recorded as an expense for fiscal year 2016.

Of such present benefit value, the portions relating to (i) Mr. Jean-Georges Malcor, Chief Executive Officer, are 3,004,684 and 352,812 respectively, (ii) Mr. Stéphane-Paul Frydman, Corporate Officer, are 2,081,369 and 169,189 respectively and (iii) Mr. Pascal Rouiller, Corporate Officer are 4,135,851 and 181,648 respectively.

Pursuant to her US employment contract, Ms. Sophie Zurquiyah benefits from a US supplemental retirement defined contribution plan (401k).

Directors' compensation

Directors (excluding our Chief Executive Officer) as a group received aggregate compensation of 584,280 in February 2017 (compared to a 680,000 envelope authorized by the General Meeting held on May 27, 2016) for services provided in their capacity as Directors during fiscal year 2016. This amount is divided into a fixed and variable component on the basis of one-third of the basic amount for function and two-thirds for presence as described hereafter. No amounts were set aside or accrued by us or our subsidiaries to provide pension, retirement or similar benefits to Directors except for our Chief Executive Officer ("Supplemental Retirement Plan").

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Allocation of the basic amount:

The fixed component is calculated on the basis of one share for each Director and an additional share as a Committee member. The remuneration of any Director appointed in the course of the year is calculated on a pro-rata temporis basis.

The variable component linked to the participation in committees and Board meetings is calculated on the basis of two shares for each meeting of the Board, one share for each committees or the Joint Committees, and 1.5 share for Board or Committee Chairs (this rule will apply as well to a Chairman attending a Joint Committee meeting of all committees). A Director who participates in a Board committee' s meeting as a guest does not receive any fee.

Allocation of the lump sum:

Audit Committee

In addition to the basic amount, a lump sum is allocated as follows:

10,000 for the Chairman of the Audit Committee;

5,000 for each other Audit Committee member, i.e. a global amount of 20,000 for 4 members.

Travel indemnity

A travel indemnity is also applicable to each Director (whatever his/her nationality), including for the annual Board seminar

2,000 per intercontinental travel;

500 per travel in the same continent.

Chairman of the Board of Directors

The Chairman benefits from a fixed amount of Directors' fees of 57,200. In addition, he receives a fixed compensation as Chairman amounting to 109,750. He also benefits from a company car, corresponding to an amount of 3,360 per year, in addition to his fixed compensation.

Chief Executive Officer

The Chief Executive Officer, who is also a Director of the Company, does not receive Directors' fees.

Stock options and performance shares

Pursuant to applicable law, Directors, except the Chief Executive Officer, are not entitled to be allocated stock options and/or performance shares of the Company.

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Non-Executive Directors

The following table sets forth the amounts CGG paid to its Directors, for the years ended December 31, 2015 and December 31, 2016:

<u>Name</u>	<u>Amount paid to</u> <u>CGG's Directors</u> <u>for fiscal year</u> <u>2016</u>	<u>Amount paid to</u> <u>CGG's Directors</u> <u>for fiscal year</u> <u>2015</u>
Olivier Appert ⁽¹⁾	n.a.	42,637.35
Bpifrance Participations ⁽²⁾	30,174.04	n.a.
Loren Carroll	54,837.40	69,686.99
Michael Daly ⁽³⁾	40,628.42	16,336.37
Jean-Yves Gilet ⁽⁴⁾	n.a.	18,326.50
Anne Guérin ⁽⁵⁾	23,983.35	43,856.86
Didier Houssin ⁽⁶⁾	52,349.44	26,358.11
Agnès Lemarchand	46,929.43	65,960.44
Gilberte Lombard	72,328.86	84,618.03
Hilde Myrberg	63,586.94	100,376.78
Robert F. Semmens	59,629.14	82,477.95
Kathleen Sendall	66,119.87	83,236.70
Daniel Valot ⁽⁷⁾	16,013.11	61,651.97
Terence Young ⁽⁸⁾	n.a.	36,133.49

⁽¹⁾ Mr. Appert resigned on July 30, 2015.

⁽²⁾ Bpifrance Participations was appointed by the General Meeting held on May 27, 2016.

⁽³⁾ Mr. Daly was appointed by cooptation in place of Mr. Young, on September 30, 2015.

⁽⁴⁾ Mr. Gilet resigned on April 15, 2015.

⁽⁵⁾ Ms. Guérin was appointed by cooptation in place of Mr. Gilet, on April 22, 2015. This appointment was ratified by the General Meeting held on May 25, 2015. Her office as Director ended after the General Meeting on May 27, 2016.

⁽⁶⁾ Mr. Houssin was appointed by cooptation in place of Mr. Appert, on July 30, 2015.

⁽⁷⁾ The office of Mr. Valot as Director ended after the General Meeting on May 27, 2016.

⁽⁸⁾ Mr. Young resigned on July 30, 2015.

As of December 31, 2016, our Directors and Executive Officers held an aggregate¹ of 16,236 shares and 467 ADS of CGG. As of December 31, 2016, none of our Directors and Executive Officers held, on an individual basis, shares and options representing 1% or more of our outstanding capital.

Board practices

The Company complies with the AFEP-MEDEF Code of corporate governance for listed companies (the "AFEP-MEDEF Code"). This Code is available on the website of the MEDEF (www.medef.fr).

The Appointment-Remuneration Committee and the Board review the qualification of the Directors as independent on an annual basis before release of the annual reports.

¹ This includes the number of shares held by Mrs. Anne Guérin in her capacity as permanent representative of the legal entity Bpifrance Participations, which is itself a Director of the Company. The number of shares directly held by Bpifrance Participations has not been taken into account for this calculation.

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In accordance with Article 8.2 of the AFEP-MEDEF Code, the Board of Directors considers that a Director is independent when he or she has no relationship of any kind whatsoever with the company, its group or its management that may impair his or her freedom of judgment. The Appointment-Remuneration Committee and the Board of Directors rely on the criteria set out by the AFEP-MEDEF Code to assess the independence of each Director as follows:

<i>Name of the Director</i>	Criterion no. 1	Criterion no. 2	Criterion no. 3	Criterion no. 4	Criterion no. 5	Criterion no. 6	Criterion no. 7	Qualification of independence established by the Board of Directors
Remi DORVAL	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Jean-Georges MALCOR	No	No	Yes	Yes	Yes	Yes	Yes	No
Loren CARROLL	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Michael DALY	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bpifrance Participations, represented by Anne GUERIN	Yes	Yes	Yes	Yes	Yes	Yes	No	No
Didier HOUSSIN	Yes	Yes	Yes	Yes	Yes	Yes	No	No
Agnès LEMARCHAND	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Gilberte LOMBARD	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Hilde MYRBERG	No	Yes	Yes	Yes	Yes	Yes	Yes	No
Robert SEMMENS	Yes	Yes	Yes	Yes	Yes	No	Yes	No
Kathleen SENDALL	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Daniel VALOT	Yes	Yes	Yes	Yes	Yes	No	Yes	No

Yes = compliance with the AFEP-MEDEF Code in relation to independence criteria

No = non-compliance with the AFEP-MEDEF Code in relation to independence criteria

These criteria are the following:

Criterion no. 1: not to be:

- an employee or an Executive Officer of the corporation, or
- an employee or an Executive Officer or a Director:
 - of a company consolidated by the corporation, or
 - of the company's parent company, or
 - of a company that the parent company consolidates

and not having been in such a position for the previous five years;

Criterion no. 2: not to be an Executive Officer of a company in which the corporation holds a directorship, directly or indirectly, on in which an employee appointed as such or an Executive Officer of the corporation (currently in office or having held such office during the last five years) is a Director;

Criterion no. 3: not to be a customer, supplier, investment banker or commercial banker:

that is material for the corporation or its group;

or for a significant part of whose business the corporation or its group accounts;

Criterion no. 4: not to be related by close family ties to an Executive Director;

Criterion no. 5: not to have been an auditor of the corporation within the past five years;

Criterion no. 6: not to have been a Director of the corporation for more than twelve years;

Criterion no. 7: not to represent a significant shareholder of the company holding more than 10% of the voting rights.

With regard to the criterion relating to the business relationship, there is no business relationship between, on the one hand, Directors and/or companies in which they hold an office and, on the other, the Company or its group. Therefore, in the absence of such a

relationship, in 2016, the Board of Directors did not have to assess the significant nature of any business relationship with regard to criteria determined in relation with the characteristics of the company and the business relationship in question.

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Finally, the Board of Directors also confirmed that Mr. Remi Dorval, who qualified as independent before his appointment as Chairman of the Board, continued to meet all of the criteria set out by the AFEP-MEDEF Code.

In its meeting held on March 2, 2017, the Board therefore confirmed that six out of the eleven Directors who were sitting on the Board at that time qualified as independent (i.e. more than half of the Board members, which is compliant with the recommendation of the AFEP-MEDEF Code¹): Ms. Agnès Lemarchand, Ms. Gilberte Lombard and Ms. Kathleen Sendall and Messrs. Loren Carroll, Remi Dorval and Michael Daly.

The Board of Directors carries out any controls and checks it deems appropriate.

In 2016, the Board of Directors of the Company met ten times. The average attendance rate of Directors at these meetings was 90.52%.

The table below summarizes the individual attendance rate of Directors in office at December 31, 2016 to the Board meetings.

Directors	Attendance rate to the Board meetings in	
	2016	
Remi DORVAL	100	%
Jean-Georges MALCOR	100	%
Loren CARROLL	80	%
Michael DALY	90	%
Anne GUERIN, permanent representative of Bpifrance Participations ⁽¹⁾	100	%
Didier HOUSSIN	90	%
Agnès LEMARCHAND	60	%
Gilberte LOMBARD	100	%
Hilde MYRBERG	90	%
Robert SEMMENS	90	%
Kathleen SENDALL	100	%

⁽¹⁾ Director since May 27, 2016

Statutory, consolidated and interim financial statements – Annual Shareholders' Meeting:

The Board approved the Company's annual financial statements and the 2015 consolidated annual financial statements and reviewed the interim quarterly and half-year results for fiscal year 2016 and the 2016 forecasts and the 2017 pre-budget. The Board also convened the General Meeting of Shareholders held in May 2016 and approved the reports and resolutions to be submitted to shareholders' approval.

Governance:

The Board approved the renewal of the Chairman's term until the General Meeting to be held to approve the financial statements of the fiscal year ending December 31, 2017. The Board also approved the amendments to its internal rules and regulations pursuant to Regulation (EU) no 596/2014 of the European Parliament and of the Council of April 16, 2014. The Board also approved the non-audit services pre approval policy and the amendments to the Audit Committee charter pursuant to the new European regulation on audit.

The Board reviewed the qualification of Directors as independent and the method of allocation of Directors' fees and the composition of the Board committees.

¹ The AFEP-MEDEF Code recommends that independent Directors should account for half the members of the Board of Directors in widely-held corporations without controlling shareholders.

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Compensation:

The Board approved the compensation components for the Senior Executive Officers for fiscal year 2016. The Board also decided to implement (i) a stock option plan for certain employees of the Group and a specific plan for the four serving Corporate Officers and the members of the Corporate Committee subject to performance conditions, and (ii) a performance units plan for certain employees of the Group and the members of the Corporate Committee, the allocation being subject to performance conditions.

The Board also determined that the performance conditions set out in the stock option plan dated June 26, 2012 applicable to the Senior Executive Officers and the former Executive Committee members (3rd batch), the stock option plan dated June 24, 2013 applicable to the Senior Executive Officers and the other members of the Corporate Committee (2nd batch) and in the stock option plan dated June 26, 2014 (1st batch) were not met.

Financial and strategic transactions:

The Board implemented a 350 million capital increase in cash with preferential subscription rights in favor of holders of existing shares, which was approved by the General Meeting on January 11, 2016. This capital increase was dedicated to financing the Transformation Plan. The Board also approved the amendments to the French revolving facility agreement and the US revolving facility agreement and implemented the related security agreements¹.

The Board also approved the strategic orientations of the group for 2016.

Finally, the Board, in accordance with the authority granted to it by the General Meeting, implemented (i) the reverse share split on the Company's shares by allocating one new ordinary share with a nominal value of 12.80 in exchange for 32 ordinary shares with a nominal value of 0.40 and (ii) the related share capital reduction through the diminution of the nominal value of the share.

The Internal Rules and Regulations of the Board of Directors define the composition, duties and operating procedures of the Board committees. The Audit Committee and the Appointment-Remuneration Committee have their own charter. They are appended to the Internal Rules and Regulations of the Board of Directors and are available on the Company's website (www.cgg.com).

Appointment-Remuneration Committee:

a) Responsibilities:

The responsibilities of this Committee in terms of propositions and/or recommendations to be made to the Board of Directors relate to:

1. the compensation to be paid to the Senior Executive Officers (“*mandataires sociaux*”) to be appointed from time to time, including the procedures for setting the variable part thereof and the grant of possible benefits in kind;
2. all provisions relative to the retirement of the Senior Executive Officers considered as “*mandataires sociaux*”;
3. for the “*mandataires sociaux*”, the deferred elements of the compensation packages (pension, severance payment) to be submitted to the Shareholders' Annual Meeting;
4. the evaluation of financial consequences on the Company's financial statements of all compensation elements for “*mandataires sociaux*”;
5. the contracts between the Company and a “*mandataire social*”;

¹ The general terms and conditions of these financial transactions were previously approved by the Board of Directors in December 2015.

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6. the possible candidacies for filling Director's positions, positions as Senior Executive Officer considered as "*mandataire social*" or positions as a member of a Board Committee.
7. the periodical review of the independence of Board members;
8. the Directors' fees level and their allocation rules;
9. the realization of capital increases reserved for the employees; and
10. the installation of cash and/or share compensation plans.

In addition to the responsibilities described above, this Committee is also in charge of:

1. examining compensation of the Corporate Committee ("C-Com") members and its evolution;
2. carrying out performance evaluation of the Board and its Committees;
3. carrying out performance evaluation of the Chairman of the Board and the Chief Executive Officer;
4. reviewing the succession planning process of C-Com members;
5. ensuring compliance of compensation and benefits policies with all applicable regulations;
6. reviewing the compensation data and other related information to be publicly disclosed by the Company in its annual reports and any other reports to be issued pursuant to applicable laws and regulations; and
7. approving the policy and process of verifying and reimbursing expenses of the Directors and the Senior Executive Officers ("*mandataires sociaux*").

The Committee may also consider any question submitted to it by the Chairman in connection with one of the matters mentioned above.

The work of the Committee is recorded in its minutes. The Committee reports to the Board on its proceedings after each meeting.

b) Composition:

As of the date of this report, the members of the Committee are as follows:

Kathleen Sendall (Chairman)(*)

Didier Houssin

Robert Semmens

Agnès Lemarchand (*)

(*) independent director

Until December 1, 2016, this Committee was composed of five members including three independent directors. Ms. Hilde Myrberg, having been appointed as Chairman of the Board of Directors of CGG Services (Norway) AS, the Norwegian operating subsidiary of the Group, she lost her quality of independent Director (application of criterion # 1 in the table relating to independence of Directors). As a result, Ms. Hilde Myrberg resigned from her position within the Appointment-Remuneration Committee which is now composed of four members of whom two are independent. Taking into consideration the expertise of its members, the presence of half of independent directors and the reasons for the lack of independence of the other two members (term exceeding 12 years for one and position of Executive Officer of a shareholder who became a minority shareholder, but acting jointly with Bpifrance Participations for the other), the Board considered that, in this new set up, the Committee was able to fulfil its tasks in a satisfactory manner independently of the management.

The Chairman of the Board and the Chief Executive Officer are involved in the work of the committee relating to the appointment of Directors.

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c) Activity:

In 2016, this Committee met seven times. The average meeting attendance rate was 77.14%.

During these meetings, the Committee examined, *inter alia*, (i) the compensation of the Chairman of the Board, of the Chief Executive Officer and of the Corporate Officers (“*Directeurs Généraux Délégués*”) and their 2016 objectives, (ii) the compensation of the other members of the C-Com, (iii) the amount of the Directors’ fees, (iv) the implementation of the new LTI program¹, (v) the report on the qualification of Directors as independent prior to its submission to the Board of Directors, (vi) the paragraphs in the annual reports’ (including the management report, *Document de Référence* and our annual report on Form 20-F) regarding the compensation of the “*mandataires sociaux*”, (vii) the 2016 bonus plans, (viii) the succession planning, (ix) the implementation of the evaluation process for the Board and the Chief Executive Officer, (x) the composition of Board and its Committees, and (xi) the appointment of Bpifrance Participations as Director.

Principles and rules to determine the remuneration of the Executive Officers:

Pursuant to Article L.225-37 of the Commercial Code, the compensation of the Chairman of the Board, the Chief Executive Officer and the Corporate Officers (*Directeurs Généraux Délégués*) is defined by the Board of Directors upon proposal from the Appointment-Remuneration Committee.

The setting of the compensation for the Chief Executive Officer and the Corporate Officers of the Company is regularly reviewed against the practices of other companies operating in the Company’s sector and in comparable compensation markets on the basis of studies carried out by specialized external firms.

Chairman of the Board of Directors:

The compensation of the Chairman of the Board of Directors comprised a fixed element (from which is deducted the amount of his benefit in kind (company car) and a fixed amount of Directors’ fees. He does not benefit from any other kind of compensation.

Chief Executive Officer and Corporate Officers:

The Board of Directors and the Appointment-Remuneration Committee pay particular attention to ensure that the compensation policy is linked to the performance of the Company and focuses on creating long-term value and the fulfillment of annual financial objectives (quantitative criteria) and the achievement of individual objectives (qualitative criteria). Consequently, significant weight is given in the structure of their compensation to the variable part of the compensation package, both short term and long term, whereas a lower weight is assigned to the fixed part compared to market practice.

The annual short term aggregate compensation includes a fixed element, a variable bonus and benefits in kind (company car). The bonus for a given fiscal year is determined and paid during the first semester of the following fiscal year. The target amount of the short term variable incentive (the target being paid when 100% of the quantitative and qualitative objectives are achieved) applied to the Chief Executive Officer and the Corporate Officers is expressed as a percentage of the fixed part of the compensation. It is equal to 100% of the fixed salary for the Chief Executive Officer and to 75% of the fixed salary for the three Corporate Officers.

Finally, in case of financial overachievement, the allocation of short term variable incentive compensation may involve:

the quantitative criteria (financial objectives) for a maximum of 133.3% of the fixed salary for the Chief Executive Officer and of 100% of the fixed salary for the Corporate Officers, and

¹ Descriptions of the stock option and performance unit plans implemented in 2016 are set forth in item 11 of the “2016 Additional Document” available on our website.

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the qualitative criteria (individual objectives) for a maximum of 66.6% of the fixed salary for the Chief Executive Officer and of 50% of the fixed salary for the Corporate Officers.

The long term compensation (incentive plans) is based on the multi-annual performance of the Company.

A detailed description of the compensations paid in 2016 to the Senior Executive Officers is set forth in the management report of Item 6 - Directors, Senior Management and Employees. Information relating to deferred severance indemnity and supplementary retirement plan are also included.

Technology/Strategy Committee:

a) Responsibilities:

The Technology/Strategy Committee's assignments are to study:

The company's strategic options and orientations in relation to technology, markets and business;

The technologic development strategy in the various business of the Group,

The broad lines of the Group's budget;

The intellectual property protection policy;

The main R&D programs;

The strategic M&A transactions;

The company's organic development;

The projects related to financial transactions;

The major investment transactions or disposal of assets.

The Committee regularly invites other Directors who are interested in its work, to participate in its assignments. The Committee reports on its work to the Board of Directors.

b) Composition:

As of the date of this report, the members of the Committee are as follows:

Remi Dorval(*) (Chairman)

Michael Daly(*)

Anne Guérin

Didier Houssin

Robert Semmens

(*) independent director

c) Activity:

In 2016, the Committee met eleven times. The attendance rate of Committee members at these meetings was 88.89%. At these meetings, the Committee reviewed the Group's strategic perspectives, the 2016-2018 business plan (and its updates) and the 2017-2019 business plan. The Committee analyzed and assessed the Group's various existing financial restructuring options (both in the short term and the long term) and received regular updates from the management as to the state of the discussions with each category of creditors.

In terms of its ongoing activities, in 2016 the Committee reviewed the competition, the multi-client market and the world seismic fleet. The Committee was also presented an update on the current technological projects and the strategic contracts.

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HSE/Sustainable Development Committee:

a) Responsibilities:

The Committee's assignments are the following:

Support General Management in developing a strategic approach to Health, Safety, Security and Environment ("HSE") & Sustainable Development ("SD"). Determine the main axes for the improvement of HSE performance on an ongoing basis. Encourage, assist and counsel General Management in maintaining and improving HSE & SD performance;

Monitor the performance of CGG's HSE & SD systems and programs, and at the Committee's discretion, recommend any changes to the Board;

Review CGG HSE & SD performance at each regularly scheduled meeting. Benchmark CGG performance against its peers in the industry;

Review the Group's high rated HSE & SD operational risks and the controls put in place to manage these risks. Review high impact incidents and near misses such as fatalities and HPIs;

Review the Group's SD programs (principally environmental, social and ethical matters) and provide support and direction concerning the mid-term and long-term direction of CGG efforts in this area;

Monitor the Group's compliance with applicable laws related to HSE & SD;

Review the Group's crisis management preparedness. Monitor any major crisis and support the Board and General Management team as necessary in the event of such a crisis;

Recommend to the Board and to General Management desirable policies and actions from its review and monitoring activity.

The Committee reports to the Board on its proceedings after each meeting, on all matters within its duties and responsibilities.

b) Composition:

As of the date of this report, the members of the Committee are as follows:

Michael Daly(*) (Chairman)

Kathleen Sendall(*)

Gilberte Lombard(*)

Hilde Myrberg

(*) independent director

Mr. Michael Daly has been chairing the Committee since January 1, 2017. During fiscal year 2016, the Committee was chaired by Ms. Kathleen Sendall.

c) Activity:

In 2016, the Committee met three times. The attendance rate of Committee members was 90%.

During these meetings, the Committee reviewed the following items: (i) the high potential incidents that occurred in the Land and Marine as well the Group HSE indicators, (ii) the review of specific risks (security risks, marine lifting and handling risks, road transportation risks), (iii) the HSE good practices implemented within the Group and the actions implemented in terms of sustainable development.

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Audit Committee:

Pursuant to its charter, the Audit Committee is responsible for assisting the Board of Directors and, as such for preparing its assignments.

a) Responsibilities:

The Audit Committee shall report regularly on its duties and responsibilities to the Board of Directors. The Committee also reports on the audit process of the financial statements, on how such process contributed to the integrity of the financial statements and the role the Committee played in such process. The Committee is required to immediately inform the Board of any difficulty encountered in the process.

In this scope, the Committee is specifically in charge of:

Assignments relating to accounts and financial information:

In accordance with the provisions of Section L.823-19 of the Commerce Code, the Audit Committee is in charge of monitoring the financial reporting process and shall make any relevant recommendation in order to ensure its integrity, including:

Reviewing and discussing with General Management and the statutory auditors the following items:

the consistency and appropriateness of the accounting methods adopted for establishment of the corporate and consolidated financial statements;

the consolidation perimeter;

the draft annual and consolidated accounts, semi-annual and quarterly consolidated financial statements along with their notes, and especially off-balance sheet arrangements;

the quality, comprehensiveness, accuracy and sincerity of the financial statements of the Group.

Hearing the statutory auditors report on their review, including any comments and suggestions they may have made in the scope of their audit;

Examining the draft press releases related to the Group financial results and proposing any modifications deemed necessary;

Reviewing the “*Document de Référence*” and the annual report on Form 20-F;

Raising any financial and accounting question that appears important to it.

Assignments relating to risk management and internal control:

In accordance with the provisions of Section L.823-19 of the Commerce Code, the Audit Committee shall monitor the effectiveness of the Company’ s internal control and risk management systems, and, if need be, of internal audit systems, in relation to the preparation and treatment of accounting and financial information, without prejudicing internal audit’ s independence. In connection therewith, the Committee’ s responsibilities include:

Reviewing with the General Management (i) the Company’ s policy on risk management, (ii) the analysis made by the Company of its major risks (risk mapping) and (iii) the programs put in place to monitor them;

Reviewing with the General Management (i) the role and responsibilities with respect to internal control; (ii) the principles and rules of internal control defined by the Company on its general

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internal control environment (governance, ethics, delegation of authority, information systems...) and on the key processes (treasury, purchase, closing of the accounts, fixed assets...), (iii) the internal control quality as perceived by the Company and (iv) significant deficiencies, if any, identified by the Company or reported by the external auditors (Article L.823-16 of the French Commercial Code) as well as the corrective actions put into place;

Reviewing (i) the Report of the Chairman on Board of Directors' Composition, Preparation and Organization of the Board of Directors' Work, and Internal Control and Risk Management and (ii) the conclusions of the external auditors on this report.

Assignments relating to internal audit:

Reviewing with General Management and the EVP Global Operational Excellence, Internal Audit and Risk Management/HSE/SD:

the organization and operation of the internal audit;

the activities and in particular the missions proposed in the scope of the internal audit plan approved by management and presented to the Committee;

results of internal audit reviews.

Assignments relating to external audit:

Reviewing with the statutory auditors their annual audit plan;

Hearing, if necessary, the statutory auditors without General Management being present;

Monitoring the procedure for selection of the auditors and issuing a recommendation to the Board of Directors on the statutory auditors whose appointment or renewal is to be submitted to the Shareholders' Meeting. Such recommendation is to be prepared in accordance with Section 16 of Regulation (EU) n° 537/2014 (the "Regulation"); the Audit Committee is also responsible for issuing a recommendation when the renewal of the auditors is contemplated under the conditions set forth in Section L.823-3-1 of the Commerce Code;

Monitoring the auditors' compliance with the independence conditions defined in Section L.822-9 to L.822-16 of the Commerce Code and take any measures necessary to the application of paragraph 3 of Section 4¹ of Regulation (EU) n°537/2014 and make sure that the conditions set forth in Section 6 of the Regulation are complied with;

Following the way the auditors fulfill their mission and take into account the statements and conclusions issued by the *Haut conseil du commissariat aux comptes* as a result of their review pursuant to Section L.821-9 et seq. of the Commerce Code;

Approving the supply of non-audit services referred to in Section L.822-11-2, pursuant to the policy prepared by the Audit Committee and ratified by the Board of Directors;

Discussing, possibly individually the audit work with the statutory auditors and General Management and reviewing regularly with management the auditors' fees. Within the framework

¹ *When the total fees received from a public-interest entity in each of the last three consecutive financial years are more than 15% of the total fees received by the statutory auditor or the audit firm or, where applicable, by the group auditor carrying out the statutory audit, in each of those financial years, such a statutory auditor or audit firm or, as the case may be, group auditor, shall disclose that fact to the audit committee and discuss with the audit committee the threats to their independence and the safeguards applied to mitigate those threats. The audit committee shall consider whether the audit engagement should be subject to an engagement quality control review by another statutory auditor or audit firm prior to the issuance of the audit report.*

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of a procedure that it determines annually, the Committee has sole authority to authorize performance by the auditors and/or by the members of their network of services not directly relating to their auditing mission.

Other assignments:

Reviewing with management and, when appropriate, the external auditors the transactions binding directly or indirectly the Company and its Executive Officers;

Handling, anonymously, any feedback relating to possible internal control problem or any problems of an accounting or financial nature.

Finally, the General Management of the Company must report any suspected fraud of a significant amount to the Committee so that the Committee may proceed with any investigation that it deems appropriate.

The following persons attend the Committee meetings: the Chairman of the Board of Directors, the Chief Executive Officer, the Corporate Officers, the relevant members of the E-Com, the Chief Executive Officer, the Senior Vice President Group Chief Accounting Officer, the auditors, the EVP Global Operational Excellence, Internal Audit and Risk Management/HSE/SD who presents an update on significant missions at least twice a year.

The Audit Committee usually meets before each session of the Board of Directors. For practical reasons that are linked to the presence of Director residing abroad, meetings of the Audit Committee are held in general on the eve of the Board of Directors. In order that this constraint does not prevent the proper functioning of the Committee, the Chairman of the Board and the Chief Executive Officer ensure that the members of the Committee receive the necessary documents and information sufficiently in advance in order to have sufficient time to be able to review the accounts.

Minutes of each meeting are taken. Furthermore, the Chairman of the Committee reports on its work at every Board of Directors' meeting. This report is recorded in the minutes of the Board of Directors' meeting.

b) Composition:

As of the date of the present report, the members of the Committee are as follows:

Gilberte Lombard (Chairman)(*)

Loren Carroll(*)

Anne Guérin

Agnès Lemarchand(*)

(*) independent director

Ms. Gilberte Lombard was appointed as Financial Expert by the Board of Directors in 2013 pursuant to Section 407 of Sarbanes Oxley Act.

Both Ms. Gilberte Lombard and Mr. Loren Carroll qualify as independent members of the Committee with specific competences in financial and accounting matters pursuant to Article L.823-19 of the French Commercial Code.

Ms. Gilberte Lombard developed an extensive financial and accounting expertise through the various financial responsibilities she has held within the HSBC Group (previously *Crédit Commercial de France*), where she spent her career. After the privatization of *Credit Commercial de France* (1987), she was the Investor Relations Officer, in charge of the relation with financial analysts and institutional investors, and coordinated the information policy vis-a-vis the shareholders of the bank: major shareholders as well as individual shareholders.

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After *Credit Commercial de France* had been taken over by HSBC (2000), she was appointed as head of the financial transactions (*Directeur des Opérations Financières*) in charge of structuring and implementing sales, acquisitions, mergers for HSBC and managing HSBC industrial and financial portfolio. As part of her assignments, she was appointed as member of the Board and the Audit Committee of several companies of the HSBC group in France. In 1990, she was also appointed secretary of the Board and was in charge, in particular, of the relations with the main shareholders of the bank.

Mr. Loren Carroll, through the positions he held over 15 years within Arthur Andersen, developed an extensive accounting and auditing practice, and gained particular experience with public companies. He then became Chief Financial Officer of Smith International, a supplier of products and services to the oil and gas, petrochemical, and other industrial markets. Within Smith International, he was in charge of investor relations, supervision of financial activities of Public Corporation (NYSE) and merger, acquisitions and strategic development.

Both Ms. Gilberte Lombard and Mr. Loren Carroll are therefore very familiar with the financial and accounting specificities of our industrial sector and those linked to our international activities.

In compliance with the provisions of the AFEP-MEDEF Code, two thirds of the Committee is composed of independent Directors.

c) Activity:

In 2016, the Committee met eight times with an average attendance rate of Committee members of 80.56%.

During these meetings, the Committee reviewed draft versions of the annual consolidated financial statements for 2015 (and in particular the impairment tests), the statutory financial statements for 2015 and the 2016 half-year statutory financial statements and the consolidated financial statements for the first quarter, the first semester and the third quarter of 2016. It also reviewed the 2016 forecasts. The Committee also provided to the Board its recommendations concerning these financial statements. The Committee reviewed the Chairman's report on Board of Directors' Composition, Preparation and Organization of the Board of Directors' Work and on Internal Control and Risk Management, the 2015 annual report on Form 20-F and the *Document de Référence*.

The Committee also met with the external auditors without General Management being present. During this meeting, the auditors and the Committee had an overview of the audit work performed for the closing of the 2015 financial statements.

In addition, the Committee was regularly kept informed of the Group's situation with respect to cash, debt, mid-term refinancing, cash flow forecasts and the Group's hedging policy. The Committee reviewed the multi-client activity including an in-depth review of its accounting principles and the analysis of the impact of the amendment of IAS38 on the accounts.

The 2016/2015 risk mapping, before and after mitigation has been presented to the Audit Committee. In this scope, the Committee also approved and implemented the annual review plan of the main risks of the Group and of certain specific risks that it determined. In this scope, in particular, the Committee reviewed the project management risk, intellectual property risk, the joint venture risks, the business interruption risk and monitored the Ethics Committee's actions. The Committee also follows the commercial consultants network of the Group on a regular basis.

The Committee also examined the work to be performed by the statutory auditors in the scope of their audit on the 2016 financial statements and approved their fee estimates for this work. The audit reviews are mostly focused on significant risks which may impact the financial statements. In compliance with the Committee's procedures for its prior approval of non-audit services provided by the members of our auditors' network, the Committee reviewed such services performed in 2016 and approved them as necessary. The Committee also reviewed the effects of the audit reform on said procedure and on its charter and amended them accordingly.

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The Committee reviewed the activities of the internal audit team, which acts according to a plan established by the E-Com and submitted to the Committee. This plan is established in light of perceived operational and financial risks with the goal of systematically reviewing the major entities of each Business Lines on a five-year basis. It includes a review of the risks identified in the risk mapping presented to the Committee by the Enterprise risk management department.

The Committee was also kept regularly informed on the assessment of internal control procedures pursuant to Section 404 of the Sarbanes-Oxley Act and of the results thereof. The external auditors and the internal audit presented their respective conclusions.

The Committee also follows the evolution of the Group's legal perimeter and, in particular the rationalization program for the Group's legal structures.

Employees

As of December 31, 2016, we had 5,766 permanent employees worldwide. Of the total number of permanent employees, 1,697 belong to the Equipment segment, 1,031 to the Acquisition segment, 2,457 to the GGR segment and 581 to the Group Functions, which includes shared services and corporate. 38 were employed by the holding company CGG SA. We have never experienced a material work stoppage and consider our relations with our employees to be constructive. A significant number of our permanent employees are technicians and persons holding engineering degrees; we have developed significant in-house training programs to sustain this high level of technical skills.

Our workforce of permanent employees decreased from 7,277 as of December 31, 2015 to 5,766 as of December 31, 2016. This decrease was due to the reduction of our seismic fleet, the implementation of the restructuring plan and the overall downturn of the oil and gas business.

The 2016 turnover rate was 20.17% (total) or 4.89% (if only voluntary leavers are taken into account). The total turnover rate was 17.22% for 2015.

Our international activity led us to recruit fewer employees in 2016 (a total of 114). We are looking for experienced technical profiles as well as young graduates, especially for the GGR segment. The talents we integrate, coupled with the expertise of our teams, enable us to be at the forefront of innovation.

In connection with the Transformation Plan, we are strengthening our focus on internal mobility with the support of our HR Country, Hub and Business Lines teams to enhance our employees' development in this context.

In accordance with French law each of our French subsidiaries (representing a total of 1,393 employees) has an Employee Representation Committee (Work Council – *Comité d'Entreprise*) consisting of representatives elected by our employees. The Work Council reports regularly to employees, represents employees in relations with management, is consulted on significant matters relating to working conditions and is regularly informed of economic developments. Elections held in November 2015 within the scope of the *Unité Économique et Sociale* CGG SA and CGG Services SAS have led to the composition of a new *Comité d'Entreprise* as of December 2015. Elections in the Sercel Group of Companies in France have been conducted in 2013 and all the Employee Representation Committees have been renewed.

Similarly elected employee representatives are in place for our field and expatriate staff employed by CGG International, set up under the specifications of the Swiss *Code des Obligations*. Marine Commission election took place in December 2012 and led to the formation of a new Commission in 2013 and whose mandate was extended for an additional year with the agreement of the employee representatives in order to implement the restructuring plan in 2016. Election for the Land Commission in September 2013 confirmed existing representatives for another three years.

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In Singapore, 93 people were represented under the collective agreement as of December 31, 2016. This represents 52.5% of our Singaporean workforce. These employees are represented by the Singapore Industrial and Services Employees Union (SISEU), an affiliated union of the National Trade Union Congress.

In Norway an agreement was concluded with two unions representing all local staff. All office employees are covered by this collective agreement (140 employees).

Share ownership

In accordance with French law, we are authorized annually by our shareholders at the Extraordinary General Meeting to issue ordinary shares for sale to our employees and employees of our affiliates who elect to participate in our Group Employee Savings Plan (*Plan d'Épargne Entreprise Groupe*) instituted in 1997 (the "Group Plan"). Our shareholders, at the Extraordinary General Meeting held on May 27, 2016, renewed our authorization to issue up to 6,250,000 ordinary shares in sales to employees and affiliates who participate in the Group Plan. We may offer ordinary shares pursuant to the Group Plan at a price not higher than the average market price for the 20 business days preceding the date on which the Board of Directors sets the commencement date for the offering, and not lower than 80% of such average market price. As of December 31, 2016, Group employees held 273 shares corresponding to 0.0012% of the share capital and 0.0024% of the voting rights. As of March 31, 2017, they still held 273 shares corresponding to 0.0012% of the share capital and 0.0024% of the voting rights.

Stock options

Pursuant to resolutions adopted by our Board of Directors on March 16, 2009, January 6, 2010, March 22, 2010, October 21, 2010, March 24, 2011, June 26, 2012, June 24, 2013, June 26, 2014, June 25, 2015, and June 23, 2016, our Board of Directors has granted options to certain of our employees and Executive Officers to subscribe for an aggregate of 17,519,293 ordinary shares not taking into account the various adjustments made to the number of stock options issued pursuant to French law. Options with respect to 510,837¹ ordinary shares remained outstanding as of December 31, 2016, whereas options with respect to 468,306¹ ordinary shares remained outstanding as of March 31, 2017.

The following table sets forth certain information relating to these stock options plans as of December 31, 2016:

Date of Board of Directors' resolution	Options granted⁽¹⁾	Number of beneficiaries	Options exercised (ordinary shares) at December 31, 2016	Options outstanding at December 31, 2016⁽²⁾⁽³⁾	Exercise price per ordinary share⁽⁴⁾	Expiration date
March 16, 2009 ⁽⁶⁾⁽⁵⁾	1,327,000	149	452,950	30,581	224.00	March 16, 2017
January 6, 2010 ⁽⁷⁾⁽⁵⁾	220,000	1	0	8,668	373.44	January 6, 2018
March 22, 2010 ⁽⁸⁾⁽⁵⁾	1,548,150	339	38,382	51,493	493.44	March 22, 2018
October 21, 2010 ⁽⁹⁾⁽⁵⁾	120,000	3	0	3,128	428.80	October 21, 2018
March 24, 2011 ⁽¹⁰⁾⁽⁵⁾	1,164,363	366	0	39,541	646.72	March 24, 2019
June 26, 2012 ⁽¹¹⁾⁽⁵⁾	1,410,625	413	0	20,141	476.48	June 26, 2020
June 24, 2013 ⁽¹²⁾⁽⁵⁾	1,642,574	672	0	42,485	493.44	June 24, 2021
June 26, 2014 ⁽¹³⁾⁽⁵⁾	1,655,843	752	0	48,404	247.88	June 26, 2022
June 25, 2015 ⁽¹⁴⁾⁽⁵⁾	1,769,890	749	0	60,581	160.64	June 25, 2023
June 23, 2016 ⁽¹⁵⁾⁽⁵⁾	6,658,848	683	0	205,815	21.76	June 23, 2024
Total	17,519,293		491,332	510,837		

⁽¹⁾ Total number of shares initially allocated, not taking into account any adjustment.

¹ As adjusted further to the capital increase dated February 5, 2016 and the reverse stock split dated July 20, 2016.

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- (2) Pursuant to French law and the terms of the stock option plans, the numbers of options initially granted has been adjusted following (i) our share capital increase in October 2012, (ii) our share capital increase in February 5, 2016 and (iii) our reverse stock split in July 2016. The figures shown are after adjustment.
- (3) The stock option plans provide for the cancellation of the non-vested options if the holder is no longer our employee, Director or Executive Officer.
- (4) The exercise price has been adjusted following (i) our share capital increase in October 2012, (ii) our share capital increase in February 5, 2016 and (iii) our reverse stock split in July 2016.
- (5) The stock option plans provide for the cancellation of the options whether vested or not if the holder is no longer our employee, Director or Executive Officer.
- (6) Options under the 2009 plans vest by one-third each year from March 2009 and can be exercised at any time. However the resulting shares cannot be sold by French tax residents before March 17, 2013. The 2009 plans consist of a plan granting 200,000 options to the Chairman and Chief Executive Officer and 125,000 options to the Chief Operating Officer (subject to certain performance conditions and a plan granting 1,002,000 options to certain other officers and employees. These figures reflect the number of options initially allocated, not taking into account any adjustment.
- (7) 110,000 options under this plan vest immediately, 55,000 vest on January 7, 2011 and 55,000 on January 7, 2012. However during the first four years, the resulting shares cannot be sold by French tax residents before January 7, 2013 for the first batch and, January 7, 2014 for the second and third batches.
- (8) Options under the March 2010 plans vest by one-third each year from March 2010 and can be exercised at any time. However the resulting shares cannot be sold by French tax residents before March 23, 2014. The March 2010 plans consist of a plan granting 200,000 options to the Chief Executive Officer (subject to certain performance conditions) and a plan granting 1,348,150 options to certain other officers and employees. These figures reflect the number of options initially allocated, not taking into account any adjustment.
- (9) Options under the October 2010 plan vest by one-third each year from October 2010 and can be exercised at any time. However the resulting shares cannot be sold by French tax residents before October 22, 2014. The October 2010 plan consists of a plan granting 120,000 options to three members of the Executive Committee. These figures reflect the number of options initially allocated, not taking into account any adjustment.
- (10) Options under the March 2011 plans vest by one-third each year from March 2011 and can be exercised at any time. However the resulting shares cannot be sold by French tax residents before March 25, 2015. The March 2011 plans consist of a plan granting 66,667 options to the Chairman and 133,333 options to the Chief Executive Officer (subject to certain performance conditions) and a plan granting 964,363 options to certain other officers and employees. These figures reflect the number of options initially allocated, not taking into account any adjustment.
- (11) Options under the June 2012 plans vest in three batches (50% in June 2014, 25% in June 2015 and 25% in June 2016) and can be exercised at any time. However the resulting shares cannot be sold by French tax residents before June 26, 2016. The June 2012 plans consist of a plan granting 200,000 options to the Chief Executive Officer, 100,000 options to each Corporate Officer (subject to certain performance conditions) and a plan granting 1,010,625 options to certain other officers and employees. These figures reflect the number of options initially allocated, not taking into account any adjustment.
- (12) Options under the June 2013 plans vest in three batches (50% in June 2015, 25% in June 2016 and 25% in June 2017) and can be exercised at any time. The June 2013 plans consist of a plan granting 200,000 options to the Chief Executive Officer, 100,000 options to each Corporate Officer (subject to certain performance conditions) and a plan granting 1,242,574 options to certain other officers and employees. These figures reflect the number of options initially allocated, not taking into account any adjustment.
- (13) Options under the June 2014 plans vest in three batches (50% in June 2016, 25% in June 2017 and 25% in June 2018) and can be exercised at any time. The June 2014 plans consist of a plan granting 200,000 options to the Chief Executive Officer, 100,000 options to each Corporate Officer (subject to certain performance conditions) and a plan granting 1,255,843 options to certain other officers and employees. These figures reflect the number of options initially allocated, not taking into account any adjustment.
- (14) Options under the June 2015 plans vest in three batches (50% in June 2017, 25% in June 2018 and 25% in June 2019) and can be exercised at any time. The June 2015 plans consist of a plan granting 220,600 options to the Chief Executive Officer, 111,000 options to each Corporate Officer (subject to certain performance conditions) and a plan granting 1,327,290 options to certain other officers and employees. These figures reflect the number of options initially allocated, not taking into account any adjustment.
- (15) Options under the June 2016 plans vest in three batches (50% in June 2018, 25% in June 2018 and 25% in June 2020) and can be exercised at any time. The June 2016 plans consist of a plan granting 882,400 options to the Chief Executive Officer, 444,000 options to each Corporate Officer (subject to certain performance conditions) and a plan granting 4,444,448 options to certain other officers and employees. These figures reflect the number of options initially allocated, not taking into account any adjustment.

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The stock options allocated to Mr. Malcor, Chief Executive Officer, Messrs. Frydman and Rouiller, and Ms. Zurquiyah, Corporate Officers (the “Executive Officers”) under the plans implemented by the Company over the last two years are set forth below:

Name of the Executive Officer	Date of the Plan	Nature of stock options	Valuation of options pursuant to the method used for consolidated financial statements ()	Maximum number of options allocated during fiscal year ⁽¹⁾⁽²⁾	Subscription price ⁽⁴⁾⁽⁵⁾	Exercise period
Jean-Georges Malcor Chief Executive Officer	06.25.2015	Options to subscribe for shares	245,000	220,600 0.11% ⁽³⁾	6.01	From 06.26.2017 to 06.25.2023 inclusive
Stéphane-Paul Frydman Corporate Officer	06.25.2015	Options to subscribe for shares	123,500	111,000 0.05% ⁽³⁾	6.01	From 06.26.2017 to 06.25.2023 inclusive
Pascal Rouiller Corporate Officer	06.25.2015	Options to subscribe for shares	123,500	111,000 0.05% ⁽³⁾	6.01	From 06.26.2017 to 06.25.2023 inclusive
Sophie Zurquiyah ⁽⁶⁾ Corporate Officer	06.25.2015	Options to subscribe for shares	88,500	79,500 0.04% ⁽³⁾	6.01	From 06.26.2017 to 06.25.2023 inclusive
Jean-Georges Malcor Chief Executive Officer	06.23.2016	Options to subscribe for shares	124,000	882,400 0.12% ⁽³⁾	0.68	From 06.24.2018 to 06.23.2024 inclusive
Stéphane-Paul Frydman ⁽⁷⁾ Corporate Officer	06.23.2016	Options to subscribe for shares	62,500	444,000 0.06% ⁽³⁾	0.68	From 06.24.2018 to 06.23.2024 inclusive
Pascal Rouiller ⁽⁷⁾ Corporate Officer	06.23.2016	Options to subscribe for shares	62,500	444,000 0.06% ⁽³⁾	0.68	From 06.24.2018 to 06.23.2024 inclusive
Sophie Zurquiyah ⁽⁷⁾ Corporate Officer	06.23.2016	Options to subscribe for shares	62,500	444,000 0.06% ⁽³⁾	0.68	From 06.24.2018 to 06.23.2024 inclusive

⁽¹⁾ Subject to the performance conditions described below.

⁽²⁾ Maximum number of shares on the day of allocation, which does not take into account any adjustment linked to the share capital increase dated February 5, 2016 or to the reverse stock split dated July 20, 2016.

⁽³⁾ Proportion of the share capital represented by the allocation.

⁽⁴⁾ The subscription price corresponds to the average of the opening share price on the last twenty trading days prior to the meeting of the Board of Directors granting the options.

⁽⁵⁾ Subscription price on the day of allocation, which does not take into account any adjustment linked to the share capital increase dated February 5, 2016.

⁽⁶⁾ As of the date of adoption of this plan, Ms. Zurquiyah was not Executive Officer of the Company.

⁽⁷⁾ The Board of Directors held on January 4, 2017, resolved to terminate the office of Messrs. Frydman and Rouiller and Ms. Zurquiyah as Corporate Officer.

Stock options are allocated without any possible discount.

The conditions of the plans applicable to the Executive Officers are those of the general plans, plus those described below.

The valuation of the options pursuant to the method used to prepare the consolidated financial statements does not necessarily correspond to the actual value that the beneficiary could derive from the exercise of the options. The exercise of the options is subject to the fulfillment of certain performance conditions and supposes a subscription price lower than the stock market price (as of the date of this report, the subscription price of all plans is above the stock market price). Moreover, the gain before tax that a stock option beneficiary may derive from the option exercise depends upon the share market price on the exercise date. This gain could be nil if, during the duration of the plan, the exercise price remains above the share market price.

Stock option plans dated June 25, 2015 and June 23, 2016

Performance conditions:

The Board of Directors decided, in accordance with the provisions of the AFEP-MEDEF Code that the rights to the options would be acquired in three batches during the first four years of the plans (50% of the

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options are allocated after two years, 25% of the options are allocated after three years and 25% of the options allocated after four years) and that the acquisition of options would be subject to the following performance conditions:

1. The average, over the 60 trading days preceding the date of allocation, of the ratio of the CGG ADS price over the PHLX Oil Service SectorSM (OSXSM) index must equal at least two-thirds of the same average ratio over the same period of sixty trading days three years before the vesting date;
2. The average, over the 60 trading days preceding the date of allocation, of the ratio of the CGG share price over SBF 120 index must equal at least two-thirds of the same average ratio over the same period of sixty trading days three years before the vesting date;
3. Over the vesting period, the market price of the CGG share must have increased at least by 8% on an annual basis;
4. The Group results on average over a period of three years preceding the vesting date must reach at least 90% of the average EBITDAS annual targets as determined by the Board of Directors.

Obligation to keep stock options under the registered form:

Pursuant to the provisions of Article L.225-185 of the French Commercial Code, the Board of Directors decided that the number of shares resulting from the exercise of stock options that the Executive Officers benefiting from these plans will have to keep under the registered form until the end of their term shall account for 20% of the amount of the gain on the purchase price realized when exercising the options granted by the Board of Directors on June 25, 2015 or June 23, 2016.

Prohibition of the use of hedging instruments:

Upon the Committee' s proposal and pursuant to the provisions of Code and the recommendations of the AMF, the Board of Directors reminded the Executive Officers that they should not use hedging instruments both on options and on shares resulting from the exercise of options until the end of the retention period of the shares under registered form as set by the Board pursuant to the provisions of Article L.225.185 of the French Commercial Code.

Exercise period:

The Board noted that the exercise of stock options by the Executive Officers is subject to compliance with the rules prohibiting trading over the shares of the Company set by the Group and which apply to all permanent insiders of the Group.

Performance shares

a) Performance shares allocated to the Executive Officers in 2015 and 2016

Neither the Company nor any of any of its subsidiaries has adopted a performance shares plan since 2012.

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- b) Performance shares that have become freely transferable upon expiry of the retention period, for the Executive Officers during 2015 and 2016:

2015

Name of the Executive Officer (<i>"mandataire social"</i>)	Date of the plan	Number of shares that have become freely transferable upon expiry of the retention period	Acquisition conditions
Jean-Georges Malcor <i>Chief Executive Officer</i>	03.24.2011	24,847	1 share to purchase for 20 allocated shares
Stéphane-Paul Frydman* <i>Corporate Officer</i>	03.24.2011	7,634	N/A
Pascal Rouiller* <i>Corporate Officer</i>	03.24.2011	8,166	N/A

* As of the date of adoption of this plan, Messrs. Frydman and Rouiller were not yet Executive Officer of the Company.

2016

Name of the Executive Officer (<i>"mandataire social"</i>)	Date of the plan	Number of shares that have become freely transferable upon expiry of the retention period	Acquisition conditions
Jean-Georges Malcor <i>Chief Executive Officer</i>	06.26.2012	9,534	1 share to purchase for 20 allocated shares
Stéphane-Paul Frydman <i>Corporate Officer</i>	06.26.2012	3,900	1 share to purchase for 20 allocated shares
Pascal Rouiller <i>Corporate Officer</i>	06.26.2012	3,782	1 share to purchase for 20 allocated shares

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Transactions in the Company's shares carried out by executives or their close relatives

Pursuant to Article L.621-18-2 of the French *Code monétaire et financier* and Article 223-26 of the General Regulation of the French Market Authority, summary of the transactions carried out pursuant to the above mentioned Article L.621-18-2 are set out below.

Executive Officers, Directors and members of the corporate committees are forbidden from carrying out any transactions in the Company's shares, whatever the nature, including the exercise of stock options, (i) during the thirty calendar days preceding the publication of quarterly, semi-annual or annual results (transactions in the Company's shares can be carried out the day after the date of publication of such results), and (ii) if such Officers, Directors or Committee members hold any information which could have any influence on the share value in case of public disclosure.

Name	Type of transaction	Date	Number of shares/ADS	Unit price	Amount of the transaction
Jean-Georges MALCOR CEO and Director	Share purchase	February 5, 2016	182,682	0.66	120,570.12
Remi DORVAL Chairman of the Board of Directors	Share purchase	February 5, 2016	18,000	0.66	11,880
Stéphane-Paul FRYDMAN Chief Financial Officer	Share purchase	February 5, 2016	120,000	0.66	79,200
	Sale of shares	January 25, 2016	20,000	0.87	17,400
	Sale of shares	June 27, 2016	72,900	0.61	44,469
	Share purchase	June 27, 2016	73,600	0.62	45,632
Pascal ROUILLER Chief Operating Officer	Sale of preferential subscription rights	January 22, 2016	25,892	0.282	7,301.54
	Share purchase	February 5, 2016	15,000	0.66	9,900
Robert SEMMENS Director	Sale of preferential subscription rights	January 26, 2016	4,992	US\$0.17	US\$848.64
	Sale of ADRs	January 25, 2016	965	US\$1.88	US\$1,814.20
	Share purchase	January 28, 2016	20,000	0.75	15,000
Gilberte LOMBARD Director Bpifrance Participations(*)	Share purchase	February 5, 2016	15,249	0.66	10,064.34
	Purchase of preferential subscription rights	January 21, 2016	5,466,217	0.3189	1,743,176.92
	Share purchase	February 5, 2016	53,768,385	0.66	35,487,134.1
Agnès LEMARCHAND Director	Sale of shares	January 18, 2016	6,000	0.85	5,100
	Share purchase	January 22, 2016	6,000	0.91	5,460
Kathleen SENDALL Director	ADR purchase	March 24, 2016	4,500	US\$0.843	US\$3,793.5
David DRAGONE EVP Human Resources	Share purchase	February 5, 2016	2,598	0.66	1,714.68
Didier HOUSSIN Director	Share purchase	February 5, 2016	3,000	0.66	1,980
	Share purchase	June 6, 2016	1,000	0.65	650
Michael DALY Director	Share purchase	February 5, 2016	4,000	0.66	2,640
Daniel VALOT Director(**)	Share purchase	February 5, 2016	1,633	0.66	1,077.78

Loren CARROLL	ADR purchase	May 6, 2016	4,500	US\$0.846	US\$3,807
Director					

(*) Legal entity closely related to Ms. Anne Guérin, Director of the Company as of the date of these transactions, Bpifrance Participations has been appointed as Director by the General Meeting held on May 27, 2016.

(**) As of the date of this transaction, Mr. Valot was still a Director of the Company.

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Item 7: PRINCIPAL SHAREHOLDERS

Major shareholders

The table below sets forth certain information with respect to entities known to us or ascertained from public filings to beneficially own a significant percentage of our voting securities as of March 31, 2017 and December 31, 2016, 2015 and 2014.

Identity of Person or Group	March 31, 2017		2016		December 31, 2015		2014	
	% of		% of		% of		% of	
	% of shares	% of voting rights	% of shares	% of voting rights	% of shares	% of voting rights	% of shares	% of voting rights
Bpifrance (formerly named Fonds Stratégique d' Investissement)	9.35	10.81	9.35	10.81	7.04	12.68	7.04	12.68
IFP Energies Nouvelles	1.27	2.11	1.27	2.11	3.58	6.46	3.58	6.46
<i>Subtotal Bpifrance and IFP Energies Nouvelles</i>	<i>10.62</i>	<i>12.92</i>	<i>10.62</i>	<i>12.92</i>	<i>10.62</i>	<i>19.14</i>	<i>10.62</i>	<i>19.14</i>
AMS Energie	8.30	8.08	8.30	8.08	—	—	—	—
DNCA Finance ⁽¹⁾	7.94	7.72	8.27	8.05	7.07	6.37	6.73	6.06
Financière de l' échiquier ⁽²⁾	—	—	—	—	5.76	5.19	—	—
Treasury stock	0.11	0.00	0.11	0.00	0.45	0.00	0.45	0.00
FCPE "CGG Actionnariat" ⁽³⁾	0.0012	0.0024	0.0012	0.0024	0.04	0.08	0.04	0.08
Public	73.0288	71.1836	72.6988	70.9476	71.24	64.87	77.34	70.38
Total	100	%	100	%	100	%	100	%

⁽¹⁾ Calculated on the basis of the number of shares owned by DNCA Finance as indicated in the notice of threshold crossing dated February 21, 2017.

⁽²⁾ Calculated on the basis of the number of shares owned by Financière de l' Echiquier as indicated in the notice of threshold crossing dated February 9, 2016.

⁽³⁾ Shares held by CGG Group employees.

Shares held by the Company are deprived of voting rights for all Shareholders' Meetings.

Our *statuts* provide that each ordinary share that is fully paid and has been held in registered form by the same shareholder for a period of at least two consecutive years will entitle such shareholder to two votes at Shareholders' s Meetings. As of March 31, 2017, Bpifrance and IFP Energies Nouvelles held respectively 2,069,686 and 280,868 fully paid ordinary shares in the registered form for two consecutive years, giving Bpifrance and IFP Energies Nouvelles respectively 10.81% and 2.11% of the voting power of the outstanding ordinary shares at such date. Other than in this respect, our ordinary shares carry identical voting rights. Our *statuts* provide that fully paid ordinary shares may be held in either registered form or bearer form at the option of the shareholder. Substantially all ordinary shares held by shareholders other than IFP Energies Nouvelles and Bpifrance are presently held in bearer form.

In May 2015, we initiated a simplified public exchange offer for our outstanding 11,200,995 bonds convertible into and/or exchangeable for new or existing share of the Company (convertible bonds) due 2019, with the intention to issue new convertible bonds due 2020 at a ratio of five 2020 convertible bonds for two 2019 convertible bonds tendered into the offer. On June 26, 2015, holders exchanged 90.3% of the principal amount of the existing 2019 convertible bonds (or 10,114,014 bonds). In consideration, CGG issued 25,285,035 convertible bonds maturing on January 1, 2020 for a total nominal amount of 325.1 million. The 2020 convertible bonds' nominal value was set at 12.86 per bond (versus 32.14 for the 2019 convertible bonds). The new bonds bear interest at a rate of 1.75% payable semi-annually in arrears on January 1 and July 1 of each year (versus

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1.25% for the 2019 convertible bonds). The bonds initially entitled the holders to receive new and/or existing CGG shares at a ratio of one share for one bond. This ratio was adjusted to entitle the holders to receive 1.422 share for one bond further to the capital increase completed on February 5, 2016, and then to receive 0.044 share for one bond further to the reverse stock split on July 20, 2016. Under certain conditions, the bonds may be redeemed prior to maturity at our option.

On February 5, 2016, the Company completed a share capital increase through the distribution of preferential subscription rights to existing shareholders to finance its Transformation Plan. The final gross proceeds amounted to 350,589,080.16, corresponding to the issuance of 531,195,576 new shares.

In accordance with the authorization granted by the General Meeting on May 27, 2016, the Company launched a reverse stock split, pursuant to which 32 ordinary shares of the Company, each with a nominal value of 0.40, were exchanged for one new share with a nominal value of 12.80 each. The reverse stock split occurred on July 20, 2016, and resulted in the new number of shares in the Company decreasing from 708,260,768 shares with a 0.40 nominal value, to 22,133,149 shares with a 12.80 nominal value. As a consequence, on July 20, 2016, the share capital of the Company amounted to 283,304,307, divided into 22,133,149 shares of 12.80 each.

On August 11, 2016, in accordance with the authorization granted by the General Meeting on May 27, 2016, the Company reduced the its share capital by 265,597,788 to bring it down from 283,304,307 to 17,706,519 by reducing the nominal value of the Company's shares from 12.80 to 0.80. As a consequence, on August 11, 2016, the share capital of the Company amounted to 17,706,519 divided into 22,133,149 shares of 0.80 each.

See "Item 9: The offer and Listing – Offer and Listing Details" for information regarding holdings of our shares in the United States.

Changes in share capital during 2016 and first quarter of 2017

Transaction	Nominal value	Number of shares created	Amount of the share premium	Amount of the capital variation	Resulting total share capital
Share capital reduction dated August 11, 2016	0.80	–	–	- 265,597,788	17,706,519
Reverse stock split dated July 20, 2016	12.80	–	–	–	283,304,307
Share capital increase dated February 5, 2016	0.40	531,195,576	138,110,849.76	212,478,230.40	283,304,307

Dilutive instruments

As of December 31, 2016 and March 31, 2017, the only dilutive instruments issued were stock options and bonds convertible into new or existing shares. As of these dates, the outstanding stock options and convertible bonds were as follows:

	12/31/ 2016^(a)	Dilution%	03/31/ 2017^(a)	Dilution%
OCEANEs 2019	68,010	0.31%	68,010	0.31%
OCEANEs 2020	1,582,034	7.15%	1,582,034	7.15%
Stock options	510,837	2.31%	468,306	2.12%

^(a) Adjusted pursuant to the share capital increase on February 5, 2016 and to the reverse stock split on July 20, 2016.

As of the date of this report, the subscription price of all stock option plans is above the stock market price.

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Employees shareholding

Pursuant to Article L.225-102 of the French Commercial Code, we inform you that on December 31, 2016, the number of shares held by the employees of the Group, through the Group Employee Savings Plan instituted in 1997, amounted to 273 shares corresponding to 0.0012% of the share capital and 0.0024% of the voting rights of CGG.

Related party transactions

We sell products and services to related parties, pursuant to arm's length contracts.

	December 31,						
	2016			2015			2014
	Joint		Total	Joint		Total	Total
	Ventures	Associates		Ventures	Associates		
	(a)	(b)		(a)	(b)		
(In millions of US\$)							
Sales of geophysical equipment	1.3	3.9	5.2	1.7	68.8	70.5	67.8
Equipment rentals and services rendered	9.8	18.2	28.0	12.5	48.0	60.5	40.3
Operating Revenue	11.1	22.1	33.2	14.2	116.8	131.0	108.1
Charter expenses	(28.3)	–	(28.3)	(29.9)	–	(29.9)	(29.9)
Ship management expenses	(36.2)	–	(36.2)	(70.6)	–	(70.6)	(110.7)
Costs of services rendered	(4.1)	(3.6)	(7.7)	(7.8)	(6.8)	(14.6)	(27.7)
Cost of operations	(68.6)	(3.6)	(72.2)	(108.3)	(6.8)	(115.1)	(168.3)
Other financial income (loss)	(1.3)	1.5	0.2	(1.6)	3.4	1.8	–
Trade accounts and notes receivable, including agency arrangements	20.7	15.6	36.3	23.1	35.0	58.1	46.6
Financial assets (see note 7)	14.9	–	14.9	24.0	38.4	62.4	71.8
Receivables	35.6	15.6	51.2	47.1	73.4	120.5	118.4
Trade accounts and notes payable, including agency arrangements	25.9	33.6	59.5	23.9	55.3	79.2	82.1
Financial liabilities – Finance lease debt	15.0	–	15.0	16.8	–	16.8	18.5
Payables	40.9	33.6	74.5	40.7	55.3	96.0	100.6
Future leases commitments	203.5	–	203.5	236.7	–	236.7	269.9
Future ship management costs	66.7	–	66.7	97.7	–	97.7	162.4
Contractual Obligations	270.2	–	270.2	334.4	–	334.4	432.3

- (a) Mainly correspond to investments in companies accounted for using the equity method in our Marine acquisition Segment (see note 8 to our consolidated financial statements);
- (b) Mainly correspond to investments in companies accounted for using the equity method in our Land and Multi-Physics acquisition Segment (see note 8 to our consolidated financial statements);

No credit facility or loan was granted to the Company by shareholders during the last three years.

Interest of experts and counsel

None

Item 8: FINANCIAL INFORMATION

Consolidated statements and other financial information

Reference is made to Item 18 for a list of all financial statements and notes thereto filed as a part of this annual report.

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Item 9: THE OFFER AND LISTING

Offer and listing details

The trading market for our ordinary shares is Euronext Paris SA, where the ordinary shares have been listed since 1981. American Depositary Shares, or ADSs, representing ordinary shares have been traded on the New York Stock Exchange since May 1997. Each ADS represents one ordinary share. The ADSs are evidenced by American Depositary Receipts, or ADRs, issued by The Bank of New York, as Depositary, and are traded under the symbol “CGG”. The Bank of New York has advised us that as of March 31, 2017, there were 310,687 ADSs outstanding. On the basis of this information, the ADSs held on such date in the United States represented approximately 1.40% of our outstanding ordinary shares. Our by-laws provide that fully paid ordinary shares may be held in either registered or bearer form at the option of the shareholder.

Price information on Euronext Paris.

The tables below set forth, for the periods indicated, the high and low prices for the outstanding ordinary shares on Euronext Paris as reported by NYSE Euronext.

The table below indicates the high and low market prices for our most recent six months:

	<u>Price per Share</u>	
	<u>High</u>	<u>Low</u>
	()	
2017		
March	9.10	6.11
February	9.98	8.35
January	15.24	9.27
2016		
December	15.43	13.03
November	24.24	11.10
October	27.88	23.14

The table below indicates the quarterly high and low market prices for our two most recent financial years and the first quarter of 2017:

	<u>Price per Share</u>	
	<u>High</u>	<u>Low</u>
	()	
2017		
First Quarter	15.24	6.11
2016		
First Quarter	1.32	0.43
Second Quarter	0.87	0.56
Third Quarter ¹	24.68	17.71
Fourth Quarter	27.88	11.10
2015		
First Quarter	6.77	4.51
Second Quarter	7.07	5.00
Third Quarter	5.13	3.06
Fourth Quarter	4.33	2.44

¹ On July 20, 2016, the Company carried out a reverse stock split (see Item 7 – “Major Shareholders”). The figures presented for the third quarter of 2016 are adjusted pursuant to this transaction.

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The table below indicates the high and low market prices for the five most recent financial years:

	Price per Share	
	High	Low
	()	
2016 ¹	27.88	0.43
2015	7.07	2.44
2014	12.85	4.25
2013	23.60	11.49
2012	25.76	16.33

Price information on the NYSE

The table below sets forth, for the periods indicated, the high and low sale prices for the ADSs representing our ordinary shares on the New York Stock Exchange.

The table below indicates the high and low market prices for our most recent six months:

	Price per Share	
	High	Low
	(US\$)	
2017		
March	9.65	6.57
February	10.51	8.83
January	15.60	10.06
2016		
December	16.25	14.01
November	26.50	11.91
October	29.70	25.95

The table below indicates the quarterly high and low market prices for our two most recent financial years and the first quarter of 2017:

	Price per Share	
	High	Low
	(US\$)	
2017		
First Quarter	15.60	6.57
2016		
First Quarter	2.95	0.59
Second Quarter	1.00	0.66
Third Quarter ²	26.88	19.86
Fourth Quarter	29.70	11.91
2015		
First Quarter	7.44	5.31
Second Quarter	7.98	5.62
Third Quarter	5.71	3.50
Fourth Quarter	4.82	2.55

¹ On July 20, 2016, the Company carried out a reverse stock split (see Item 7 – “Major Shareholders”).

² *On July 20, 2016, the Company carried out a reverse stock split (see Item 7 – “Major Shareholders”). The figures presented for the third quarter of 2016 are adjusted pursuant to this transaction.*

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The table below indicates the yearly high and low market prices on a yearly basis for the five most recent financial years:

	Price per Share	
	High	Low
	(US\$)	
2016 ¹	29.70	0.59
2015	7.98	2.55
2014	17.55	5.50
2013	31.12	15.77
2012	34.84	20.68

Trading on Euronext Paris

Official trading of listed securities on Euronext Paris is transacted through stockbrokers and other financial intermediaries, and takes place continuously on each business day from 9:00 a.m. through 5:25 p.m., with a pre-opening session from 7:15 a.m. through 9:00 a.m. during which transactions are recorded but not executed. Any trade effectuated after the close of a stock exchange session is recorded, on the next Euronext Paris trading day, at the closing price for the relevant security at the end of the previous day's session. Euronext Paris publishes a daily Official Price List that includes price information concerning listed securities. Euronext Paris has introduced continuous trading during trading hours by computer for most listed securities. Shares listed on Euronext Paris are placed in one of three categories depending on the issuer's market capitalization. Our outstanding ordinary shares are listed on Euronext Paris in the category known as *Continu*, which includes the most actively traded shares.

Plan of distribution

Not applicable.

Markets

Our ordinary shares are listed on Euronext Paris. American Depositary Shares representing our ordinary shares are listed on the New York Stock Exchange. Our 7.75% Senior Notes due 2017, our 6.5% Senior Notes due 2021, our 5.875% Senior Notes due 2020 and our 6.875% Senior Notes due 2022 are listed on the Euro MTF market in Luxembourg.

Selling shareholders

Not applicable.

Dilution

Not applicable.

Expenses of the issue

Not applicable.

Item 10: ADDITIONAL INFORMATION

Share capital

Not applicable.

¹ On July 20, 2016, the Company carried out a reverse stock split (see Item 7 – “Major Shareholders”).

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Memorandum and by-laws

Our company is a *société anonyme*, a form of limited liability company, established under the laws of France. We are registered with the Trade Register of Paris, France under the number 969 202 241 RCS Paris. Our financial year begins on January 1 and ends on December 31 of each calendar year. The following paragraphs set forth information concerning our share capital and provide related descriptions of certain provisions of our by-laws (*statuts*), and applicable French law. This information and description do not purport to be complete and are qualified in their entirety by reference to our by-laws.

Object and purposes

Under Article 2 of our *statuts*, our object is:

to develop and operate, in any form and under any conditions whatsoever, any and all businesses relating to the geophysical surveying of soil and subsoil in any and all countries, on behalf of third parties or ourselves;

to participate directly or indirectly in any business, firm or company whose object would be likely to promote our object; and

generally, to engage in any commercial, industrial, mining, financial, personal or real property activities relating directly or indirectly to the above objects without limitation or reserve.

Directors

For a further description of the Board of Directors' powers under French law and our *statuts*, see "Item 6: Directors, Senior Management and Employees."

Transaction with Interested Directors

French corporate law provides for prior approval and control of transactions entered into between, directly or indirectly, us (i) and our Directors, Chief Executive Officer, Corporate Officers, or (ii) any entity in which any of these persons is at the same time an owner, partner with unlimited liability, Managing Director, Deputy Managing Director, Member of the Supervisory Board or an Executive Officer, unless (i) the transaction is entered into in the ordinary course of business and under normal terms and conditions and (ii) the transaction is entered into between us and one of our, directly or indirectly, fully owned subsidiaries. Transactions entered into between us and one of our shareholders who holds, directly or indirectly, more than 10% of our voting rights, or with an entity controlling such a shareholder, are also considered related party transactions requiring the prior approval of our Board of Directors.

The interested party has the obligation to inform our Board of Directors as soon as it is aware of the existence of the related party transaction, and a majority of our disinterested Directors must approve the transaction. This prior approval of our Board of Directors shall be justified, in respect of the interest of the transaction for our Company, including specifying the financial conditions attached to it.

If a related party transaction is pre-approved by the majority of our disinterested Directors, our Chairman must then report the authorized transaction to our statutory auditors within one month following the entering into of this transaction. The auditors must then prepare a special report on the transaction to be submitted to our shareholders at their next General Meeting, during which our shareholders would consider the transaction for ratification (any interested shareholder would be excluded from voting). If the transaction is not ratified by the shareholders, such absence of ratification would normally and except in the case of fraud have no impact on the validity of the transaction, but the shareholders may in turn hold the Board of Directors or interested representative of the Company liable for any damages suffered as a result thereof.

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Any related transaction already concluded and duly authorized by our Board of Directors in prior years and which had continued during the previous years shall be reviewed annually by our Board of Directors and must be reported to our statutory auditors for the purposes of the special report described above.

In addition, the report of our Board of Directors presented to our shareholders at the General Meeting, pursuant to Article 225-102 of the French Commercial Code, must describe all transactions, except those entered into the ordinary course of business and under normal terms and conditions, entered into between, directly or indirectly, (i) our Directors, Chief Executive Officer, Corporate Officers, one of our shareholders who holds, directly or indirectly, more than 10% of our voting rights, and (ii) one of our subsidiary, in which we directly or indirectly held for more than 50% of share capital.

Any related party transaction concluded without the prior consent of a majority of our disinterested Directors can be voided by a court, if we incur a loss as a result. In addition, an interested related party may be held liable on this basis.

Power to Decide Upon the Compensation of Directors, Chairman and Chief Executive Officer

Under our *statuts*, the Shareholders' Meeting may provide for the payment to the Directors of an annual fixed sum for their attendance at Board meetings (*jetons de présence*). The amount of such compensation remains unchanged until further decision by the Shareholder's Meeting. The Board of Directors allocates this amount between its members in the manner it deems appropriate.

Under our *statuts*, the Board of Directors determines the compensation of its Chairman as well as of our Chief Executive Officer and Corporate Officers. Nevertheless, the shareholders have authority to determine the elements of the compensation and the compensation is allowed to be paid only after the approval of the General Meeting with a double mandatory vote. Under the Law No 2016-1691 of December 9, 2016 relating to transparency, anti-corruption and modernization of the economy, a say-on-pay process applies to compensation granted to its Chairman and its Chief Executive Officer. Henceforth, a resolution ("ex-ante" vote) will be submitted to shareholders, at least each year, during the Annual General Meeting in order to approve the principles and criteria of determination, distribution and awarding of fixed, variable and exceptional elements of the remuneration of the managers under their mandate (including benefits of any kind). If the resolution on the remuneration is rejected, the principles and criteria previously approved by the shareholders will be applied. Then, during the General Meeting of the next financial year, the shareholders will decide on the elements composing the compensation paid and allocated for the precedent financial year ("ex-post" vote).

Borrowing powers exercisable by the Directors

Under French company law and our *statuts*, Directors other than legal entities are forbidden to take out loans from CGG SA in any form whatsoever or to have CGG SA grant them an overdraft in current account or otherwise. It is also forbidden to have CGG SA stand as surety for them or back their commitments in respect of third parties. This prohibition also applies to Executive Officers and to permanent representatives of legal-entity Directors. It also applies to the spouses, lineal forebearers or descendants of the persons referred to in this paragraph and also to any trustee.

Also, under Article L.225-43 of the French Commercial Code, Directors, Executive Officers and permanent representatives of legal-entity Directors may not borrow money or obtain a guarantee from the Company. Any such loan or guarantee would be void and may not be relied upon by third parties.

Retirement of Directors under an Age Limit Requirement

Under our *statuts*, the Chairman of the Board's term of office ends, at the latest, after the Annual Ordinary Shareholders' Meeting following the date on which he reaches the age of 65. However, the Board of Directors

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may further extend the office of the Chairman, one or more times for a total period not to exceed three years. Our *statuts* also provide that when the offices of Chairman and Chief Executive Officer are held by the same person, the Chief Executive Officer's term of office ends on the same date as that of the Chairman. In accordance with Article L.225-19 of the French Commercial Code, no more than one-third of the members of the Board of Directors may be more than 70 years old, unless the *statuts* of the Company provide otherwise. Our *statuts* do not contain any provisions contrary to this limitation.

Number of Shares Required for a Director's Qualification

Under our *statuts*, throughout his term of office, each Director must own at least one share. Nevertheless, the internal regulations of the Board provide that each Director owns at least 156 shares of the Company.

Share capital

As of December 31, 2016, our issued share capital amounted to 17,706,519 divided into 22,133,149 shares of the same class with a nominal value of 0.80 per share. The shares are fully paid. Pursuant to our *statuts*, fully paid shares may be held either in registered or in bearer form at the option of the shareholder. The *statuts* also allow us to avail ourselves of a procedure known as *titres au porteur identifiables* by which we may request Euroclear France to disclose the name, nationality, address and the number of shares held by the holders of any of our securities which have, or may in the future have, voting rights. See "Form, Holding and Transfer of Shares."

As of March 31, 2017, our issued share capital still amounted to 17,706,519 divided into 22,133,149 shares, with a nominal value of 0.80 per share.

Dividend and liquidation rights

We may only distribute dividends out of our "distributable profits", plus any amounts held in our reserves which the shareholders decide to make available for distribution, other than those reserves which are specifically required by law. "Distributable profits" consist of our unconsolidated net profit in each fiscal year, as increased or reduced by any profit or loss carried forward from prior years, less any contributions to the reserve accounts pursuant to law.

Under French law, before dividends may be paid with respect to any fiscal year, we must contribute a minimum of 5% of our annual unconsolidated net income to a legal reserve fund, until it reaches an amount equal to 10% of our outstanding share capital. The legal reserve is distributable only upon our liquidation.

Our *statuts* provide that the General Shareholders' Meeting, either on a recommendation from the Board of Directors or on its own initiative, may allocate all or part of our distributable profits, if any, to one or more special or general reserves or to keep such profits as retained earnings to be carried forward to the next fiscal year. Any remaining distributable profits are distributed to shareholders as dividends in proportion to their holdings. However, except in the case of a decrease in share capital which aims to offset losses, no distribution may be made to shareholders when the shareholders' equity is or would become, as a result of the distribution, less than the amount of the share capital increased by amounts held in reserve accounts pursuant to law. The methods of payment of dividends are determined by the Annual General Meeting of Shareholders or by the Board of Directors in the absence of a decision by the shareholders. According to our *statuts*, the General Meeting has the power to give each shareholder the option of receiving all or part of its dividend payment in either cash or shares.

If we have earned distributable profits since the end of the preceding fiscal year, as shown on an interim income statement certified by our auditors, the Board of Directors has the authority, without the approval of shareholders, to distribute interim dividends to the extent of such distributable profits for the period covered by the interim income statement.

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Subject to the statement above regarding interim dividends, the payment of dividends is fixed at the Ordinary General Meeting of Shareholders at which the annual accounts are approved, upon the recommendation of the Board of Directors. Under French law, dividends are normally distributed to shareholders in proportion to their respective holdings. Dividends are payable to all holders of shares, except for treasury stock, issued and outstanding on the date of the Shareholders' Meeting approving the distribution of dividends or, in the case of interim dividends, on the date of the Board of Directors' meeting approving the distribution of interim dividends. We must make annual dividend payments within nine months of the end of our fiscal year, unless otherwise authorized by a court order. Dividends not claimed within five years of the date of payment revert to the French State.

Our Board of Directors may, at any time and for any reason, propose to an Extraordinary General Meeting of Shareholders the early dissolution of the Company and we may be placed in liquidation in compliance with the relevant provisions of the French company law. If the Company is liquidated, those of its assets remaining after payment of our debts, liquidation expenses and all of our remaining obligations will be distributed first to repay in full the nominal value of the shares, and the surplus, if any, will be distributed among the shareholders in proportion to the nominal value of their shareholdings.

Changes in share capital

Increases in the share capital

We may increase our share capital either:

- by issuing additional shares (either ordinary or preferred shares) or securities giving access, immediately or in the future, to a portion of our share capital; or

- by increasing the nominal value of our existing shares.

We may issue additional shares:

- for cash;

- for assets contributed in kind;

- upon the conversion of preferred shares, debt securities or other debt instruments previously issued;

- upon the conversion of ordinary shares into preferred shares;

- as a result of a merger or a split;

- by the capitalization of reserves, retained earnings or issuance premiums;

- for cash credits payable by the Company; or

- for any combination of the preceding items.

We may increase our share capital only with the approval of the shareholders at an Extraordinary General Meeting, following a report of the Board of Directors. However, when a capital increase takes place through capitalization of reserves, retained earnings or issuance premiums, the General Meeting at which the decision to increase the capital is taken follows the quorum and majority requirements of Ordinary General Meetings. Increases effected by an increase in the nominal value of shares require unanimous approval of the shareholders, unless effected by capitalization of reserves, retained earnings or issuance premiums. See "Attendance and Voting at Shareholders' Meetings."

The shareholders may delegate to the Board of Directors (i) the decision to increase the share capital or (ii) after authorizing the increase in share capital, the right to carry out any such increase. The Board of Directors may further delegate this right to the Chief Executive Officer. Each time the shareholders decide on a share

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capital increase or decide to delegate to the Board of Directors the decision to increase the share capital or the right to carry out a capital increase, they must also determine in a separate resolution whether or not to proceed with a capital increase reserved for employees of the Company and its subsidiaries or whether to delegate to the Board of Directors the right to carry out such reserved capital increase.

Decreases in share capital

An Extraordinary General Meeting of Shareholders also has the power to authorize and implement a reduction in share capital which may be achieved either:

- by decreasing the nominal value of our outstanding shares; or
- by reducing the number of our outstanding shares.

The number of outstanding shares may be reduced either by an exchange or repurchase of shares and cancellation of shares.

According to French company law, any decrease in our share capital requires approval by the shareholders entitled to vote at an Extraordinary General Meeting. In the case of a capital reduction, other than a reduction to absorb losses and a reduction pursuant to a program of acquisition of shares, all holders of shares must be offered the possibility to participate in such a reduction. See “Acquisition of our own Shares”. All holders of shares in a given class of shares must be treated equally unless each affected shareholder agrees otherwise. Our creditors may oppose a capital reduction during the 20-day period following the registration with the Registry of Commerce of the minutes of the Shareholders’ Meeting approving the capital reduction if such reduction does not result from losses. Upon a creditor’s request, the *Tribunal de Commerce* may order us to reimburse our creditors or guarantee our debt.

Preferential rights to subscribe

According to French law, our current shareholders have preferential rights on a pro rata basis to subscribe (*droit préférentiel de souscription*) for any issue of additional shares to be subscribed in cash or by set-off of cash debts and to subscribe to any issue of other securities which may either directly or indirectly result in, or carry rights to subscribe for, additional shares issued by us. An Extraordinary Shareholders’ Meeting may decide to withdraw the shareholders’ preferential right to subscribe, either in respect of any specific issue of securities, or more generally, with respect to an authorization by the Extraordinary General Meeting, to issue shares or other equity securities, for a duration not to exceed 26 months or 18 months in the case of an authorization given for an issue of securities to identified persons or categories of persons. Shareholders may also individually waive their preferential right to subscribe in respect of any offering. French law requires that the Board of Directors and our statutory auditors present reports that specifically address any proposal to waive preferential subscription rights. In the event of a waiver, the issue of securities must be completed within the period prescribed by law. Preferential rights to subscribe, if not previously waived, are tradable during the subscription period relating to a particular offering of shares and may be quoted on Euronext Paris. In the event that the preferential rights of shareholders are withdrawn, the Shareholders’ Meeting has the power to grant, or to authorize the Board of Directors to grant, existing shareholders a non-transferable priority right (*délai de priorité*) to subscribe for new shares issued during a minimum period of three trading days.

Attendance and voting at Shareholders’ Meetings

General

In accordance with French law, General Shareholders’ Meetings may be ordinary or extraordinary. Ordinary General Meetings of Shareholders are required for matters such as:

- the election, replacement and removal of Directors;
- the appointment of statutory auditors;

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the approval of annual accounts;

more generally, all decisions which do not require the approval of the Extraordinary General Meeting of the Shareholders; and

the declaration of dividends or the authorization for dividends to be paid in shares.

Extraordinary General Meetings of Shareholders are required for approval of all matters and decisions involving:

changes in our *statuts* (including changing our corporate purposes);

increasing or reducing our share capital;

change of nationality of the Company, subject to certain conditions as described in Article L.225-97 of the French Commercial Code;

extending or abridging the duration of the Company;

mergers and spin-offs;

creation of a new class of shares;

authorization of notes or other securities giving access, immediately or in the future, to a portion of our share capital;

transformation of our Company into another legal form; and

voluntary liquidation of our Company before the end of its statutory term.

Annual Ordinary Meetings

Our Board of Directors must convene the Annual Ordinary General Meeting of Shareholders each year for approval of the annual accounts. This meeting must be held within six months of the end of our fiscal year, unless such time is extended by an order of the President of the *Tribunal de Commerce* pursuant to a request. Other Ordinary or Extraordinary Meetings may be called at any time during the year. Meetings of Shareholders may be convened by the Board of Directors or, in the circumstances prescribed by law, if the Board of Directors fails to call such a meeting, by our statutory auditors or by an administrator appointed by the President of the *Tribunal de Commerce* or by a shareholder holding the majority of the share capital or voting rights following a public offer or the transfer of a block trade. Any of the following may request the President of the *Tribunal de Commerce* to appoint an administrator:

one or several shareholders holding in the aggregate at least 5% of our share capital;

any interested parties in case of emergency;

the Workers' Committee in case of emergency; or

an association of shareholders who have held the shares in registered form for at least two years and holding, in the aggregate, at least 1% of our voting rights.

Notice of Shareholders' Meetings

French law requires that a preliminary notice (*avis de réunion*) of a General Meeting of a listed company be published in the *Bulletin des Annonces Légales Obligatoires* ("BALO") at least 35 days before the date set for the meeting. Such preliminary notice, the text of the resolutions proposed by the Board of Directors, the resolutions or the points presented by the shareholders together with the aggregate number of voting rights and shares of the Company and certain documents useful for the meeting must be published on the Company's website at least 21 days (or 15 days in case of a takeover bid) before the date of the meeting. A copy of the

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preliminary notice can first be sent to the *Autorité des marchés financiers* (the “AMF”), the self-regulatory organization that has general regulatory authority over the French regulated exchanges, with an indication of the date of its publication in the BALO. The preliminary notice of a General Meeting must mainly state the details of the Company and information about the voting process and the meeting, the matters to be discussed at the meeting and the draft of the resolutions to be discussed, but also describe how the shareholders can request the inclusion of points or draft resolutions or questions on the agenda of the General Meeting as well as information regarding the vote by proxy, the address of the Company website, the date of registration of the securities and how and when to consult the final text. The agenda of the meeting and the draft of the resolutions to be discussed, such as described in the preliminary notice, may only be modified between the date of publication of the preliminary notice and the twenty-first day preceding the General Meeting. From the date of publication until 25 days before the date of the General Meeting (or within 10 days from the date of the General Meeting in case of a takeover bid), additional resolutions to be submitted for approval by the shareholders or points to be discussed at the meeting may be proposed to the Board of Directors by:

one or more shareholders holding, in the aggregate, a certain percentage of our share capital (0.5% to 4% determined on the basis of a statutory formula relating to capitalization); or

a duly authorized association of shareholders who have held their shares in registered form for at least two years and holding, in the aggregate, at least 1% of our voting rights.

The Board of Directors must submit these resolutions to a vote of the shareholders.

At least 15 days before the date set for any General Meeting on first call, and at least 10 days before any General Meeting on second call (and at least 6 and 4 days, respectively, in case of takeover bid), we must send a notice (*avis de convocation*) by mail, or by electronic mail if accepted by the holder of registered shares, to all holders of registered shares who have held such shares for more than one month prior to the date of the notice. Notice of the Meeting must also be given by publication in a journal authorized to publish legal announcements in the local administrative department (*département*) in which we are registered as well as in the BALO, with prior notice having been given to the AMF. Such a notice must mainly include the details of the Company, as well as a description of the type, agenda, place, date and time of the meeting and other information about the voting process. With the sole exception of removal and replacement of Directors (which may be discussed at any meeting), any matter which does not appear on the agenda may not be discussed at the meeting.

Attendance and voting at Shareholders' Meetings

Attendance and exercise of voting rights at both Ordinary and Extraordinary General Meetings of Shareholders are subject to certain conditions. A shareholder does not need to have a minimum number of shares in order to be able to attend or be represented at an Extraordinary General Meeting. Any statutory provision to the contrary is null and void. In order to participate in any General Meeting, a holder of registered shares must have paid up its shares and have its shares registered in his name or in the name of the accredited financial intermediary referred to in Article L.228-1 of the French Commercial Code in a shareholder account maintained by us or on our behalf two business days prior to the meeting. Similarly, a holder of bearer shares must obtain from the accredited financial intermediary (*intermédiaire financier habilité*) with whom such holder has deposited its shares a statement of holdings and send it to the location specified in the notice of the meeting two business days before the meeting convenes.

Proxies and Votes by Mail

Subject to the foregoing, all shareholders have the right to participate in General Meetings, either in person, by a proxy or by mail and, subject only to any applicable laws, may vote according to the number of shares they hold. Proxies may be granted by a shareholder to:

another shareholder;

his or her spouse;

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the person with whom the shareholder has entered into a civil solidarity pact (“PACS”);
any other natural or legal person of his or her choice.

The shareholder must write and send us the proxy.

In case in which the proxy is given to someone else than the shareholder’s spouse or the person with who a PACS has been concluded, the proxy must inform the shareholder of any conflict of interest by registered letter in accordance with Article L.225-106-1 of the French Commercial Code.

Alternatively, the shareholder may send us a blank proxy without nominating any representative. In that case, the Chairman of the Shareholders’ Meeting will vote the shares with respect to which such blank proxy has been given in favor of all resolutions proposed or approved by the Board of Directors and against all others. We will send proxy forms to any shareholder on request, provided such request is received by the Company at least six days before the date of the relevant General Meeting. In order to be counted, we must receive proxy forms at our registered office or at such other address indicated in the notice convening the meeting prior to the date of the relevant General Meeting. With respect to voting by mail, we must send our shareholders a form of such vote and we must receive the form at least three days prior to the date of the relevant General Meeting.

Quorum

Under French law, a quorum requires the presence in person or voting by mail or by proxy of shareholders representing, in the aggregate, not less than:

20% of the shares entitled to vote (in the case of an Ordinary General Meeting convened on first call, an Extraordinary General Meeting convened on second call or an Extraordinary General Meeting convened on first call, if deciding upon any capital increase by capitalization of reserves, retained earnings or share premium); or

25% of the shares entitled to vote (in the case of any other Extraordinary General Meeting convened on first call).

No quorum is required in the case of an Ordinary General Meeting convened on second call or an Extraordinary General Meeting convened on second call, if deciding upon any capital increase by capitalization of reserves, retained earnings or share premium.

If a quorum is not present at any meeting on first call, the meeting is adjourned and reconvened, and in the case of an Extraordinary General Meeting, for a date not more than two months later. When a General Meeting is reconvened, only questions which were on the agenda of the adjourned meeting may be discussed and voted upon.

Any shareholder may also, if the Board of Directors or its Chairman allows at the time of the convocation to a General Meeting, attend the meeting via video-conference or by means of electronic telecommunication or tele-transmission subject to, and in accordance with, the conditions laid down by the legislation or the regulations then in force. This shareholder is then considered to be present at the meeting when calculating the quorum and the majority.

Majority

At an Ordinary General Meeting or an Extraordinary General Meeting deciding upon any capital increase by capitalization of reserves, retained earnings or share premium, a simple majority of votes cast by the shareholders present or represented at such meeting is required to pass a resolution. At any other Extraordinary General Meeting, a two-thirds majority of votes cast is required to pass a resolution. A unanimous vote, however, is required to increase the liabilities of shareholders. Abstention from voting by those present or represented by proxy or voting by mail is viewed as a vote against the resolutions submitted to a vote.

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Our *statuts* provide that, as from May 22, 1997, each share that is fully paid and has been held in registered form by the same shareholder for a period of at least two consecutive years will entitle such shareholder to two votes. The attribution of double voting rights for shares held in registered form by the same shareholder for a period of at least two consecutive years is a legal requirement under French company law, and this provision can be removed only by a decision of an Extraordinary General Meeting. In the event of capital increases effected by an attribution of new shares, as a result of the incorporation of reserves, retained earnings or issuance premiums, the shares attributed by reason of and proportionately to the ownership of shares holding double voting rights are immediately granted double voting rights as if they themselves had fulfilled the requirements therefore. Under French company law, shares that have to be transferred pursuant to laws and regulations applicable to cross-shareholdings, as well as shares held by entities controlled directly or indirectly by us, are not entitled to voting rights. In the latter case, the shares do not count for quorum or majority purposes.

Acquisition of our own shares

Under French law, our Company may not issue shares to itself either directly or through a financial intermediary acting on our behalf. However, exceptionally, we may, either directly or through a financial intermediary acting on our behalf, purchase our shares:

- (1) to reduce our share capital (albeit not to absorb losses), canceling the shares we purchase, with our shareholders' approval at an Extraordinary General Meeting;
- (2) to provide shares to our employees under a profit sharing plan or stock option plan; or
- (3) in the context of a share repurchase program that allows us to acquire up to 10% of our share capital for a maximum period of 18 months. To acquire shares in the context of a share repurchase program, we must first obtain our shareholders' approval at an Ordinary General Meeting and make public a description of such program prior to its launch.

We may not repurchase under either (2) or (3) above an amount of shares that would result in our Company holding, directly or through a person acting on our behalf, more than 10% of our outstanding share capital, without canceling the said 10% first. In addition, we may not cancel more than 10% of our outstanding share capital over any 24-month period.

We must hold any shares we repurchase in registered form. These shares also must be fully paid up. Shares repurchased by us are deemed outstanding under French law but are not entitled to dividends or voting rights and we may not ourselves exercise preferential subscription rights. Such shares do not count for quorum or majority purposes (such repurchase may therefore trigger threshold crossings, see "Requirements for Holdings Exceeding Certain Percentages"). The shareholders, at an Extraordinary General Meeting, may decide not to take such shares into account in determining the preferential rights to subscribe attached to the other shares (if such a decision is not taken, these rights must be either sold on the market before the end of the subscription period or distributed to the other shareholders on a pro rata basis).

A direct subsidiary is generally prohibited by French law from holding shares in its parent and, in the event it becomes a holder of shares, such subsidiary must transfer such shares within one year following the date on which it becomes the holder thereof. An indirect subsidiary may only acquire shares if such subsidiary demonstrates a business purpose for holding the shares but in no event will it be entitled to vote such shares.

At the Shareholders' Meeting held on May 27, 2016, our shareholders renewed the existing authorization to acquire up to 10% of our share capital through purchases of shares and to resell shares so acquired for the 18 months following the date of such meeting.

Under such authorization, we are allowed to carry out transactions on our shares with the following objectives:

to support liquidity of our shares through a liquidity contract entered into with an investment service provider in compliance with the Code of Practice of the French *Autorité des marchés financiers*,

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to deliver shares in the scope of securities giving access, immediately or in the future, to shares by redemption, conversion, exchange, presentation of a warrant or by any other means,

to deliver, immediately or in the future, shares in exchange in the scope of external growth within the limit of 5% of the share capital,

to allocate shares to employees and officers of the Company or affiliated companies within the meaning of Article L.225-180 of the French Commercial Code, including but not limited to the scope of options to purchase shares of the Company,

to deliver shares for no consideration to Executive Officers and employees, including but not limited to the scope of Articles L.225-197-1 et seq. of the French Commercial Code,

to cancel the shares through a capital reduction, subject to a decision of, or an authorization, by the Extraordinary General Meeting.

In accordance with these objectives (save for liquidity contracts), and subject to the provisions of the European Commission Regulation Number 2273/2003 of December 22, 2003, the treasury shares so acquired may be either cancelled, sold or otherwise transferred. The shares may be acquired, sold or transferred, on one or several occasions, by any means, including by individual agreement or market purchase, by an offer to buy, or in a block of shares and at any moment, but not during a take-over bid. The maximum amount of share capital that can be purchased or transferred as block of shares can be up to the total authorized amount under this program.

The General Meeting approved a maximum purchase price of 40 per share.

The maximum number of shares that we are entitled to hold is 10% of our share capital as at the time of the purchase, less any shares acquired under previous authorizations. Notwithstanding the above, pursuant to Article L.225-209, paragraph 6 of the French Commercial Code, the number of shares that may be acquired and retained for possible use for payment or exchange in the context of a merger, demerger or contribution may not exceed 5% of the share capital.

This authorization was granted for a period of 18 months from May 27, 2016 and cancelled and replaced the authorization granted to the Board of Directors by the General Meeting held on May 29, 2015. This share repurchase plan was not implemented in 2016.

As of December 31, 2016, we held 25,000 of our own shares.

Trading in our own shares

Under European Commission Regulation Number 2273/2003 of December 22, 2003 and Commission delegated Regulation No 2016/1052 (EU) of 8 March 2016, trades by a company in its own shares are deemed valid when the following conditions are met:

each purchase must not be made at a price higher than the higher of the price of the last independent trade and the highest current independent bid on Euronext Paris or any other trading venues on which the shares are traded and purchased by us; and

the purchase must not account for more than 25% of the average daily trading volume on Euronext Paris in the shares during the twenty trading days immediately preceding the purchase.

However, there are two periods during which we are not permitted to trade in our own securities: the 15-day period before the date on which we make our consolidated annual accounts public, and the period beginning on the date on which we become aware of information that, if disclosed, would have a significant impact on the market price of our securities and ending on the date this information is made public.

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We must file a report with the AMF every six months as well as at entry into force, amendment or termination of the liquidity arrangement containing the assessment of such arrangement. Such report is then posted on our website. In addition, we must also file with the AMF a monthly report containing details of all transactions relating to our shares that we may have carried out during the month.

Form, holding and transfer of shares

Form of Shares. Our *statuts* provide that our fully paid shares may be held in either registered or bearer form at the option of the shareholder. We may avail ourselves of the procedure known as *titres au porteur identifiables*, according to which we are entitled to request Euroclear France to disclose the name, nationality, address and the number of shares held by holders of those securities of ours which have, or which may in the future acquire, voting rights.

Holding of Shares. In accordance with French law concerning dematerialization of securities, the ownership rights of holders of shares are represented by book entries rather than by share certificate. According to our *statuts*, registered shares are entered into an account held by us or by a representative nominated by us, while shares in bearer form are placed in an account held by an accredited financial intermediary (*intermédiaire financier habilité*).

We maintain a share account with Euroclear France in respect of all shares in registered form, which, in France, is administered by BNP Paribas Securities Services, acting on our behalf as our agent. Shares held in registered form are inscribed in the name of each shareholder (either directly, or, at the shareholder's request, through such shareholder's accredited financial intermediary) in separate accounts maintained by BNP Paribas Securities Services on our behalf. Each shareholder account shows the name of the holder and the number of shares held and, in the case of shares inscribed through an accredited financial intermediary, shows that they are so held. BNP Paribas Securities Services, as a matter of course, issues confirmations to each registered shareholder as to holdings of shares inscribed in the shareholder's accounts, but these confirmations do not constitute documents of title.

Shares held in bearer form are held and inscribed on the shareholder's behalf in an account maintained by an accredited financial intermediary with Euroclear France separately from our share account with Euroclear France. Each accredited financial intermediary maintains a record of shares held through it and will issue certificates of inscription in respect thereof. Shares held in bearer form may only be transferred through accredited financial intermediaries and Euroclear France. As noted above, our *statuts* allow us to request from Euroclear France details concerning the identity of the holders of shares in bearer form at any time.

Transfer of Shares. Our *statuts* do not contain any restrictions relating to the transfer of shares. An owner of shares resident outside France may trade such shares on Euronext Paris. Should such owner (or the broker or other agent) require assistance in this connection, an accredited financial intermediary should be contacted.

Prior to any transfer of shares held in registered form on Euronext Paris, such shares must be converted into bearer form and, accordingly, must be registered in an account maintained by an accredited financial intermediary. A shareholder may initiate a transfer by giving instructions (through an agent if appropriate) to the relevant accredited financial intermediary.

Requirements for holdings exceeding certain percentages

French company law provides that any individual or entity, who acting alone or in concert with others, acquires, directly or indirectly, more than 5%, 10%, 15%, 20%, 25%, 30%, 33 1/3%, 50%, 66 2/3%, 90% or 95% of our outstanding shares or voting rights thereof or whose shareholding falls below any such percentage must notify us at the latest by the closure of the fourth trading day following the date the threshold has been crossed of the number of shares it holds and of the voting rights attached thereto. Such individual or entity must also notify the AMF within the same period.

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In order to permit holders of our shares to give the notice required by law, we must monthly, in accordance with Article 221-3 of the *Règlement Général* of the AMF, post (including on the Company website) information with respect to the total outstanding number of voting rights and shares if these have changed and provide the AMF with a written notice.

If any person fails to comply with the legal notification requirement, the shares or voting rights in excess of the relevant threshold will be deprived of voting rights for all Shareholders' Meeting until the end of a two-year period following the date on which the owner thereof complies with the notification requirements. In addition, any shareholder who fails to comply with the above requirements may have all or part of its voting rights (and not only with respect to the shares in excess of the relevant threshold) suspended for up to five years by the *Tribunal de Commerce* at the request of our Chairman, any shareholder or the AMF, and may be subject to criminal penalties.

French company law imposes additional reporting requirements on persons who acquire more than 10%, 15%, 20% or 25% of our outstanding shares or voting rights. These persons must file a report with us and the AMF at the latest by the closure of the fifth trading day following the date they cross the threshold. In the report, the acquirer must specify his intentions for the following six-month period, including whether or not it intends to continue its purchases, to acquire control of our Company or to seek nomination to our Board of Directors. In addition, the acquirer must also provide information on its strategy, the means of financing its acquisition, any stock lending or stock borrowing agreement and regarding whether or not it is acting in concert with another party. The AMF makes the notice public. The acquirer can amend its stated intentions in case of changes and in such case, this latter must file a new report which opens a new six-month period. Failure to comply with the reporting requirements or to abide by the stated intentions may result in a sanction similar to that applicable to failure to comply with the legal notification requirement.

In addition to the provisions of French company law, our *statuts* provide that any shareholder who directly or indirectly acquires ownership or control of shares representing 1% or any multiple thereof of our share capital or voting rights, or whose shareholding falls below any such limit, must inform us within five trading days of the crossing of the relevant threshold, of the number of shares then owned by such shareholder. Failure to comply with these notification requirements may result, at the request, recorded in the minutes of the General Meeting, of one or several shareholders holding at least 1% of the capital, in the shares in excess of the relevant threshold being deprived of voting rights for all Shareholder Meetings until the end of a two-year period following the date on which the owner thereof has complied with such notification requirements.

Compulsory Tender. The AMF Regulations provide that a shareholder, acting alone, or shareholders acting in concert, as these terms are defined in Article L.233-10 of the French Commercial Code, who come to own directly or indirectly more than 30% of the voting rights or share capital of a French company listed on a regulated market in France must immediately notify the AMF, and submit a compulsory tender for all the shares of capital and all securities giving access to the share capital or voting rights of such company. The tender must be submitted on terms acceptable to the AMF. Any person acting alone or in concert is under the same obligation of notification and compulsory offer if, further to a merger or a contribution, he or she ends up holding more than 30% of the shares or voting rights of a French company listed on a regulated market.

In addition, the same obligation applies to any shareholder acting alone or shareholders acting in concert who, owning directly or indirectly between 30% and 50% of the voting rights or share capital of a French company listed on a regulated market in France, increase their interest by more than 2% of the existing total number of shares or voting rights over a maximum period of twelve consecutive months.

The French commercial law requires a 50% minimum threshold for compulsory tenders described above. The tender automatically lapses if a shareholder, acting alone, or shareholders acting in concert, as these terms are defined in Article L.233-10 of the French Commercial Code fails to obtain more than 50% of the voting rights or share capital of a French company listed on a regulated market. When the majority seems impossible or

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unlikely to be achieved for reasons not related to the characteristics of the tender, the AMF may, at the request of the bidder, allow the threshold to be removed or lowered below 50% of the voting rights or of the share capital. This threshold provides additional adverse consequences on a compulsory tender in case of lapsing: (i) if the mandatory tender offer results from the acquisition of more than 30% of the share capital or voting rights of French company listed on a regulated market in France, the voting rights exceeding the 30% threshold will be suspended, and (ii) if the compulsory tender is triggered by an increase of interest by more than 1% of the existing total number of shares or voting rights over a maximum period of twelve consecutive months (as described above), voting rights exceeding the number of shares held before this acquisition plus 1% will be suspended and the relevant shareholder will not be able to increase its shareholding other than through a tender.

In addition, the French Labor Code requires the issuance of an opinion by our works council (*comité d'entreprise*) in case of a compulsory tender on our Company by any person acting alone or in concert, at the end of an “ad hoc” information and consultation procedure. This opinion shall be issued at the latest within one month from the filing of the draft of the tender. However, the elected members of our works council will be entitled to request from the President of *Tribunal de Grande Instance*, an extension of such one-month period in case of specific difficulties in obtaining the necessary information to be in a position to issue an opinion, except if the problem is caused by our deliberate refusal to disclose the requested information. This opinion will then be provided to our Board of Directors before it takes a decision on the tender. Our works council will be entitled not only to consult the bidder, but also to request the appointment of an expert who will have to issue a report assessing its intentions on our industrial and financial policy and strategic plans, within three weeks from the filing of the draft of the tender.

The AMF is vested with the power to grant relief from the obligation to tender for all of the shares of the target company and may consider certain exemptions when petitioned for such relief by the acquiring shareholders. These exemptions primarily concern previous control of the target company or a commitment to divest within a given period.

Material contracts

The following contracts (not being contracts entered into in the ordinary course of business) have been entered into by us or our subsidiaries within the two years immediately preceding the date of this document and are, or may be, material:

US\$165 million revolving credit agreement dated July 15, 2013

See “Item 5: Operating and Financial Review and Prospects – Liquidity and Capital Resources – Financing Arrangements – US\$165 million Revolving Credit Agreement (US revolving facility)” for a description of our US\$165 million revolving credit agreement dated July 15, 2013 as subsequently amended in 2014, 2015 and 2016.

US\$325 million revolving credit agreement dated July 31, 2013

See “Item 5: Operating and Financial Review and Prospects – Liquidity and Capital Resources – Financing Arrangements – US\$325 million Revolving Credit Agreement (French revolving facility)” for a description of our US\$325 million revolving credit agreement dated July 31, 2013 as subsequently amended in 2014, 2015 and 2016.

2019 secured term loans

See “Item 5: Operating and Financial Review and Prospects – Liquidity and Capital Resources – Financing Arrangements – 2019 secured term loans” for a description of our 2019 secured term loans.

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Exchange controls

Ownership of ADSs or shares by Non-French Persons

Other than as described above, under French law, there is no limitation on the right of non-resident or foreign shareholders to own or to exercise their voting rights attached to the securities they hold in a French company.

Pursuant to the French Monetary and Financial Code, administrative authorization is no longer required of non-European residents prior to acquiring a controlling interest in a French company, with exceptions regarding sensitive economic areas such as defense, public health, etc. However a notice (*déclaration administrative*) must be filed with the French Ministry of the Economy in certain circumstances and in particular for the acquisition of an interest in us by any person not residing in France or any foreign controlled resident if such acquisition would result in (i) the acquisition of a controlling interest of more than 33.33% of our share capital or voting rights or (ii) the increase of a controlling interest in us unless such person not residing in France or group of non-French residents already controls more than 50% of our share capital or voting rights prior to such increase. In certain circumstances (depending upon such factors as the percentage and value of the acquired part of our share capital), an additional declaration, for statistical purposes shall be filled with the *Banque de France*.

Exchange controls

Under current French exchange control regulations, there are no limitations on the amount of payments that may be remitted by us to non-residents. Laws and regulations concerning foreign exchange control do require, however, that all payments or transfers of funds (including payments of dividends to foreign shareholders) made by a French resident to a non-resident be handled by an accredited intermediary. In France, all registered banks and substantially all credit establishments are accredited intermediaries.

Taxation

The following summarizes the material French tax and US federal income tax consequences to US Holders (as defined below) of the ownership and disposition of ADSs and shares.

For the purposes of this discussion, a US Holder means a beneficial owner of ADSs or shares that is, for US federal income tax purposes:

- an individual who is a citizen or resident of the United States;

- a corporation, or other entity treated as a corporation, created or organized in or under the laws of the United States or of any State thereof, including the District of Columbia;

- an estate the income of which is subject to US federal income taxation regardless of its source; or

- a trust if a court within the United States is able to exercise primary supervision over the trust and one or more US persons have the authority to control all substantial decisions of the trust, or the trust has validly elected to be treated as a domestic trust for US federal income tax purposes.

This discussion is not a complete description of all of the tax consequences of the ownership or disposition of ADSs or shares.

The summary assumes that each obligation in the deposit agreement between The Bank of New York and us (the “Deposit Agreement”) and any related agreement will be performed in accordance with its terms and is based on the current tax laws of the Republic of France and the United States, including the US Internal Revenue Code of 1986, as amended (the “Code”), its legislative history, existing and proposed Treasury Regulations thereunder published rulings and court decisions as well as the Convention between the Government of the United States of America and the Government of the French Republic for the Avoidance of Double Taxation and

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the Prevention of Fiscal Evasion with Respect to Taxes on Income and Capital dated August 31, 1994 (the “Treaty”), the 2004 Protocol amending the Treaty entered into force on December 21, 2006, and the 2009 Protocol amending the Treaty entered into force on December 23, 2009, all as of the date hereof and all subject to change, possibly with retroactive effect.

For purposes of the Treaty, French tax law and the Code, US Holders of ADSs generally will be treated as owners of the corresponding number of our shares underlying those ADSs held by The Bank of New York as depositary (the “Depositary”).

Your individual circumstances may affect the tax consequences of the ownership or disposition of ADSs or shares to you, and your particular facts or circumstances are not considered in the discussion below.

This discussion summary does not address state, local or other tax laws other than French tax law and US federal income tax law. This summary also does not discuss all of the tax considerations that may be relevant to, nor is it intended to apply to, certain holders of ADSs or shares subject to special treatment under the relevant tax laws, such as:

- investors that own (directly, indirectly or by attribution) 5% or more of our voting stock;
- banks;
- dealers in securities or currencies;
- traders in securities who elect to apply a mark-to-market method of accounting;
- financial institutions;
- regulated investment companies;
- real estate investment trusts;
- tax-exempt organizations;
- insurance companies;
- persons that hold ADSs or shares as part of a hedging, straddle, conversion or other integrated transaction;
- US Holders who hold ADSs or shares other than as capital assets;
- persons whose functional currency is not the US dollar;
- certain US expatriates;
- individual retirement accounts and other tax-deferred accounts;
- persons subject to the US alternative minimum tax or net investment income tax;
- investors that hold the ADSs or shares in connection with a trade or business conducted outside the United States; and
- persons who acquired ADSs or shares pursuant to an employee stock option or otherwise as compensation.

The US federal income tax treatment of a partner in an entity or arrangement treated as a partnership for US federal income tax purposes that holds ADSs or shares will depend on the status of the partner and the activities of the partnership. Holders that are entities or arrangements treated as partnerships for US federal income tax purposes should consult their tax advisors concerning the US federal income tax consequences to them and their partners of the ownership and disposition of ADSs or shares by the partnership.

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You should consult your own tax advisor regarding the French and US federal, state and local and other tax consequences of the ownership and disposition of ADSs or shares in the light of your particular circumstances, including the effect of any state, local or other tax laws. In particular, you should confirm whether you are eligible for the benefits of the Treaty with your advisor and should discuss any possible consequences of failing to be so eligible. You should also consult your tax advisor in the event that you become entitled to receive any dividend that is approved to be paid.

French taxation

The following describes the material French tax consequences of owning and disposing of ADSs relevant to US Holders which do not hold their ADSs in connection with a permanent establishment or fixed base in France through which a holder carries on business or performs personal services in France. The statements relating to French tax laws set out below are based on the laws in force as at the date hereof, and are subject to any changes in applicable French tax laws or in any applicable double taxation conventions or treaties with France occurring after such date.

This discussion is intended only as a descriptive summary and does not purport to be a complete analysis or list of all potential tax effects of the ownership of ADSs.

Taxation of dividends

France generally imposes a 30% withholding tax on dividends distributed in cash or in the form of shares by a French corporation (such as our Company) to shareholders who are residents of the United States. Furthermore, dividends paid outside of France in a “non-cooperative state or territory” (*Etat ou territoire non-coopératif*) as defined in Article 238-0 A of the French Tax Code (i.e. a state or territory included in a list to be updated and published each year by way of an order (*arrêté*) of the French Ministers in charge of the economy and the budget) are subject to French withholding tax at a rate of 75%. However, the Treaty generally reduces the withholding tax rate to 15% on dividends paid in cash or in the form of shares to an Eligible US Holder (as defined below).

Under the Treaty, an “Eligible US Holder” is a US Holder whose ownership of ADSs is not attributable to a permanent establishment or fixed base in France and who is:

an individual or other non-corporate holder; or

a corporation that does not own, directly or indirectly, 10% or more of the capital of our Company, provided in each case that such holder;

is a resident of the United States under the Treaty;

is the beneficial owner of the dividends and is entitled to Treaty benefits under the limitation on benefits provisions in Article 30 of the Treaty; and

complies with the procedural rules to obtain Treaty benefits described below under “Taxation of Dividends – Procedure to Obtain Treaty Benefits”.

Taxation of dividends – procedure to obtain treaty benefits

Eligible US Holders must follow certain procedures in order to be eligible for the 15% dividend withholding tax under the Treaty.

An Eligible US Holder who wishes to obtain a reduced withholding rate at source must complete and deliver to the US financial institution that is in charge of the administration of the ADSs of that Eligible US Holder a Treaty form establishing that such US Holder is a US resident for the purpose of the Treaty (Form 5000).

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If Form 5000 is not filed prior to the dividend payment, we or the French paying agent will withhold tax from the dividend at the above rate of 30%, and the Eligible US Holder will be entitled to claim a refund of the excess withholding tax by filing Form 5001 with the Depositary or the French paying agent early enough to enable them to forward that application to the French tax authorities before December 31 of the second year following the calendar year in which the related dividend was paid.

The Depositary will provide to all US Holders of ADSs the applications or certificates, together with instructions, and will arrange for the filing with the French tax authorities of all applications and certificates completed by US Holders of ADSs and returned to the Depositary in sufficient time to complete the filing.

Form 5000 and Form 5001 and their respective instructions are available at the *trésorerie des non-résidents* (10, rue du Centre, 93160 Noisy-le-Grand, France). Copies of these forms may also be downloaded from the website of the French tax authorities (www.impots.gouv.fr), and English-language versions of these forms may be downloaded from the website of the French embassy in Washington, D.C. (<http://ambafrance-us.org/spip.php?article1315>).

Taxation on sale or disposal of ADSs

Subject to the provisions of any relevant double tax treaty, persons who are not French residents for the purpose of French taxation (as well as, under certain conditions, foreign states, international organizations and certain foreign public bodies), who are not established or domiciled in a non-cooperative state and who have held not more than 25%, directly or indirectly, of the dividend rights (*droits aux bénéfices sociaux*) of our Company at any time during the preceding five years, are not generally subject to any French income tax or capital gains tax on any sale or disposal of ADSs.

If a transfer of listed shares is evidenced by a written agreement, such share transfer agreement is, in principle, subject to registration formalities and therefore to a registration duty assessed on the higher of the purchase price or the market value of the shares, at the rate of 0.1%. Transfers subject to the French financial transaction tax are exempted from the 0.1% registration duty, where applicable.

Transfers of listed shares and certain other equity-linked instruments (including American depositary shares) that are admitted to trading on a French or foreign regulated or recognized market, issued by companies having their registered seat in France and whose market capitalization exceeds 1 billion as at December 1 of the year preceding the relevant taxable year, are subject to French financial transaction tax, at the rate of 0.2%, subject to certain exemptions. As at December 1, 2016, the market capitalization of our Company did not exceed 1 billion.

French estate and gift taxes

Pursuant to “The Convention Between the United States of America and the French Republic for the Avoidance of Double Taxation and the Prevention of Fiscal Evasion with Respect to Taxes on Estates, Inheritance and Gifts” dated November 24, 1978 as amended by a protocol dated December 8, 2004, a transfer of ADSs by gift or by reason of the death of a US Holder will not be subject to French gift or inheritance tax, unless (i) the donor or the transferor is domiciled in France at the time of making the gift or at the time of his or her death, or (ii) the ADSs were used in, or held for use in, the conduct of a business through a permanent establishment or fixed base in France. In such a case, the French gift or inheritance tax may be credited against the US gift or inheritance tax. This tax credit is limited to the amount of the US gift or inheritance tax due on the ADSs.

French wealth tax

The French wealth tax (*impôt de solidarité sur la fortune*) does not generally apply to a US Holder who is a resident of the United States as defined in the provisions of the Treaty, unless the ADSs form part of the business property of a permanent establishment or fixed base in France.

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United States federal income taxation

Except as otherwise noted, the following summary assumes that we will not be a passive foreign investment company (a “PFIC”) for US federal income tax purposes. We do not believe that we were a PFIC for US federal income tax purposes for our taxable year ended December 31, 2016, but our possible status as a PFIC must be determined annually and therefore may be subject to change. If we were to be a PFIC in any taxable year, material adverse tax consequences could result for US Holders. See “US federal income taxation – Passive foreign investment company status” below.

THE SUMMARY OF US FEDERAL INCOME TAX CONSEQUENCES SET OUT BELOW IS FOR GENERAL INFORMATION ONLY. IT IS NOT INTENDED TO BE RELIED UPON BY PURCHASER FOR THE PURPOSE OF AVOIDING PENALTIES THAT MAY BE IMPOSED UNDER THE US INTERNAL REVENUE CODE. US HOLDERS SHOULD CONSULT THEIR TAX ADVISERS AS TO THE PARTICULAR TAX CONSEQUENCES TO THEM OF OWNING AND DISPOSING OF THE ADSs, INCLUDING THEIR ELIGIBILITY FOR THE BENEFITS OF THE TREATY, THE APPLICABILITY AND EFFECT OF STATE, LOCAL, NON-US AND OTHER TAX LAWS AND POSSIBLE CHANGES IN TAX LAW.

US Holders of ADSs

For US federal income tax purposes, a US Holder of ADSs generally will be treated as the owner of the corresponding number of shares held by the Depositary, and references herein to shares refer also to ADSs representing the shares. Accordingly, no gain or loss generally will be recognized if a US Holder of ADSs exchanges the ADSs for the underlying shares represented by the ADSs. A US Holder’s adjusted tax basis in the withdrawn shares generally will be the same as the US Holder’s adjusted tax basis in the ADSs surrendered, and the holding period of the shares generally will include the holding period of the ADSs. However, the US Treasury has expressed concern that US holders of depositary receipts (such as holders of receipts representing our ADSs) may be claiming foreign tax credits in situations where an intermediary in the chain of ownership between such holders and the issuer of the security underlying the depositary receipts, or a party to whom depositary receipts or deposited shares are delivered by the depositary prior to the receipt by the depositary of the corresponding securities, has taken actions inconsistent with the ownership of the underlying security by the person claiming the credit, such as a disposition of such security. Such actions may also be inconsistent with the claiming of the reduced tax rates that may be applicable to certain dividends received by certain non-corporate holders, as described below. Accordingly, (i) the creditability of any French taxes and (ii) the availability of the reduced tax rates for any dividends received by certain non-corporate US Holders, each as described below, could be affected by actions taken by such parties or intermediaries.

Dividends

General. Distributions paid on our shares out of current or accumulated earnings and profits (as determined for US federal income tax purposes), before reduction for any French withholding tax paid by us with respect thereto, will generally be taxable to a US Holder as dividend income in the year in which the distribution is received (which, in the case of a US Holder of ADSs, will be the year of receipt by the Depositary), and will not be eligible for the dividends received deduction allowed to corporations. Distributions in excess of current and accumulated earnings and profits will be treated as a non-taxable return of capital to the extent of the US Holder’s adjusted tax basis in the shares and thereafter as capital gain. However, we do not maintain calculations of our earnings and profits in accordance with US federal income tax accounting principles. US Holders should therefore assume that any distribution by us with respect to our ordinary shares will be reported as ordinary dividend income. US Holders should consult their own tax advisors with respect to the appropriate US federal income tax treatment of any distribution received from us.

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Dividends paid by us generally will be taxable to a non-corporate US Holder at the reduced rate normally applicable to long-term capital gains, provided either we qualify for the benefits of the Treaty or the shares are considered to be readily tradable on the NYSE, and certain other requirements are met. A US Holder will not be able to claim the reduced rate for any year in which we are treated as a PFIC or any year immediately following a year in which we are treated as a PFIC. See “Passive foreign investment company status” below.

Foreign Currency Dividends. Dividends paid in euro will be included in income in a US dollar amount calculated by reference to the exchange rate in effect on the day the dividends are received by the US Holders (or, in the case of ADSs, by the Depositary), regardless of whether the euro are converted into US dollars at that time. If dividends received in euro are converted into US dollars on the day they are received by the US Holders (or, in the case of ADSs, by the Depositary), the US Holder generally will not be required to recognize foreign currency gain or loss in respect of the dividend income.

Effect of French withholding taxes

US Holders will be treated as having received the amount of French withholding taxes withheld by us, and as then having paid over the withheld taxes to the French taxing authorities. As a result of this rule, the amount of dividend income included in gross income for US federal income tax purposes by a US Holder with respect to a payment of dividends may be greater than the amount of cash actually received (or receivable) by the US Holder from us with respect to the payment. Please see “Taxation – French taxation – Taxation of dividends” for additional discussion on French withholding taxes.

A US Holder will generally be entitled, subject to certain limitations, to a credit against its US federal income tax liability, or a deduction in computing its US federal taxable income, for any French income taxes withheld from a dividend. Eligible US Holders that are eligible for benefits under the Treaty will not be entitled to a foreign tax credit for the amount of any French taxes withheld in excess of the maximum rate under the Treaty, and with respect to which the holder is entitled to obtain a refund from the French taxing authorities. The rules governing foreign tax credits are complex. US Holders should consult their tax advisors concerning the foreign tax credit implications of the payment of French taxes.

Sale or other Disposition

Upon a sale or other disposition of shares (other than an exchange of ADSs for shares), a US Holder generally will recognize capital gain or loss for US federal income tax purposes equal to the difference, if any, between the amount realized on the sale or other disposition and the US Holder’s adjusted tax basis in the shares. This capital gain or loss will be long-term capital gain or loss if the US Holder’s holding period in the shares exceeds one year. Any gain or loss will generally be US source.

A US Holder’s adjusted tax basis in a share generally will be its US dollar cost. The amount realized on a sale or other disposition of shares for an amount in foreign currency generally will be the US dollar value of this amount on the date of sale or other disposition. On the settlement date, the US Holder generally will recognize US source foreign currency gain or loss (taxable as ordinary income or loss) equal to the difference (if any) between the US dollar value of the amount received based on the exchange rates in effect on the date of sale or other disposition and the settlement date. However, in the case of shares traded on an established securities market that are sold by a cash basis US Holder (or an accrual basis US Holder that so elects), the amount realized will be based on the exchange rate in effect on the settlement date for the sale, and no exchange gain or loss will be recognized at that time.

Passive foreign investment company status

We do not believe that we were a PFIC for US federal income tax purposes for our taxable year ended December 31, 2016, but our possible status as a PFIC must be determined annually and therefore may be subject

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to change. A foreign corporation will be a PFIC in any taxable year in which, after taking into account the income and assets of the corporation and certain subsidiaries pursuant to applicable “look-through rules,” either (i) 75% or more of its gross income consists of “passive” income or (ii) the average percentage of its assets (by value) that produce or are held for the production of passive income is at least 50%.

If we were a PFIC in any taxable year during which a US Holder owned shares and the US Holder has not made a mark to market or qualified electing fund election, the US Holder would generally be subject to special rules (regardless of whether we continued to be a PFIC) with respect to (i) any “excess distribution” (generally, any distributions received by the US Holder on shares in a taxable year that are greater than 125% of the average annual distributions received by the US Holder in the three preceding taxable years or, if shorter, the US Holder’s holding period for the shares) and (ii) any gain realized on the sale or other disposition of shares. Under these rules (a) the excess distribution or gain would be allocated ratably over the US Holder’s holding period, (b) the amount allocated to the current taxable year and any taxable year prior to the first taxable year in which we are a PFIC would be taxed as ordinary income, and (c) the amount allocated to each of the other taxable years would be subject to tax at the highest rate of tax in effect for the applicable class of taxpayer for that year and an interest charge for the deemed deferral benefit would be imposed with respect to the resulting tax attributable to each such other taxable year. Additionally, dividends paid by us would not be eligible for the reduced rate of tax described above under “US federal income taxation – Dividends – General”. If we were a PFIC, a US Holder of shares would generally be subject to similar rules with respect to distributions to us by, and dispositions by us of the stock of, any direct or indirect subsidiaries of ours that were also PFICs.

A US Holder who owns, or who is treated as owning, PFIC stock during any taxable year in which we are a PFIC may be required to file IRS Form 8621. US Holders should consult their tax advisors regarding the potential application of the PFIC regime, including the requirement to file Form 8621.

Backup withholding and information reporting

Payments of dividends and other proceeds with respect to shares by a US paying agent or other US intermediary will be reported to the IRS and to the US Holder as may be required under applicable regulations. Backup withholding may apply to these payments if the US Holder fails to provide an accurate taxpayer identification number or certification of exempt status or fails to comply with applicable certification requirements. Certain US Holders (including, among others, corporations) are not subject to backup withholding. US Holders should consult their tax advisors about these rules and any other reporting obligations that may apply to the ownership or disposition of shares, including requirements related to the holding of certain specified foreign financial assets.

Dividends and paying agents

Not applicable.

Statement by experts

Not applicable.

Documents on display

We are subject to the reporting requirements of the Securities Exchange Act of 1934, as amended (the “Exchange Act”) applicable to foreign private issuers. In accordance with the Exchange Act, we electronically file or submit reports, including annual reports on Form 20-F and interim reports on Form 6-K, and other information with the Securities and Exchange Commission. You may obtain these reports and other information by sending a written request to CGG, Tour Maine-Montparnasse, 33, avenue du Maine, BP 191, 75755 Paris cedex 15, France, Attention: Investor Relations Officer, Telephone: (33) 1 64 47 45 00.

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You can inspect and copy these reports, and other information, without charge, at the Public Reference Room of the Commission located at 100 F Street, N.E., Washington, D.C. 20549. You can also obtain copies of these materials at prescribed rates from the Public Reference Room of the Commission at 450 Fifth Street, N.W., Washington, D.C. 20549 or by calling the Commission at 1-800-SEC-0330. The Commission also maintains a web site at <http://www.sec.gov> that contains reports and other information regarding registrants that file electronically with the Commission.

In addition, you can inspect material filed by CGG at the offices of the New York Stock Exchange, 20 Broad Street, New York, New York 10005, on which American Depositary Shares representing shares of our common stock are listed. As a foreign private issuer, we are not subject to the proxy rules under Section 14 or the short-swing insider profit disclosure rules under Section 16 of the Exchange Act.

Subsidiary information

Not applicable.

Item 11: QUANTITATIVE AND QUALITATIVE DISCLOSURE ABOUT MARKET RISK

Because we operate internationally, we are exposed to general risks linked to operating abroad. Our major market risk exposures are changing interest rates and currency fluctuations.

Interest rate risk

Our policy is to manage interest rates through maximization of the proportion of fixed rate debt. As of December 31, 2016, 71% of our debt consisted of fixed-rate bonds, along with some fixed-rate finance leases and fixed-rate medium-term bank credit facilities with variable maturities. This debt is not exposed to interest rate fluctuations. However, drawings under our US and French revolving facilities incur interest at variable rates that are reset at each interest period (generally between one and 12 months). Our Term loans due 2019 also incur interest at variable rates. As a result, a portion of our interest expenses vary in line with movements in short-term interest rates. We may use interest rate swaps to adjust interest rate exposure when appropriate based upon market conditions.

Foreign Exchange Rate Risk

As a company that derives a substantial amount of its revenue from sales internationally, we are subject to risks relating to fluctuations in currency exchange rates. Our revenues and expenses are mainly denominated in US dollars and euros, and to a significantly lesser extent, in Canadian dollars, Brazilian reais, Australian dollars, Norwegian kroner, British pounds and Chinese yuan.

We attempt to match foreign currency revenues and expenses in order to balance our net position of receivables and payables denominated in foreign currencies. Nevertheless, during the past five years, such dollar-denominated expenses have not equaled dollar-denominated revenues principally due to personnel costs payable in euros in France and Europe. In order to improve the balance of our net position of receivables and payables denominated in foreign currencies, we maintain our financing primarily in US dollars. As of December 31, 2016 and 2015, our total outstanding debt denominated in US dollars was US\$1,879 million and US\$1,874 million and, respectively, representing 67% and 66% of our total financial debt outstanding at such dates.

In addition, our policy generally is to hedge major currency cash exposures through foreign exchange forward contracts or other foreign exchange currency hedging instruments. These contracts are entered into with major financial institutions, thereby minimizing the risk of credit loss.

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As of December 31, 2016 we have no forward exchange contracts outstanding.

At December 31, 2015, contracts were outstanding for the US dollar equivalent of US\$77.7 million (notional amount), of which US\$25.7 million against Norwegian kroner, US\$19.1 million against renminbi yuan, US\$14.4 against British pounds, US\$5.1 million against Canadian dollars, US\$5.0 million against euros, US\$4.6 million against Singapore dollar, US\$2.9 million against Swiss franc and US\$0.9 million against Australian dollar. Their fair value as of December 31, 2015 was not material.

We do not enter into forward foreign currency exchange contracts for trading purposes.

The table below presents principal amounts and related weighted average interest rates by year of maturity for our debt obligations as of December 31, 2016:

<u>Carrying value⁽¹⁾</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>Thereafter</u>	<u>Total</u>	<u>Fair Value</u>
	(in US\$ million)							
Debt								
U.S. dollar	46.7	34.9	95.4	2.6	607.7	422.9	1,210.2	677.3
<i>Average fixed rate</i>							6.4 %	
U.S. dollar	22.8	315.0	369.4	–	–	–	707.2	557.4
<i>Average variable rate</i>							6.4 %	
Euro	5.0	5.1	41.8	769.4	5.4	30.5	857.2	327.8
<i>Average fixed rate</i>							3.9 %	
Euro	–	128.4	–	–	–	–	128.4	109.1
<i>Average variable rate</i>							6.1 %	

Note: For the purposes of the table above, the various components of the financial debt are presented at their normal maturities even though these debts – except finance lease debt – are presented entirely as current due to the application of IAS 1 (see note 13 to our consolidated financial statements, included elsewhere in this document)

⁽¹⁾ *Excluding bank overdrafts, accrued interest, IFRS adjustments and issue premium*

Commercial risk and counter-party risk

Our receivables and investments do not represent a significant concentration of credit risk due to the wide variety of customers and markets in which we sell our services and products and our presence in many geographic areas. Specific procedures have been put in place to monitor customers' payments and reduce risks. In 2016, the Group's two most significant customers accounted for 6.7% and 6.4% of the Group's consolidated revenues compared with 5.0% and 4.9% in 2015 and 7.1% and 5.2% in 2014.

We seek to minimize our counter-party risk by entering into hedging contracts only with well rated commercial banks or financial institutions and by distributing the transactions among the selected institutions. Although our credit risk is the replacement cost at the then-estimated fair value of the instrument, we believe that the risk of incurring losses is remote and those losses, if any, would not be material.

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Item 12: DESCRIPTION OF SECURITIES OTHER THAN EQUITY SECURITIES

American depositary shares

Our ADSs are listed on the New York Stock Exchange under the symbol “CGG”. The Bank of New York Mellon is the depositary (the “Depositary”) issuing ADSs pursuant to an amended and restated deposit agreement dated January 11, 2007 among our company, the Depositary and the holders from time to time of ADSs (the “Deposit Agreement”). Each ADS represents the right to receive one share. The table below sets forth the fees payable, either directly or indirectly, by a holder of ADSs as of the date of this annual report.

<u>Category</u>	<u>Depositary Actions</u>	<u>Associated Fee/By Whom Paid</u>
(a) Depositing or substituting the underlying shares	Issuance of ADSs, including issuances resulting from a distribution of shares or rights or other property	US\$5.00 (or less) per 100 ADSs (or portion thereof) charged to person depositing the shares
(b) Receiving or distributing dividends	Any cash distribution to ADS registered holders	US\$0.02 (or less) per ADS
(c) Selling or exercising rights	Distribution of securities distributed to holders of deposited securities which are distributed by the depositary to ADS registered holders	A fee equivalent to the fee that would be payable if securities distributed had been shares and the shares had been deposited for issuance of ADSs
(d) Withdrawing an underlying security	Cancellation of ADSs for the purpose of withdrawal, including if the deposit agreement terminates	US\$5.00 (or less) per 100 ADSs (or portion thereof) charged to person withdrawing the shares
(e) Transferring, splitting or grouping receipts	Transfers, combining or grouping of depositary receipts	Not applicable
(f) General depositary services, particularly those charged on an annual basis	Other services performed by the Depositary in administering the ADSs	Not applicable
(g) Expenses of the Depositary	Expenses incurred on behalf of holders in connection with: taxes and other governmental charges the Depositary or the custodian has to pay on any ADS or share underlying and ADS, for example, stock transfer taxes, stamp duty or withholding taxes; cable, telex and facsimile transmission (when expressly provided in the Deposit Agreement); registration or transfer fees for the registration of shares or other deposited securities on the share register and applicable to transfers of shares or other deposited securities to or from the name of the custodian; and	

expenses of the Depositary in
connection with the conversion of
foreign currency into US dollars.

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The Depositary may remit to us all or a portion of the Depositary fees charged for the reimbursement of certain of the expenses we incur in respect of the ADS program established pursuant to the Deposit Agreement upon such terms and conditions as we may agree from time to time.

However, in the year ended December 31, 2016, the Depositary did not reimburse us for any fees or expenses.

PART II

Item 13: DEFAULTS, DIVIDEND ARREARAGES AND DELINQUENCIES

Not applicable.

Item 14: MATERIAL MODIFICATIONS TO THE RIGHTS OF SECURITYHOLDERS AND USE OF PROCEEDS

Not applicable.

Item 15: CONTROLS AND PROCEDURES

(a) *Disclosure controls and procedures.* As of the end of the period covered by this report, we carried out an evaluation of the effectiveness of our disclosure controls and procedures (as defined in 17 CFR 240.13a-15(e) and 240.15d-15(e)), under the supervision of our management, including our Chief Executive Officer and our Chief Financial Officer. Based on this evaluation, our Chief Executive Officer and our Chief Financial Officer concluded that such controls and procedures are effective to ensure that information required to be disclosed in reports filed with or submitted to the SEC under the Exchange Act, is recorded, processed, summarized and reported within the time periods specified in the Exchange Act and its rules and forms.

There has been no change in our internal control over financial reporting during the period covered by this report that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

Pursuant to Article L.225-37 of the French Commercial Code, as amended by a French financial law (the *Loi de Sécurité Financière*) enacted on August 1, 2003, our Chairman of the Board must deliver a report to the Annual General Meeting of our shareholders on the Board of Directors' composition, preparation and organization of the Board of Directors' work, internal control and risk management. This report for 2016 informed our shareholders of the internal control procedures that we have put in place in order to circumvent identified risks resulting from our activities and the risks of errors or fraud, particularly in accounting and finance. It describes the existing control environment, i.e. our values with respect to integrity and ethics, the organization of our corporate governance committees, the functions of our Disclosure Committee and the way we delegate powers and determine areas of responsibility. It also describes the procedures put in place to identify and assess our major risks, whether internal or external. It gives details on our control procedures, particularly those applied to financial information, so as to ensure reliability of financial reporting. A self-assessment process of internal control procedures currently existing within our Group has been implemented.

(b) *Management annual report on internal control over financial reporting.* We are responsible for establishing and maintaining adequate internal control over financial reporting (as defined in Rule 13a-15(f) under the Securities and Exchange Act of 1934) for CGG.

Due to its inherent limitations, internal control over financial reporting may not prevent or detect misstatements, and can only provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

We assessed the effectiveness of our internal control over financial reporting as of December 31, 2016, and concluded that our internal control over financial reporting is effective. In making this assessment, we used the criteria established in Internal Control – Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission. Based on our assessment under these criteria, we concluded that, as

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of December 31, 2016, our internal control over financial reporting was effective to provide reasonable assurance regarding the reliability of financial reporting and the preparation of consolidated financial statements in accordance with International Financial Reporting Standards (IFRS) as issued by the International Accounting Standards Board (IASB) and with IFRS as adopted by the European Union as of December 31, 2016.

The effectiveness of internal control over financial reporting has been audited by Ernst & Young et Autres, our independent registered public accounting firm, as stated in their report, which is included herein.

(c) Attestation Report of Independent Registered Public Accounting Firm.

Report of Independent Registered Public Accounting Firm on the internal control over financial reporting

To the Board of Directors and Shareholders of CGG,

We have audited CGG and subsidiaries' internal control over financial reporting as of December 31, 2016, based on criteria established in Internal Control-Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) (the COSO criteria). CGG and subsidiaries' management is responsible for maintaining effective internal control over financial reporting, and for its assessment of the effectiveness of internal control over financial reporting included in the accompanying management annual report on internal control over financial reporting. Our responsibility is to express an opinion on the company' s internal control over financial reporting based on our audit.

We conducted our audit in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, testing and evaluating the design and operating effectiveness of internal control based on the assessed risk, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

A company' s internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company' s internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company' s assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

In our opinion, CGG and subsidiaries maintained, in all material respects, effective internal control over financial reporting as at December 31, 2016, based on the COSO criteria.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States), the consolidated statements of financial position of CGG and subsidiaries as at December 31, 2016, 2015 and 2014, and the related consolidated statements of operations, comprehensive income (loss),

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changes in equity and cash flows for each of the years in the three-year period ended December 31, 2016 and our report dated May 1, 2017 expressed an unqualified opinion thereon.

Paris-La Défense, France

May 1, 2017

/s/ ERNST & YOUNG et Autres

(d) *Changes in Internal Control Over Financial Reporting.*

Not Applicable

Item 16A: AUDIT COMMITTEE FINANCIAL EXPERT

Pursuant to Section 407 of the Sarbanes Oxley Act of 2002, Mrs. Lombard was appointed Financial Expert of the Audit Committee by a Board resolution dated May 3, 2014. Mrs. Lombard is “independent”, as that term is defined by the listing standards of the New York Stock Exchange.

Item 16B: CODE OF ETHICS

The Board of Directors has adopted a Code of Ethics that applies to our Chief Executive Officer, our Chief Financial Officer, other Senior Financial Officers (including our principal Accounting Officer), the members of the Executive Committee and the Disclosure Committee to promote honest and ethical conduct, full, fair, accurate, timely and understandable disclosure in periodic reports required to be filed by us and compliance with applicable governmental rules and regulations. A copy of this Code of Ethics is filed as an exhibit to this annual report.

Item 16C: PRINCIPAL ACCOUNTANT FEES AND SERVICES

	December 31,			
	2016		2015	
	EY	Mazars	EY	Mazars
	(in thousands of US\$)			
Audit Fees ^(a)	2,642	1,170	3,241	1,420
Audit-Related Fees ^(b)	252	51	283	164
Tax Fees ^(c)	23	14	24	42
All Other Fees ^(d)	25	—	—	—
Total	2,942	1,235	3,548	1,626

Notes:

- (a) *Audit fees are the aggregate fees billed by our independent auditors for the audit of the individual and consolidated annual and semi-annual financial statements and the provision of services that are normally provided by our independent auditors in connection with statutory and regulatory filings or engagements.*
- (b) *Audit-related fees are the aggregate fees billed by our independent auditors for services that are reasonably related to the performance of the audit or review of our financial statements and are not reported under “audit fees”. They include consultations relating to accounting principles and internal controls.*
- (c) *Tax fees are the aggregate fees billed by our independent auditors for services rendered by our auditors for tax compliance, tax advice, and tax planning. They include assistance when dealing with local authorities, advice regarding tax audit and litigation, expatriate taxation and tax advice relating to mergers and acquisitions.*
- (d) *All other fees are the aggregate fees billed by our independent auditors other than the services reported in notes (a) through (c) of this table. They include training services as well as general and specific advice.*

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The Board of Directors and the Audit Committee have adopted an audit and non-audit services pre-approval policy. This policy requires the Audit Committee to pre-approve the audit and non-audit services performed by the independent auditors in order to assure that they do not impair the auditors' independence from us.

Pursuant to this policy, a list of proposed services is pre-approved, on an annual basis, without consideration of specific case-by-case services by the Audit Committee. Unless a type of service has received such general pre-approval, it will require specific pre-approval by the Audit Committee or by its Chairman. In addition, any proposed services exceeding pre-approved cost levels or budgeted amounts will also require specific pre-approval by the Audit Committee. The services list and the cost levels are reviewed annually by the Audit Committee.

The annual audit services engagement terms and fees as defined in note (a) of table above are subject to the specific pre-approval of the Audit Committee.

Item 16D: EXEMPTIONS FROM THE LISTING STANDARDS FOR AUDIT COMMITTEES

Not applicable.

Item 16E: PURCHASES OF EQUITY SECURITIES BY THE ISSUER AND AFFILIATED PURCHASERS

Not applicable.

Item 16F: CHANGE IN REGISTRANT'S CERTIFYING ACCOUNTANT

In February 2013, the Audit Committee recommended to streamline the audit and to retain Ernst & Young et Autres as sole certifying registered accountant, while recommending to the Board to have Ernst & Young et Autres and Mazars re-appointed by the 2013 Shareholders' General Meeting as joint statutory auditors for domestic reporting purposes of the Group as a public company in France. This recommendation was endorsed and implemented by the Board of Directors on February 27, 2013.

Item 16G: CORPORATE GOVERNANCE

The corporate governance rules of the New York Stock Exchange differ from the regulations and recommendations applicable in France, especially those governing the definition of Director independence and the role and operation of the Board's committees. As a non-US listed company, we are exempted from many of these corporate governance rules, which are applicable to US listed companies. For example, notwithstanding our conclusions as to independence under the AFEP-MEDEF Code, our Board has not formally determined which of our Directors meet NYSE independence standards. The Board's internal charter does not address Committee purposes and responsibilities in the manner specified by the NYSE rules applicable to Nominating, Compensation and Audit Committees, and our Appointment-Remuneration Committee has not been given independent authority and funding to hire compensation advisors. However, our Audit Committee members meet the independence test for Audit Committee members established by the SEC, and we believe that they also meet the definition of "independence" under the NYSE rules.

Item 16H: MINE SAFETY DISCLOSURE

Not applicable.

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PART III

Item 17: FINANCIAL STATEMENTS

Not applicable

Item 18: FINANCIAL STATEMENTS

The following audited financial statements of the CGG Group and related schedules, together with the report of Ernst & Young et Autres, are filed as part of this annual report:

	<u>Page</u>
<u>Report of Independent Auditors</u>	F-1
<u>Consolidated Financial Statements:</u>	
<u>Consolidated Statement of Financial Position as at December 31, 2016, 2015 and 2014</u>	F-2
<u>Consolidated Statements of Operations for the years ended December 31, 2016, 2015 and 2014</u>	F-3
<u>Consolidated Statements of Comprehensive Income (Loss) for the years ended December 31, 2016, 2015 and 2014</u>	F-4
<u>Consolidated Statements of Changes in Equity for the years ended December 31, 2016, 2015 and 2014</u>	F-5
<u>Consolidated Statements of Cash Flows for the years ended December 31, 2016, 2015 and 2014</u>	F-7
<u>Notes to the Consolidated Financial Statements</u>	F-8

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Item 19: EXHIBITS

Exhibit No	Exhibit
1.1*	English translation of our Articles of Association (<i>statuts</i>).
2.1	Indenture dated as of May 31, 2011 between CGG S.A., certain of its subsidiaries acting as guarantors, and The Bank of New York Mellon, as Trustee. (Exhibit 4.19 to the Registrant's Registration Statement on Form F-4, dated September 27, 2011, is incorporated herein by reference).
2.2	Supplemental Indenture dated as of May 31, 2012 to the Indenture dated May 31, 2011 between CGG S.A. certain of its subsidiaries acting as guarantors, and The Bank of New York Mellon as Trustee (Exhibit 2.2 to the Registrant's Annual Report on Form 20-F for the fiscal year ended December 31, 2015, dated April 15, 2016, is incorporated herein by reference).
2.3	Supplemental Indenture dated as of January 7, 2016 to the Indenture dated May 31, 2011 between CGG S.A. certain of its subsidiaries acting as guarantors, and The Bank of New York Mellon as Trustee (Exhibit 2.3 to the Registrant's Annual Report on Form 20-F for the fiscal year ended December 31, 2015, dated April 15, 2016, is incorporated herein by reference).
2.4*	Supplemental Indenture dated as of February 22, 2017 to the Indenture dated May 31, 2011 between CGG S.A. certain of its subsidiaries acting as guarantors, and The Bank of New York Mellon as Trustee.
2.5*	Indenture dated as of April 23, 2014 between CGG S.A., certain of its subsidiaries acting as guarantors, and The Bank of New York Mellon, as Trustee.
2.6*	Supplemental Indenture dated as of June 24, 2014 to the Indenture dated April 23, 2014 between CGG S.A. certain of its subsidiaries acting as guarantors, and The Bank of New York Mellon as Trustee.
2.7*	Supplemental Indenture dated as of January 7, 2016 to the Indenture dated April 23, 2014 between CGG S.A. certain of its subsidiaries acting as guarantors, and The Bank of New York Mellon as Trustee.
2.8*	Supplemental Indenture dated as of February 22, 2017 to the Indenture dated April 23, 2014 between CGG S.A. certain of its subsidiaries acting as guarantors, and The Bank of New York Mellon as Trustee.
2.9	Indenture dated as of May 1, 2014 between CGG S.A., certain of its subsidiaries acting as guarantors, and The Bank of New York Mellon, as Trustee (Exhibit 4.7 to the Registrant's Registration Statement on Form F-4, dated July 3, 2014 is incorporated herein by reference).
2.10*	Supplemental Indenture dated as of June 24, 2014 to the Indenture dated May 1, 2014 between CGG S.A. certain of its subsidiaries acting as guarantors, and The Bank of New York Mellon as Trustee.
2.11*	Supplemental Indenture dated as of January 7, 2016 to the Indenture dated May 1, 2014 between CGG S.A. certain of its subsidiaries acting as guarantors, and The Bank of New York Mellon as Trustee.
2.12*	Supplemental Indenture dated as of February 22, 2017 to the Indenture dated May 1, 2014 between CGG S.A. certain of its subsidiaries acting as guarantors, and The Bank of New York Mellon as Trustee.
4.1	Mixed Capital Company Contract dated November 26, 2003 by and among Sercel SA, the Committee of the Hebei JunFeng Prospecting Equipment Company, the Dongfang Geological Prospecting Limited Liability Company, and the Xian General Factory for Oil Prospecting Equipment (Exhibit 10.1 to the Report on Form 6-K, dated May 13, 2004, is incorporated herein by reference).
4.2	Agreement between the Shareholders of CGG Ardiseis, dated June 23, 2006, between Industrialization & Energy Services Company (TAQA) and us (we have requested that the Commission grant confidential treatment for certain portions of this document) (Exhibit 4.22 to the Registrant's Annual Report on Form 20-F for the fiscal year ended December 31, 2006, dated May 7, 2007, is incorporated herein by reference).

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<u>Exhibit No</u>	<u>Exhibit</u>
4.3	Joint Venture Agreement ⁽¹⁾ relating to Seabed Geosolutions B.V. between Fugro Consultants International N.V. and CGGVeritas S.A. dated January 27, 2013 (Exhibit 4.5 to the Registrant' s Annual Report on Form 20-F for the fiscal year ended December 31, 2012, dated April 25, 2013, is incorporated herein by reference).
4.4	Amendment dated February 16, 2013 ⁽¹⁾ to the Joint Venture Agreement relating to Seabed Geosolutions B.V. between Fugro Consultants International N.V. and CGGVeritas S.A. (Exhibit 4.6 to the Registrant' s Annual Report on Form 20-F for the fiscal year ended December 31, 2012, dated April 25, 2013, is incorporated herein by reference).
4.5	US\$325 million French Law Multicurrency Revolving Facility Agreement between CGG S.A. as Borrower, certain of its subsidiaries acting as guarantors and the lenders party thereto, dated July 31, 2013 as amended and restated most recently pursuant to an amendment and restatement agreement dated February 4, 2016. (Exhibit 4.5 to the Registrant' s Annual Report on Form 20-F for the fiscal year ended December 31, 2015, dated April 15, 2016, is incorporated herein by reference).
4.6	Amendment and Restatement Agreement, dated as of January 10, 2016, to the Credit Agreement, dated as of July 15, 2013, between CGG Holding (U.S.) Inc., as Borrower, CGG S.A., as Parent, and the lenders party thereto. (Exhibit 4.6 to the Registrant' s Annual Report on Form 20-F for the fiscal year ended December 31, 2015, dated April 15, 2016, is incorporated herein by reference).
4.7	Amendment No. 1, dated as of February 4, 2016, to the Amendment and Restatement Agreement, dated as of January 10, 2016, between CGG Holding (U.S.) Inc., as Borrower, CGG S.A., as Parent, Credit Suisse AG, Cayman Islands Branch, as Administrative Agent and Collateral Agent, and the lenders party thereto. (Exhibit 4.7 to the Registrant' s Annual Report on Form 20-F for the fiscal year ended December 31, 2015, dated April 15, 2016, is incorporated herein by reference).
4.8	Term Loan Credit Agreement, dated as of November 19, 2015, between CGG Holding (US) Inc., as Borrower, CGG S.A., as Parent, certain subsidiaries acting as guarantors, Jefferies Finance LLC, as Administrative Agent, Credit Suisse AG, as Collateral Agent, and the lenders party thereto. (Exhibit 4.8 to the Registrant' s Annual Report on Form 20-F for the fiscal year ended December 31, 2015, dated April 15, 2016, is incorporated herein by reference).
4.9	Incremental Assumption Agreement, dated as of December 4, 2015, between CGG Holding (US) Inc., as Borrower, Jefferies Finance LLC, as Administrative Agent, and Morgan Stanley Bank International Limited, as Incremental Term Lender. (Exhibit 4.9 to the Registrant' s Annual Report on Form 20-F for the fiscal year ended December 31, 2015, dated April 15, 2016, is incorporated herein by reference).
8*	Our subsidiaries.
11	Code of Ethics (Exhibit 11 to the Registrant' s Annual Report on Form 20-F for the fiscal year ended December 31, 2013, dated April 10, 2014, is incorporated herein by reference).
12.1*	Certification of Chief Executive Officer pursuant to Section 302 of the Sarbanes Oxley Act of 2002.
12.2*	Certification of Chief Financial Officer pursuant to Section 302 of the Sarbanes Oxley Act of 2002.
13.1*	Certification of Chief Executive Officer pursuant to Section 906 of the Sarbanes Oxley Act of 2002 (10 U.S.C. § 1350).
13.2*	Certification of Chief Financial Officer pursuant to Section 906 of the Sarbanes Oxley Act of 2002 (10 U.S.C. § 1350).
15.1*	Consent of Ernst & Young et Autres.

* Filed herewith.

(1) Pursuant to the rules of the SEC, the schedules and similar attachments to the agreement have not been filed herewith. The Company agrees to furnish supplementally a copy of any omitted schedule to the SEC upon request.

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The Company and its consolidated subsidiaries are party to several debt instruments under which the total amount of securities authorized does not exceed 10% of the total assets of the Company and its subsidiaries on a consolidated basis. Pursuant to paragraph 2(b)(i) of the instructions to the exhibits to Form 20-F, the Company agrees to furnish a copy of such instruments to the SEC upon request.

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SIGNATURES

The registrant hereby certifies that it meets all of the requirements for filing on Form 20-F and that it has duly caused and authorized the undersigned to sign this annual report on its behalf.

CGG
(Registrant)

/s/ JEAN-GEORGES MALCOR

Jean-Georges Malcor
Chief Executive Officer

/s/ STEPHANE-PAUL FRYDMAN

Stéphane-Paul Frydman
Chief Financial Officer

Date: May 1, 2017

ERNST & YOUNG

1-2 place des Saisons, Paris La Défense 1
92400 Courbevoie

Report of Independent Registered Public Accounting Firm on the consolidated financial statements

To the Board of Directors and Shareholders of CGG,

We have audited the accompanying consolidated statement of financial position of CGG and subsidiaries (the “Company”) as of December 31, 2016, 2015 and 2014, and the related consolidated statements of operations, comprehensive income (loss), changes in equity and cash flows for each of the three years in the period ended December 31, 2016. These financial statements are the responsibility of the Company’s management. Our responsibility is to express an opinion on these financial statements based on our audits.

We conducted our audits in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audit provides a reasonable basis for our opinion.

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the consolidated financial position of CGG and subsidiaries at December 31, 2016, 2015 and 2014, and the consolidated results of its operations and its cash flows for each of the three years in the period ended December 31, 2016, in conformity with International Financial Reporting Standards as issued by the International Accounting Standards Board.

The accompanying consolidated financial statements have been prepared assuming that CGG and subsidiaries will continue as a going concern. As discussed in Note 1.3 to the financial statements, CGG and subsidiaries faces material uncertainties that raise substantial doubt about its ability to continue as a going concern. Management’s plans in regard to these matters are also described in Note 1.3. The consolidated financial statements do not include any adjustments that might result from the outcome of this uncertainty.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States), CGG’s internal control over financial reporting as of December 31, 2016, based on criteria established in Internal Control-Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) (the COSO criteria), and our report dated May 1, 2017 expressed an unqualified opinion thereon.

Paris-La Défense, France

May 1, 2017

/s/ERNST & YOUNG et Autres

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CGG

CONSOLIDATED STATEMENT OF FINANCIAL POSITION

		December 31,		
	Notes	2016	2015	2014
		(In millions of US\$)		
ASSETS				
Cash and cash equivalents	28	538.8	385.3	359.1
Trade accounts and notes receivable, net	3	434.8	812.5	942.5
Inventories and work-in-progress, net	4	266.3	329.3	417.3
Income tax assets		112.2	91.2	145.9
Other current assets, net	5	105.8	119.2	126.5
Assets held for sale, net	5	18.6	34.4	38.3
Total current assets		1,476.5	1,771.9	2,029.6
Deferred tax assets	24	26.0	52.2	98.2
Investments and other financial assets, net	7	51.9	87.6	141.8
Investments in companies under equity method	8	190.5	200.7	137.7
Property, plant and equipment, net	9	708.6	885.2	1,238.2
Intangible assets, net	10	1,184.7	1,286.7	1,373.8
Goodwill, net	11	1,223.3	1,228.7	2,041.7
Total non-current assets		3,385.0	3,741.1	5,031.4
TOTAL ASSETS		4,861.5	5,513.0	7,061.0
LIABILITIES AND EQUITY				
Bank overdrafts	13	1.6	0.7	2.9
Current portion of financial debt ⁽¹⁾	13	2,782.1	96.5	75.7
Trade accounts and notes payables		157.4	267.8	444.2
Accrued payroll costs		138.9	169.2	222.5
Income taxes payable		31.6	47.0	72.2
Advance billings to customers		24.4	56.0	54.4
Provisions – current portion	16	110.7	219.5	106.0
Other current liabilities	12	140.2	198.6	231.8
Total current liabilities		3,386.9	1,055.3	1,209.7
Deferred tax liabilities	24	67.6	136.3	153.8
Provisions – non-current portion	16	162.1	155.9	220.3
Financial debt	13	66.7	2,787.6	2,700.3
Other non-current liabilities	17	21.4	19.5	30.7
Total non-current liabilities		317.8	3,099.3	3,105.1
Common stock: 26,898,306 shares authorized and 22,133,149 shares with a 0.80 nominal value issued and outstanding at December 31, 2016	15	20.3	92.8	92.8
Additional paid-in capital		1,850.0	1,410.0	3,180.4
Retained earnings		(272.3)	1,181.7	562.0
Other Reserves		171.1	138.0	64.7
Treasury shares		(20.1)	(20.6)	(20.6)
Net income (loss) for the period attributable to owners of CGG SA		(573.4)	(1,450.2)	(1,154.4)
Cumulative income and expense recognized directly in equity		(0.8)	(0.6)	(7.6)
Cumulative translation adjustment		(54.1)	(38.9)	(24.3)

Equity attributable to owners of CGG SA	<u>1,120.7</u>	<u>1,312.2</u>	<u>2,693.0</u>
Non-controlling interest	<u>36.1</u>	<u>46.2</u>	<u>53.2</u>
Total equity	<u>1,156.8</u>	<u>1,358.4</u>	<u>2,746.2</u>
TOTAL LIABILITIES AND EQUITY	<u>4,861.5</u>	<u>5,513.0</u>	<u>7,061.0</u>

(1) Out of the US\$2,782.1 million of financial debt classified as current liabilities, only US\$100.1 million has a maturity of less than 12 months. The rest of it – not due as the Group never breached its financial covenants and having a maturity greater than 12 months – is explained by a pure accounting reclassification due to the application of IAS 1. See Note 13 on financial debts for further explanations

The accompanying notes are an integral part of the consolidated financial statements

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CGG

CONSOLIDATED STATEMENTS OF OPERATIONS

		Year		
	Notes	2016	2015	2014
(In millions of US\$, except per share data)				
Operating revenues	19	1,195.5	2,100.9	3,095.4
Other income from ordinary activities	19	1.4	1.4	1.5
Total income from ordinary activities		1,196.9	2,102.3	3,096.9
Cost of operations		(1,250.4)	(1,817.2)	(2,510.8)
Gross profit		(53.5)	285.1	586.1
Research and development expenses – net	20	(13.6)	(68.7)	(101.2)
Marketing and selling expenses		(62.2)	(87.2)	(113.9)
General and administrative expenses		(84.3)	(98.5)	(146.6)
Other revenues (expenses) – net	21	(182.9)	(1,188.3)	(921.9)
Operating income	19	(396.5)	(1,157.6)	(697.5)
Expenses related to financial debt		(176.9)	(180.2)	(202.3)
Income provided by cash and cash equivalents		2.7	1.7	1.7
Cost of financial debt, net	22	(174.2)	(178.5)	(200.6)
Other financial income (loss)	23	(11.4)	(54.5)	(43.0)
Income (loss) of consolidated companies before income taxes		(582.1)	(1,390.6)	(941.1)
Deferred taxes on currency translation		(1.0)	(1.6)	(15.9)
Other income taxes		14.7	(75.4)	(107.9)
Total income taxes	24	13.7	(77.0)	(123.8)
Net income (loss) from consolidated companies		(568.4)	(1,467.6)	(1,064.9)
Share of income (loss) in companies accounted for under equity method		(8.2)	21.4	(81.7)
Net income (loss)		(576.6)	(1,446.2)	(1,146.6)
<i>Attributable to:</i>				
<i>Owners of CGG SA</i>	\$	(573.4)	(1,450.2)	(1,154.4)
<i>Owners of CGG SA</i> ⁽²⁾		(518.6)	(1,302.0)	(866.1)
Non-controlling interests	\$	(3.2)	4.0	7.8
Weighted average number of shares outstanding ⁽³⁾⁽⁴⁾	29	20,795,431	6,080,535	6,077,792
Dilutive potential shares from stock options	29	(1)	(1)	(1)
Dilutive potential shares from performance share plans	29	(1)	(1)	(1)
Dilutive potential shares from convertible bonds	29	(1)	(1)	(1)
Dilutive weighted average number of shares outstanding adjusted when dilutive ⁽³⁾⁽⁴⁾		20,795,431	6,080,535	6,077,792
Net income (loss) per share				
– Basic	\$	(27.57)	(238.50)	(189.95)
– Basic ⁽²⁾		(24.94)	(214.11)	(142.52)
– Diluted	\$	(27.57)	(238.50)	(189.95)
– Diluted ⁽²⁾		(24.94)	(214.11)	(142.52)

(1) As our net result was a loss, stock options and performance shares plans had an anti-dilutive effect; as a consequence, potential shares linked to those instruments were not taken into account in the dilutive weighted average number of shares or in the calculation of diluted loss per share.

(2) Converted at the average exchange rate of US\$1.1057, US\$1.1138 and US\$1.3328 per for 2016, 2015 and 2014 respectively.

- (3) *As a result of the February 5, 2016 CGG SA capital increase via an offering of preferential subscription rights to existing shareholders, the calculation of basic and diluted earnings per share for 2015 and 2014 has been adjusted retrospectively. Number of ordinary shares outstanding has been adjusted to reflect the proportionate change in the number of shares.*
- (4) *As a result of the July 20, 2016 reverse stock split the calculation of basic and diluted earnings per share for 2015 and 2014 has been adjusted retrospectively. Number of ordinary shares outstanding has been adjusted to reflect the proportionate change in the number of shares.*

The accompanying notes are an integral part of the consolidated financial statements

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CGG

CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME (LOSS)

	Year		
	2016	2015	2014
	(In millions of US\$)		
Net income (loss) from statements of operations	(576.6)	(1,446.2)	(1,146.6)
Other comprehensive income to be reclassified in profit (loss) in subsequent period:			
Net gain (loss) on cash flow hedges	(0.2)	0.7	(1.2)
Net gain (loss) on available-for-sale financial assets	–	(0.7)	–
Exchange differences on translation of foreign operations	(17.7)	(16.8)	(49.2)
Net other comprehensive income to be reclassified in profit (loss) in subsequent period⁽¹⁾	(17.9)	(16.8)	(50.4)
Other comprehensive income not to be classified in profit (loss) in subsequent period:			
Net gain (loss) on actuarial changes on pension plan	(6.6)	(3.3)	(8.5)
Net other comprehensive income not to be reclassified in profit (loss) in subsequent period⁽²⁾	(6.6)	(3.3)	(8.5)
Total other comprehensive income (loss) for the period, net of taxes⁽¹⁾⁺⁽²⁾	(24.5)	(20.1)	(58.9)
Total comprehensive income (loss) for the period	(601.1)	(1,466.3)	(1,205.5)
<i>Attributable to:</i>			
<i>Owners of CGG</i>	<i>(595.4)</i>	<i>(1,467.4)</i>	<i>(1,213.2)</i>
<i>Non-controlling interests</i>	<i>(5.7)</i>	<i>1.1</i>	<i>7.7</i>

⁽¹⁾ Actuarial changes on pension plan are not classified to profit or loss in subsequent periods.

⁽²⁾ Other components recognized in other comprehensive income are reclassified to profit or loss under certain conditions.

The accompanying notes are an integral part of the consolidated financial statements

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CGG

CONSOLIDATED STATEMENT OF CHANGES IN EQUITY

	Number of Shares issued (a)	Share capital	Additional paid-in capital	Retained earnings	Other reserves	Treasury shares	Income and expense recognized directly in equity	Cumulative Translation Adjustment	Equity attributable to owners of CGG SA	Non- controlling interests	Total equity
Balance at January 1,											
2014	5,527,840	92.7	3,180.4	575.1	(46.1)	(20.6)	(7.6)	26.0	3,799.9	90.2	3,890.1
Net gain (loss) on actuarial changes on pension plan ⁽¹⁾				(8.5)					(8.5)		(8.5)
Net gain (loss) on cash flow hedges ⁽²⁾							(1.2)		(1.2)		(1.2)
Exchange differences on foreign currency translation ⁽³⁾							1.2	(50.3)	(49.1)	(0.1)	(49.2)
Other comprehensive income⁽¹⁾⁺⁽²⁾⁺⁽³⁾				(8.5)			–	(50.3)	(58.8)	(0.1)	(58.9)
Net income ⁽⁴⁾				(1,154.4)					(1,154.4)	7.8	(1,146.6)
Comprehensive income⁽¹⁾⁺⁽²⁾⁺⁽³⁾⁺⁽⁴⁾				(1,162.9)			–	(50.3)	(1,213.2)	7.7	(1,205.5)
Capital increase	5,447	0.1		(0.1)					–		–
Dividends									–	(7.5)	(7.5)
Cost of share-based payment				8.2					8.2		8.2
Reimbursement of convertible bonds, net of deferred taxes				(16.3)					(16.3)		(16.3)
Exchange differences on foreign currency translation generated by the parent company					110.8				110.8		110.8
Changes in consolidation scope and other				3.6					3.6	(37.2)	(33.6)
Balance at December 31,											
2014	5,533,287	92.8	3,180.4	(592.4)	64.7	(20.6)	(7.6)	(24.3)	2,693.0	53.2	2,746.2

^(a) Number of shares as of January 1, 2014, December 31, 2014 and capital increase have been restated to reflect the 32-for-one stock split on July 20, 2016.

	Number of Shares issued (a)	Share capital	Additional paid-in capital	Retained earnings	Other reserves	Treasury shares	Income and expense recognized directly in equity	Cumulative Translation Adjustment	Equity attributable to owners of CGG SA	Non- controlling interests	Total equity
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Balance at January 1,											
2015	<u>5,533,287</u>	<u>92.8</u>	<u>3,180.4</u>	<u>(592.4)</u>	<u>64.7</u>	<u>(20.6)</u>	<u>(7.6)</u>	<u>(24.3)</u>	<u>2,693.0</u>	<u>53.2</u>	<u>2,746.2</u>
Net gain (loss) on actuarial changes on pension plan ⁽¹⁾				(3.3)					(3.3)		(3.3)
Net gain (loss) on cash flow hedges ⁽²⁾							0.7		0.7		0.7
Net gain (loss) on available-for-sale financial assets ⁽³⁾							(0.7)		(0.7)		(0.7)
Exchange differences on foreign currency translation ⁽⁴⁾							0.7	(14.6)	(13.9)	(2.9)	(16.8)
Other comprehensive income⁽¹⁾⁺⁽²⁾⁺⁽³⁾⁺⁽⁴⁾				(3.3)			0.7	(14.6)	(17.2)	(2.9)	(20.1)
Net income ⁽⁵⁾				(1,450.2)					(1,450.2)	4.0	(1,446.2)
Comprehensive income⁽¹⁾⁺⁽²⁾⁺⁽³⁾⁺⁽⁴⁾⁺⁽⁵⁾				(1,453.5)			0.7	(14.6)	(1,467.4)	1.1	(1,466.3)
Dividends									–	(7.5)	(7.5)
Cost of share-based payment				3.2					3.2		3.2
Exchange differences on foreign currency translation generated by the parent company					73.3				73.3		73.3
Public exchange offer of convertible bonds, net of tax				8.5					8.5		8.5
Transfer to retained earnings of the parent company			(1,770.4)	1,770.4					–		–
Changes in consolidation scope and other				(4.7)			6.3		1.6	(0.6)	1.0
Balance at December 31,											
2015	<u>5,533,287</u>	<u>92.8</u>	<u>1,410.0</u>	<u>(268.5)</u>	<u>138.0</u>	<u>(20.6)</u>	<u>(0.6)</u>	<u>(38.9)</u>	<u>1,312.2</u>	<u>46.2</u>	<u>1,358.4</u>

^(a) Number of shares as of January 1, 2015 and December 31, 2015 has been restated to reflect the 32-for-one stock split on July 20, 2016.

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	Number of Shares issued (a)	Share capital	Additional paid-in capital	Retained earnings	Other reserves	Treasury shares	Income and expense recognized directly in equity	Cumulative Translation Adjustment	Equity attributable to owners of CGG SA	Non- controlling interests	Total equity
Balance at January 1,											
2016	5,533,287	92.8	1,410.0	(268.5)	138.0	(20.6)	(0.6)	(38.9)	1,312.2	46.2	1,358.4
Net gain (loss) on actuarial changes on pension plan ⁽¹⁾				(6.6)					(6.6)		(6.6)
Net gain (loss) on cash flow hedges ⁽²⁾							(0.2)		(0.2)		(0.2)
Net gain (loss) on available-for-sale financial assets ⁽³⁾									—		—
Exchange differences on foreign currency translation ⁽⁴⁾								(15.2)	(15.2)	(2.5)	(17.7)
Other comprehensive income⁽¹⁾⁺⁽²⁾⁺⁽³⁾⁺⁽⁴⁾				(6.6)			(0.2)	(15.2)	(22.0)	(2.5)	(24.5)
Net income ⁽⁵⁾				(573.4)					(573.4)	(3.2)	(576.6)
Comprehensive income⁽¹⁾⁺⁽²⁾⁺⁽³⁾⁺⁽⁴⁾⁺⁽⁵⁾				(580.0)			(0.2)	(15.2)	(595.4)	(5.7)	(601.1)
Capital increase	16,599,862	231.6	135.9			0.5			368.0		368.0
Share capital reduction (<i>see note 15</i>)		(304.1)	304.1						—		—
Dividends									—	(4.4)	(4.4)
Cost of share-based payment				2.6					2.6		2.6
Exchange differences on foreign currency translation generated by the parent company					33.1				33.1		33.1
Changes in consolidation scope and other				0.2					0.2		0.2
Balance at December 31,											
2016	22,133,149	20.3	1,850.0	(845.7)	171.1	(20.1)	(0.8)	(54.1)	1,120.7	36.1	1,156.8

(a) Number of shares as of January 1, 2016 and capital increase have been restated to reflect the 32-for-one stock split on July 20, 2016.

The accompanying notes are an integral part of the consolidated financial statements

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CGG

CONSOLIDATED STATEMENTS OF CASH FLOWS

		Year		
	Notes	2016	2015	2014
(In millions of US\$)				
OPERATING				
Net income (loss)		(576.6)	(1,446.2)	(1,146.6)
Depreciation and amortization	28	293.2	1,310.6	1,031.3
Multi-client surveys depreciation and amortization	10, 28	417.2	369.5	565.8
Depreciation and amortization capitalized in multi-client surveys	10	(42.3)	(72.8)	(130.0)
Variance on provisions		(105.6)	98.5	116.1
Stock based compensation expenses		2.0	3.1	6.1
Net (gain) loss on disposal of fixed and financial assets	28	0.1	(27.2)	(7.3)
Equity (income) loss of investees		8.2	(21.4)	81.7
Dividends received from investments in companies under equity method		13.0	5.1	30.7
Other non-cash items		0.3	(3.0)	44.8
Net cash flow including net cost of financial debt and income tax		9.5	216.2	592.6
Less net cost of financial debt		174.2	178.5	200.6
Less income tax expense		(13.7)	77.0	123.8
Net cash flow excluding net cost of financial debt and income tax		170.0	471.7	917.0
Income tax paid		(12.6)	(19.2)	(22.9)
Net cash flow before changes in working capital		157.4	452.5	894.1
– change in trade accounts and notes receivables		320.2	76.8	7.6
– change in inventories and work-in-progress		60.2	53.2	40.3
– change in other current assets		(27.3)	25.7	12.8
– change in trade accounts and notes payable		(98.2)	(144.1)	(73.4)
– change in other current liabilities		(58.2)	(33.5)	(36.3)
Impact of changes in exchange rate on financial items	28	1.0	(22.5)	19.1
Net cash flow provided by operating activities		355.1	408.1	864.2
INVESTING				
Total capital expenditures (including variation of fixed assets suppliers, excluding multi-client surveys)	9	(104.5)	(145.6)	(281.9)
Investments in multi-client surveys, net cash	10	(295.1)	(284.6)	(583.3)
Proceeds from disposals of tangible & intangible assets		12.3	46.2	7.8
Total net proceeds from financial assets	28	6.1	4.4	21.5
Acquisition of investments, net of cash & cash equivalents acquired	28	–	(19.3)	(8.1)
Variation in loans granted	28	18.3	(27.8)	(50.0)
Variation in subsidies for capital expenditures		(0.6)	(0.7)	(0.9)
Variation in other non-current financial assets		(17.7)	4.1	1.4
Net cash flow used in investing activities		(381.2)	(423.3)	(893.5)
FINANCING				
Repayment of long-term debt		(496.1)	(231.6)	(1,288.1)
Total issuance of long-term debt		458.1	466.0	1,382.3
Lease repayments		(8.7)	(8.2)	(8.8)
Change in short-term loans		0.9	(2.1)	(0.8)
Financial expenses paid		(141.8)	(153.8)	(144.0)
<i>Net proceeds from capital increase:</i>				

– from shareholders	28	367.5	–	0.1
– from non-controlling interests of integrated companies		–	–	–
<i>Dividends paid and share capital reimbursements:</i>				
– to shareholders		–	–	–
– to non-controlling interests of integrated companies	28	(4.4)	(7.5)	(43.2)
Acquisition/disposal from treasury shares		0.5	–	–
Net cash flow provided by (used in) financing activities		176.0	62.8	(102.5)
Effect of exchange rates on cash		3.6	(21.4)	(8.7)
Impact of changes in consolidation scope		–	–	(30.4)
Net increase (decrease) in cash and cash equivalents		153.5	26.2	(170.9)
Cash and cash equivalents at beginning of year	28	385.3	359.1	530.0
Cash and cash equivalents at end of period	28	538.8	385.3	359.1

The accompanying notes are an integral part of the consolidated financial statements

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

NOTE 1 – SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

CGG S.A. (“the Company”), along with its subsidiaries (together, the “Group”) is a global participant in the geophysical and geological services industry, providing a wide range of data acquisition, processing and interpretation services as well as related imaging and interpretation software to clients in the oil and gas exploration and production business. It is also a global manufacturer of geophysical equipment.

Given that the Company is listed on a European Stock Exchange and pursuant to European Regulation n(o)1606/2002 dated July 19, 2002, the accompanying consolidated financial statements have been prepared in accordance with International Financial Reporting Standards (“IFRS”) and its interpretations as issued by the International Accounting Standards Board (IASB) and as adopted by the European Union at December 31, 2016.

The consolidated financial statements were authorized for issue by the Board of Directors on March 2, 2017 and are subject to the approval of our General Meeting convened to approve the 2016 financial statements. As part of a new financial statements authorization for issue, the Board of Directors held on April 27, 2017, updated the classification of part of our financial debt as current liability and amended the notes 1.2, 1.3, 13, 18, and 30.

1.1 – Critical Accounting Policies

Our accounting policies, which we have applied consistently, are described below. However, the accounting policies related to the accounts impacted by the judgments and estimates described below are particularly important to reflect our financial position and results of operations. As we must exercise significant judgment when we apply these policies, their application is subject to an inherent degree of uncertainty.

Those accounting policies are consistent with those used to prepare our consolidated financial statements as at December 31, 2015, except for the first adoption of the following Standards, Amendments, and Interpretations:

Annual Improvements (2012-2014)

Amendments to IAS 1 – Disclosure initiative

Amendments to IAS 16 & IAS 38 – Clarification of Acceptable Methods of Depreciation and Amortization

Amendments to IFRS 11 – Acquisition of an interest in a joint operation

The adoption of these Standards, Amendments, and Interpretations had limited impact on the Group’s financial statements. The application of Amendments to IAS 16 & IAS 38 – Clarification of Acceptable Methods of Depreciation and Amortization is described below.

The Group decided not to early adopt those Standards, Amendments and Interpretations that the European Union adopted but that were not effective as of December 31, 2016, namely:

IFRS 15 – Revenue from Contracts with Customers

IFRS 9 – Financial instrument – classification and valuation of financial assets

First analysis of the application of IFRS 15 is detailed below.

At the date of issuance of these consolidated financial statements, the following Standards, Amendments, and Interpretations were issued but not yet adopted by the European Union and were thus not effective:

Amendments to IAS 7 – Disclosure initiative

Amendments to IAS 12 – Recognition of deferred tax assets for unrealized losses

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Amendments to IFRS 2 – Share-based payment

Amendments to IFRS 15 – Revenue from Contracts with Customers

IFRS 16 – Leases

Annual Improvements (2014-2016)

IFRIC 22 – Foreign Currency Transactions and Advance Consideration

We are currently reviewing these Standards, Amendments, and Interpretations to measure their potential impact on our consolidated financial statements.

Application of Amendments to IAS 16 & IAS 38 – Clarification of Acceptable Methods of Depreciation and Amortization

The amendment of IAS 38 Intangible assets led CGG to adapt its multi-client library amortization pattern as follows:

From January 1, 2016 onwards; each survey is amortized in a manner that reflect the pattern of consumption of economic benefits determined on the basis of the normative total expected sales on this survey and no longer on the basis of sales generated.

This amount used for amortization purposes excludes the effect of price elements like significant discounts or transfer fees for change in control.

A rate corresponding to the ratio of capitalized costs to total expected sales excluding these particular pricing components over the life of the survey is applied to each normative sale. For 2016, and as applied conservatively by CGG since January 1, 2014, such amortization rate is 80%.

In most of the transactions, the normative sale equals the amount of revenue recognized. In some cases, however, the amount of revenue recognized is adjusted to exclude particular pricing components (e.g. a special rebate to a customer buying a large volume of data).

In addition, an impairment test is performed on an annual basis (or more frequently, whenever there is an indication that a survey may be impaired). Given the life cycle of a multi-clients project, our surveys are generally fully depreciated or impaired within five years after completion.

These principles reflect the characteristic of our multi-client business models and have been applied from January 1, 2016.

The application of IAS 38 amendment in 2016 led to an additional amortization of US\$24.8 million.

First analysis of the application of IFRS 15 – Revenue from Contracts with Customers

The IASB issued a new revenue recognition standard, IFRS 15, replacing all existing IFRS standards on revenues. This standard is effective on January 1, 2018 with a retrospective application (i.e. financial statements shall be presented as this standard had always been in force). CGG will implement IFRS 15 on January 1, 2018 without early adoption.

IFRS 15 defines the frame of the revenue recognition as a five steps process: i) identify the contract, ii) identify the performance obligations, iii) determine the transaction price, iv) allocate the transaction price, v) recognize revenue. The second step still allows the revenue recognition over time provided certain criteria are met, the main change compared to current standards being the notion of “risk and rewards” replaced by the notion of “control”.

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The Group analyzed this new standard at corporate level starting FY14. Since CGG includes various Business Lines and considering the application of this new standard implies significant intimacy with operations the Group initiated a bottom up assessment in June 2016 with the aim to go through the five steps of the standard for each activity. The process of analysis and validation is still in progress.

CGG does not expect significant changes in its revenues recognition policies during the final conclusion phase for exclusive surveys sales and after-sales of multi-client surveys. Revenue recognition for multi-clients during prefunding phase (before delivery) is still under close scrutiny and analysis. CGG, as well as all multi-clients players, currently recognizes revenue over time based on physical progress of the survey. CGG liaised with all major players of multi clients industry to share views on the new standard application during this phase and compare operational practices. CGG has not yet concluded the analysis on this particular topic.

1.2 – Use of judgment and estimates

The preparation of consolidated financial statements in accordance with IFRS requires management to make estimates, assumptions and judgments that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the consolidated financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ materially from those estimates due to the change in economic conditions, changes in laws and regulations, changes in strategy and the inherent imprecision associated with the use of estimates.

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Key judgments and estimates used in the financial statements are summarized in the following table:

Note	Judgments and estimates	Key assumptions
Note 1.3	Going concern	Assessment of going concern considering current covenants and financial restructuring
Note 2	Fair value of assets and liabilities acquired through purchase accounting	Pattern used to determine the fair value of assets and liabilities
Note 3	Recoverability of client receivables	Assessment of clients' credit default risk
Notes 7 and 8	Valuation of investments	Financial assets fair value Equity method companies fair value
Note 10	Amortization and impairment of multi-client surveys	Expected margin rate for each category of surveys Expected useful life of multi-client surveys
Note 10	Depreciation and amortization of tangible and intangible assets	Assets useful lives
Note 11	Recoverable value of goodwill and intangible assets	Expected geophysical market trends and timing of recovery Discount rate (WACC)
Note 13	Classification of financial debt as current or non-current	Progress of the negotiations on Financial Restructuring
Note 16	Post-employment benefits	Discount rate Participation rate to post employment benefit plans Inflation rate
Note 16	Provisions for restructuring and onerous contracts	Assessment of future costs related to restructuring plans and onerous contracts
Note 16	Provisions for risks, claims and litigations	Assessment of risks considering court rulings and attorney' s positions
Note 19	Revenue recognition	Contract completion rates Assessment of fair value of customer loyalty programs Assessment of fair value of contracts identifiable parts
Note 20	Development costs	Assessment of future benefits of each project
Note 24	Deferred tax assets	Hypothesis supporting the achievement of future taxable benefits

1.3 – Going concern assumptions

At the date of March 2, 2017, in light of the Group' s cash flow projections based on the current operations and in the absence of any acceleration of the Group' s financial debt reimbursement discussed below, CGG has enough cash liquidity to fund its operations until at least December 31, 2017 provided that some specific actions, which are subject to negotiation with other parties, be successfully implemented during this period. At the date of April 27, 2017, the main specific actions being the proactive management of marine liabilities and the fleet ownership changes (see note 30) have been already successfully implemented.

The Group is, however, facing material uncertainties that may cast substantial doubt upon its ability to continue as a going concern, including likely future non-respect of certain ratios included in maintenance covenants, and other limitations contained in the outstanding (drawn) Revolving Credit Facilities, in the Term

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Loan B and in the Nordic Facility. If such non-respect of ratios were to occur and not be timely remediated, it would trigger, also through the crossdefault clauses of the Senior Notes indentures, the immediate acceleration of repayment of substantially all of CGG's senior debt. CGG would not then have sufficient cash liquidity to fulfill these reimbursement obligations, nor – in the current economic environment and given its financial situation – be in a position to raise the required additional refinancing.

In the recent past, CGG requested and obtained several consents from its RCF, Term Loan B and Nordic lenders, particularly related to the disapplication of maintenance covenants as of December 31, 2016 (obtained before 2016 year-end) and to the appointment of a 'mandataire ad hoc' (a French facilitator for creditor negotiations) to support the financial restructuring process that CGG is entering into with the aim of significantly reducing debt levels. The proposed debt reduction would involve the conversion of unsecured debt into equity and the extension of the secured debt maturities.

Looking forward, in the context of the discussions with the lenders about the financial restructuring necessary to allow the Group to face its capital structure constraints, the Management intends particularly to obtain the appropriate standstill agreement or covenants' relief to prevent any future events of default on the Group's credit agreements. The disapplication of maintenance covenants as of March 31, 2017 was thus requested and obtained shortly before March 31, 2017. If discussions with lenders are unsuccessful, and to avoid the risk of any liquidity shortfall or an accelerated reimbursement of the Group's financial debt, the Company will consider all available legal options to protect the Group's operations while negotiating the terms of its financial restructuring.

Having carefully considered the above, the Board of Directors held on March 2, 2017 concluded that preparing the 2016 consolidated financial statements on a going concern basis is an appropriate assumption. Considering the main specific actions already achieved, the Board of Directors held on April 27, 2017, confirmed that a going concern basis is again an appropriate assumption.

1.4 – Accounting policies

1 – Basis of consolidation

Our consolidated financial statements include CGG SA and all its subsidiaries.

Subsidiaries are fully consolidated from the date of acquisition, being the date on which we obtain control, and continue to be consolidated until the date when such control ceases. Control is achieved when we are exposed or have rights to variable returns from our involvement with the investee and have the ability to affect those returns through our power over the investee. When we have less than a majority of the voting or similar rights of an investee, we consider all relevant facts and circumstances in assessing whether we have power over the investee, including contractual arrangements with the other holders or potential voting rights.

The financial statements of the subsidiaries are prepared for the same reporting period as the parent company, using consistent accounting policies. All intra-group balances, transactions, unrealized gains and losses resulting from intra-group transactions and dividends are eliminated in full.

Losses within a subsidiary are attributed to the non-controlling interest even if that results in a deficit balance. A change in the ownership interest of a subsidiary, without a loss of control, is accounted for as an equity transaction. If we lose control over a subsidiary, we:

- derecognize the assets (including goodwill) and liabilities of the subsidiary,
- derecognize the carrying amount of any non-controlling interest,
- derecognize the cumulative translation differences, recorded in equity,

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recognize the fair value of the consideration received,
recognize the fair value of any investment retained,
recognize any surplus or deficit in profit or loss, and
reclassify the parent' s share of components previously recognized in other comprehensive income to profit or loss or retained earnings, as appropriate.

We use the equity method for investments classified as joint venture. A joint venture is a joint arrangement whereby the parties that have joint control of the arrangement have rights to the net assets of the arrangement. Joint control is the contractually agreed sharing of control of an arrangement, which exists only when decisions about the relevant activities require the unanimous consent of the parties sharing control.

2 – Foreign currency

Effective January 1, 2012, we changed the presentation currency of our consolidated financial statements from the euro to the US dollar to better reflect the profile of our revenues, costs and cash flows, which are primarily generated in US dollars, and hence, to better present the financial performance of the Group.

The financial statements of all of our subsidiaries are maintained in the local currency, with the exception of the financial statements of subsidiaries for which the functional currency is not the local currency. The functional currency is the currency in which they primarily conduct their business. Goodwill attributable to subsidiaries is accounted for in the functional currency of the applicable entities.

When translating the financial statements of subsidiaries to US dollars, year-end exchange rates are applied to the statement of financial position items, while average annual exchange rates are applied to income statement items. Adjustments resulting from this process are recorded in a separate component of shareholders' equity.

With respect to affiliates accounted for using the equity method, the effects of exchange rates changes on the net assets of the affiliate are recorded in a separate component of shareholders' equity.

Transactions denominated in currencies other than the functional currency of a given entity are recorded at the exchange rate prevailing on the date of the transaction. Monetary assets and liabilities denominated in foreign currencies other than the functional currency are revalued at year-end exchange rates and any resulting unrealized exchange gains and losses are included in income. Unrealized exchange gains and losses arising from monetary assets and liabilities for which settlement in neither planned nor likely to occur in the foreseeable future are recorded in a separate component of shareholder' s equity.

3 – Business combinations

Business combinations are accounted for using the acquisition method. The cost of an acquisition is measured as the aggregate of the consideration transferred, measured at acquisition date fair value and the amount of any non-controlling interest in the acquiree. For each business combination, we measure the non-controlling interest in the acquiree either at fair value or at the proportionate share in the recognized amounts of the acquiree' s identifiable net assets. Acquisition costs incurred are expensed and included in administrative expenses.

If the business combination is achieved in stages, the acquisition date fair value of the acquirer' s previously held equity interest in the acquiree is remeasured to fair value at the acquisition date through profit or loss. Any contingent consideration to be transferred by us will be recognized at fair value at the acquisition date. Subsequent changes to the fair value of the contingent consideration which is deemed to be a financial instrument will be recognized in accordance with IAS 39 either in profit or loss or as a change in other comprehensive

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income. If the contingent consideration is classified as equity, it should not be remeasured until it is finally settled within equity. Goodwill is initially measured at cost being the excess of the aggregate of the consideration transferred measured at fair value and the amount recognized for non-controlling interest over the net identifiable assets acquired and liabilities assumed.

If this consideration is lower than the fair value of the net assets of the subsidiary acquired, the difference is recognized in profit or loss.

After initial recognition, goodwill is measured at cost less any accumulated impairment losses. For the purpose of impairment testing, goodwill acquired in a business combination is, from the acquisition date, allocated to each of the Group's cash-generating units that are expected to benefit from the combination, irrespective of whether other assets or liabilities of the acquiree are assigned to those units.

Where goodwill forms part of a cash-generating unit and part of the operation within that unit is disposed of, the goodwill associated with the operation disposed of is included in the carrying amount of the operation when determining the gain or loss on disposal of the operation. Goodwill disposed of in this circumstance is measured based on the relative values of the operation disposed of and the portion of the cash-generating unit retained.

4 – Operating revenues

Operating revenues are recognized when they can be measured reliably, and when it is likely that the economic benefits associated with the transaction will flow to the entity, which is at the point that such revenues have been realized or are considered realizable.

Multi-client surveys

Revenues related to multi-client surveys result from (i) pre-commitments and (ii) licenses after completion of the surveys ("after-sales").

Pre-commitments – generally, we obtain commitments from a limited number of customers before a seismic project is completed. These pre-commitments cover part or all of the survey area blocks. In return for the commitment, the customer typically gains the right to direct or influence the project specifications, advance access to data as it is being acquired, and favorable pricing. We record payments that we receive during periods of mobilization as advance billing in the statement of financial position in the line item "Advance billings to customers".

We recognize pre-commitments as revenue when production has started based on the physical progress of the project, as services are rendered.

After sales – generally, we grant a license entitling non-exclusive access to a complete and ready for use, specifically defined portion of our multi-client data library in exchange for a fixed and determinable payment. We recognize after sales revenue upon the client executing a valid license agreement and being granted access to the data.

In case after sales agreements contain multiple deliverable elements, the revenue is allocated to the various elements based on specific objective evidence of fair value, regardless of any separate allocations stated within the contract for each element.

After sales volume agreements – we enter into a customer arrangement in which we agree to grant licenses to the customer for access to a specified number of blocks of the multi-client library. These arrangements typically enable the customer to select and access the specific blocks for a limited period of time. We recognize revenue when the blocks are selected and the client has been granted access to the data and if the corresponding revenue can be reliably estimated.

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Exclusive surveys

In exclusive surveys, we perform seismic services (acquisition and processing) for a specific customer. We recognize proprietary/contract revenues as the services are rendered. Revenue is recognized using the percentage of completion method (or “proportional performance method”).

The billings and the costs related to the transit of seismic vessels at the beginning of the survey are deferred and recognized over the duration of the contract by reference to the technical stage of completion.

In some exclusive survey contracts and a limited number of multi-client survey contracts, we are required to meet certain milestones. We defer recognition of revenue on such contracts until all milestones before which the customer has a right of cancellation or refund of amounts paid have been achieved.

Equipment sales

We recognize revenues on equipment sales upon delivery to the customer when risks and rewards are fully transferred. Any advance billings to customers are recorded in current liabilities.

Software and hardware sales

We recognize revenues from the sale of software and hardware products following acceptance of the product by the customer at which time we have no further significant vendor obligations remaining. Any advance billings to customers are recorded in current liabilities.

If an arrangement to deliver software, either alone or together with other products or services, requires significant production, modification, or customization of software, the entire arrangement is accounted for as a production-type contract, i.e. using the percentage of completion method.

If the software arrangement provides for multiple deliverables (e.g. upgrades or enhancements, post-contract customer support such as maintenance, or services), the revenue is allocated to the various elements based on specific objective evidence of fair value, regardless of any separate allocations stated within the contract for each element.

Maintenance revenues consist primarily of post contract customer support agreements and are recorded as advance billings to customers and recognized as revenue on a proportional performance basis over the contract period.

Other geophysical sales/services

Revenues from our other geophysical sales/services are recognized as the services are performed and, when related to long-term contracts, using the proportional performance method of recognizing revenues.

Customer loyalty programs

We may grant award credits to our main clients. These award credits are contractually based on cumulative services provided during the calendar year and attributable to future services.

These credits are considered as a separate component of the initial sale and measured at their fair value by reference to the contractual rates and the forecasted cumulative revenues for the calendar year. These proceeds are recognized as revenue only when the obligation has been fulfilled.

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5 – Cost of net financial debt

Cost of net financial debt includes expenses related to financial debt, composed of bonds, the debt component of convertible bonds, bank loans, capital-lease obligations and other financial borrowings, net of income provided by cash and cash equivalents.

Borrowing costs that relate to assets that take a substantial period of time to get ready for use or sale are capitalized as part of the acquisition cost of such assets.

6 – Income taxes and deferred taxes

Income taxes includes all tax based on taxable profit.

Deferred taxes are recognized on all temporary differences between the carrying value and the tax value of assets and liabilities, as well as on carry-forward losses, using the balance sheet liability method. Deferred tax assets are recognized only when their recovery is considered as probable.

Deferred tax liabilities are recognized on intangible assets identified and recognized as part of business combinations (technological assets, customer relationships).

Deferred tax assets and deferred tax liabilities are not discounted.

7 – Intangible and tangible assets

In accordance with IAS 16 “Property, Plant and equipment” and IAS 38 “Intangible assets” only items for which cost can be reliably measured and for which the future economic benefits are likely to flow to us are recorded in our consolidated financial statements.

Property, plant and equipment

Property, plant and equipment are valued at historical cost less accumulated depreciation and impairment losses. Depreciation is generally calculated over the following useful lives:

– equipment and tools	3 to 10 years
– vehicles	3 to 5 years
– aircrafts	5 to 10 years
– seismic vessels	12 to 30 years
– buildings for industrial use	20 years
– buildings for administrative and commercial use	20 to 40 years

Depreciation expense is determined using the straight-line method.

We include residual value, if significant, when calculating the depreciable amount. We segregate tangible assets into their separate components if there is a significant difference in their expected useful lives, and depreciate them accordingly.

Lease agreements

Assets under a finance lease agreement or a long-term lease agreement that transfers substantially all the risks and rewards incidental to ownership to the Group are accounted for as fixed assets at the commencement of the lease term, at amounts equal to the fair value of the leased property or, if lower, the present value of the minimum lease payments, each determined at the inception of the lease. Minimum lease payments are

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apportioned between the finance charge and the reduction of the outstanding liability and the finance charge is allocated to each period during the lease term so as to produce a constant periodic rate of interest on the remaining balance of the liability. Assets under finance lease are depreciated over the shorter of its useful life and the lease term, if there is no reasonable certainty that the Group will obtain ownership by the end of the lease term. Depreciation is determined on the same basis as owned-assets and is included in depreciation expense.

Rent payments under operating leases are recognized as operating expenses on a straight-line basis over the lease term.

Goodwill

Goodwill is determined according to IFRS 3 Revised – Business Combinations. Goodwill is not amortized but subject to an impairment test at least once a year at the statement of financial position dates or when a triggering event occurs.

Multi-client surveys

Multi-client surveys consist of seismic surveys to be licensed to customers on a non-exclusive basis. All costs directly incurred in acquiring, processing and otherwise completing seismic surveys are capitalized into the multi-client surveys (including transit costs when applicable). The carrying amount of our multi-client library is stated on our statement of financial position at the aggregate of those costs less accumulated amortization. Whenever there is an indication that a survey may be impaired, an impairment test is performed. A systematic impairment test of all delivered surveys is performed for the yearly closing.

Each survey is amortized in a manner that reflects the pattern of consumption of its economic benefits during both prefunding and after-sale periods. An amortization rate of 80% corresponding to the ratio of capitalized costs to total expected sales over the accounting life of the survey is applied to each normative sale, unless specific indications lead to application of a different rate. If that is the case, the amortization rate is adjusted to reflect the commercial effects of price elements. Given the life cycle of a multi-clients project, our surveys are generally fully depreciated or impaired within five years after delivery.

Multi-client surveys are classified into a same category when they are located in the same area with the same estimated sales ratio, such estimates generally relying on the historical patterns.

Development costs

Expenditures on research activities undertaken with the prospect of gaining new scientific or technological knowledge and understanding are recognized in the income statement as expenses as incurred and are presented as “Research and development expenses – net”. Expenditures on development activities, whereby research findings are applied to a plan or design for the production of new or substantially improved products and processes, are capitalized if:

the project is clearly defined, and costs are separately identified and reliably measured,

the product or process is technically and commercially feasible,

we have sufficient resources to complete development, and

the intangible asset is likely to generate future economic benefits, either because it is useful to us or through an existing market for the intangible asset itself or for its products.

The expenditures capitalized include the cost of materials, direct labor and an appropriate proportion of overhead. Other development expenditures are recognized in the income statement as expenses as incurred and are presented as “Research and development expenses – net”.

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Capitalized development expenditures are stated at cost less accumulated amortization and impairment losses.

Capitalized developments costs are amortized over 5 years.

Research and development expenses in our income statement represent the net cost of development costs that are not capitalized, of research costs, offset by government grants acquired for research and development.

Other intangible assets

Other intangible assets consist primarily of customer relationships, technology and trade name acquired in business combinations. Customer relationships are generally amortized over periods ranging from 10 to 20 years and acquired technology are generally amortized over periods ranging from 5 to 10 years.

Impairment

The carrying values of our assets (excluding inventories, assets arising from construction contracts, non-current assets classified as held for sale in accordance with IFRS 5, deferred tax assets, assets arising from employee benefits and financial assets) are reviewed at each statement of financial position date or if any indication exists that an asset may be impaired, in compliance with IAS 36 "Impairment of assets". Factors we consider important that could trigger an impairment review include the following:

- significant underperformance relative to expected operating results based upon historical and/or projected data,
- significant changes in the manner of our use of the tested assets or the strategy for our overall business, and
- significant negative industry or economic trends.

The recoverable amount of tangible and intangible assets is the greater of their net fair value less costs of disposal and value in use.

Goodwill, assets that have an indefinite useful life and intangible assets are allocated to cash generating units or groups of cash generating units. We estimate the recoverable amount of these cash generating units at each statement of financial position closing date and whenever any indication exists that the cash generating unit may be impaired.

We determine the value in use by estimating future cash flows expected from the assets or from the cash generating units, discounted to their present value using the sector weighted average cost of capital (WACC) estimated on a yearly basis by the Group. When the recoverable value retained is a fair value less cost of disposal, the fair value is determined by reference to an active market.

We recognize an impairment loss whenever the carrying amount of an asset exceeds its recoverable amount. For an asset that does not generate largely independent cash inflows, the recoverable amount is determined for the cash-generating unit to which the asset belongs.

Impairment losses are recognized in the statement of operations. Impairment losses recognized in respect of a group of non-independent assets allocated to a cash-generating unit are allocated first to reduce the carrying amount of any goodwill allocated to cash-generating units (group of units) and then, to reduce the carrying amount of the other assets in the unit (group of units) on a pro rata basis provided that the carrying amount of an individual asset is not reduced below its value in use or fair value less costs of disposal.

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A previously recognized impairment loss is reversed only if there has been a change in the assumptions used to determine the asset's recoverable amount since the last impairment loss was recognized. The reversal is limited so that the carrying amount of the asset does not exceed its recoverable amount, nor exceed the carrying amount that would have been determined, net of depreciation or amortization, had no impairment loss been recognized for the asset in prior years. Such reversal is recognized in the income statement unless the asset is carried at a revalued amount, in which case the reversal is treated as a revaluation increase.

Impairment losses recognized on goodwill cannot be reversed.

Assets held for sale

Assets classified as assets held for sale correspond to non-current assets for which the net book value will be recovered by a sale rather than by their use in operations. Assets held for sale are valued at the lower of historical cost and fair value less cost to sell.

8 – Investments in companies under equity method

Under the equity method, the investments in our associates or joint ventures are carried in the statement of financial position at cost plus post acquisition changes in our share of net assets of the associates or joint ventures. Goodwill relating to the associates is included in the carrying amount of the investment and is neither amortized nor individually tested for impairment.

After application of the equity method, we determine whether it is necessary to recognize an additional impairment loss on our investment in the associates. We determine at each reporting date whether there is any objective evidence that the investments in our associates are impaired. If this is the case we calculate the amount of impairment as the difference between the recoverable amount of the associates and their carrying value and usually recognize the amount in the 'share of profit of an associate' in the statement of operations.

Upon loss of significant influence over the associate, we measure and recognize any retaining investment at its fair value. Any difference between the carrying amount of the associate upon loss of significant influence and the fair value of the retaining investment and proceeds from disposal is recognized in profit or loss.

From the date when an investment ceases to be an associate or a joint venture and becomes a financial asset we discontinue the use of the equity method. The retained interests are measured at fair value. We recognize in profit or loss any difference between (i) the fair value of any retained interest and any proceeds from disposing of a part interest in the associate or joint venture; and (ii) the carrying amount of the investment at the date the equity method was discontinued.

9 – Investments and other financial assets

Investments and other financial assets include investments in non-consolidated entities, loans and non-current receivables.

Investments in non-consolidated entities

In accordance with IAS 39 "Financial instruments", we classify investments in non-consolidated entities as available-for-sale and therefore present them on the statement of financial position at their fair value. The fair value for listed securities is their market price at the statement of financial position date. If a reliable fair value cannot be established, securities are valued at historical cost.

Gains or losses on disposal of impaired investments in non-consolidated entities classified as available for sale are not recognized through profit and loss.

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Loans and non-current receivables

Loans and non-current receivables are accounted for at amortized cost.

Impairment

We examine available-for-sale securities and other financial assets at each statement of financial position date to detect any objective evidence of impairment. Where this is the case, we record an impairment loss in the statement of operations.

Where there is objective evidence of impairment of an investment in a non-consolidated entity (for instance in case of significant or prolonged decline of the value of the asset) we record an irreversible impairment loss in the statement of operations.

Derecognition

We derecognize a financial asset (or, where applicable, a part of a financial asset or part of a group of similar financial assets) when:

The rights to receive cash flows from the asset have expired, or

We have transferred the rights to receive cash flows from the asset or have assumed an obligation to pay the received cash flows in full without material delay to a third party under a 'pass-through' arrangement; and either (a) we have transferred substantially all the risks and rewards of the asset, or (b) we have neither transferred nor retained substantially all the risks and rewards of the asset, but have transferred control of the asset.

When we have transferred the rights to receive cash flows from an asset, we evaluate if and to what extent we have retained the risks and rewards of ownership. When we have neither transferred nor retained substantially all of the risks and rewards of the asset, nor transferred control of the asset, the asset is recognized to the extent of our continuing involvement in the asset. In that case, we also recognize an associated liability. The transferred asset and the associated liability are measured on a basis that reflects the rights and obligations that we have retained.

Continuing involvement that takes the form of a guarantee over the transferred asset is measured at the lower of the original carrying amount of the asset and the maximum amount of consideration that we could be required to repay.

10 – Treasury shares

We value treasury shares at their cost, as a reduction of shareholders' equity. Proceeds from the sale of treasury shares are included in shareholders' equity and have no impact on the statement of operations.

11 – Inventories

We value inventories at the lower of cost (including direct production costs where applicable) and net realizable value.

We calculate the cost of inventories on a weighted average price basis for our Equipment segment and on a first-in first-out basis for Contractual Data Acquisition and Geology, Geophysics & Reservoir ("GGR") segments.

The additions and deductions in valuation allowances for inventories and work-in-progress are presented in the consolidated statements of operations as "Cost of sales".

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12 – Trade accounts and Notes receivable

In the Contractual Data Acquisition and Geology, Geophysics & Reservoir (“GGR”) segments, customers are generally large national or international oil and gas companies, which management believes reduces potential credit risk.

In the Equipment segment, a significant portion of sales is paid by irrevocable letters of credit.

The Group maintains an allowance for doubtful accounts based upon factors surrounding the credit risk of specific customers, historical trends and other information. Credit losses have not been material for the periods presented and have consistently been within management’s expectations.

Recoverable costs and accrued profit not billed comprise amounts of revenue recognized under the percentage of completion method on contracts for which billings had not been presented to the contract owners. Such unbilled accounts receivable are generally billed over the 30 or 60 days after services has been delivered.

13 – Provisions

We record a provision when the Group has a present obligation (legal or constructive) as a result of a past event for which it is probable that an outflow of resources embodying economic benefits (that can be reliably determined) will be required to settle the obligation.

Onerous contracts

We record a provision for onerous contracts equal to the excess of the unavoidable costs of meeting the obligations under the contract over the economic benefits expected to be received under it, as estimated by the Group.

Pension, post-employment benefits and other post-employment benefits

We record obligations for contributions to defined contribution pension plans as an expense in the income statement as incurred. We do not record any provision for such plans as we have no further obligation.

Our net obligation in respect of defined benefit pension plans is calculated separately for each plan by estimating the amount of future benefit that employees have earned in return for their service in the current and prior periods. We perform the calculation by using the projected unit credit method.

That benefit is discounted to determine its present value, and the fair value of any plan assets is deducted.

Net interest is calculated by applying the discount rate to the net defined benefit liability or asset. Interest is recorded in the profit and loss.

Unvested past services costs are recognized immediately if the benefits have vested immediately following the introduction of, or changes to, a pension plan.

We record actuarial gains and losses on defined benefits plans directly in equity.

14 – Financial debt

Financial debt is accounted for:

As at the date of issuance, at the fair value of the consideration received, less issuance fees and/or issuance premium;

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Subsequently, at amortized cost, corresponding to the fair value at which it is initially recognized, less repayments at the nominal amount and increased or decreased for the amortization of all differences between this original fair value recognized and the amount at maturity; differences between the initial fair value recognized and the amount at maturity are amortized using the effective interest rate method.

15 – Convertible debt

The Company recognizes separately the components of convertible debt as respectively (i) a financial liability and (ii) an option to the holder of the instrument to convert it into an equity instrument of the Company.

The Company first determines the carrying amount of the liability component by measuring the fair value of a similar liability (including any embedded non-equity derivative features) that does not have an associated equity component.

The carrying amount of the equity instrument represented by the option to convert the instrument into ordinary shares is then determined by deducting the fair value of the financial liability from the fair value of the compound financial instrument as a whole. The carrying amount is presented net of associated deferred taxes.

The sum of the carrying amounts assigned to the liability and equity components on initial recognition is always equal to the fair value that would be ascribed to the instrument as a whole.

16 – Derivative financial instruments

We use over-the-counter derivative financial instruments to hedge our exposure to foreign exchange fluctuations from operational, financing and investment activities denominated in a currency different from the functional currency. In accordance with our treasury policy, we do not hold or issue derivative financial instruments for trading purposes. However, derivatives that do not qualify for hedge accounting are accounted for as trading instruments in “Other financial income (loss)”.

Over-the-counter derivatives are entered into in the frame master agreements that provide a right of set-off in the event of default, insolvency or bankruptcy of one of the parties to the agreement (those netting agreements do not fulfill IAS 32 criteria to offset the fair value of derivatives on the balance sheet).

Exchange gains or losses on foreign currency financial instruments that represent the efficient portion of an economic hedge of a net investment in a foreign subsidiary are reported as translation adjustments in shareholder’ s equity under the line item “Cumulative translation adjustments”, the inefficient portion being recognized in the statement of operations. The cumulative value of foreign exchange gains and losses recognized directly in equity will be transferred to statement of operations when the net investment is sold.

Derivative financial instruments are stated at fair value. The gain or loss on reassessment to fair value is recognized immediately in the statement of operations. However, where derivatives qualify for cash flow hedge accounting, we account for changes in the fair value of the effective portion of the hedging instruments in shareholder’ s equity. The ineffective portion is recorded in “Other financial income (loss)”. Amounts recorded in other comprehensive income are reclassified into the statement of operations when the hedged risks impact the statement of operations.

When derivatives do not qualify for cash flow hedge accounting, we account for changes in the fair value into the statement of operations in “Other financial income (loss)”.

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17 – Cash flow statement

The cash flows of the period are presented in the cash flow statement within three activities: operating, investing and financing activities:

Operating activities

Operating activities are the principal revenue-producing activities of the entity and other activities that are not investing or financing activities.

Investing activities

Investing activities are the acquisition and disposal of long-term assets and other investments not included in cash equivalents. When a subsidiary is acquired, a separate item, corresponding to the consideration paid net of cash and cash equivalents held by the subsidiary at the date of acquisition, provides the cash impact of the acquisition.

Investments in multi-client surveys are presented net of depreciation and amortization capitalized in multi-client surveys, in order to reflect actual cash outflows. Depreciation and amortization capitalized in multi-client surveys are also restated in operating activities.

Financing activities

Financing activities are activities that result in changes in the size and composition of the contributed equity and borrowings of the entity.

They include the cash impact of financial expenses.

Cash and cash equivalents

Cash and cash equivalents in the consolidated statement of financial position comprise cash at banks and on hand and short-term deposits with a maturity of three months or less that are readily convertible to known amounts of cash.

18 – Share-based payments, including stock options

Employees (including senior executives) of the Group receive remuneration in the form of share-based payments. These rights can be settled either in equity (equity-settled transactions) or in cash (cash-settled transactions).

Equity-settled transactions

We include stock options granted to employees in the financial statements using the following principles: the stock option's fair value is determined on the grant date and is recognized in personnel costs, with a corresponding increase in equity, on a straight-line basis over the period between the grant date and the end of the vesting period. We calculate stock option fair value using the Black-Scholes mathematical model.

Cash-settled transactions

The cost of cash-settled transactions is measured initially at the grant date using a binomial model. A provision is recognized over the period until the vesting date. This liability is re-measured to fair value at each reporting date up to and including the settlement date, which changes in fair value recognized in the statement of operations.

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19 – Grants

Government grants, including non-monetary grants at fair value, are not recognized until there is reasonable assurance that the entity will comply with the conditions of the grant and that the grants will be received.

Government grants are recognized as income over the periods necessary to match them with the related costs which they are intended to compensate. They are presented as a reduction of the corresponding expenses in the item “Research and development expenses, net” in the statement of operations.

Refundable grants are presented in the statement of financial position as “Other non-current liabilities”.

20 – Earnings per share

Basic per share amounts are calculated by dividing net income for the year attributable to ordinary equity holders of the Company by the weighted average number of ordinary shares outstanding during the year.

Diluted earnings per share amounts are calculated by dividing the net income attributable to ordinary equity holders of the Company and adjusted for the after-tax amounts of preference dividends, differences arising on the settlement of preferences shares, and other similar effects of preference shares classified as equity, by the weighted average number of ordinary shares outstanding during the year plus the weighted average number of ordinary shares that would be issued on the conversion of convertible bonds, the exercise of stock options and shares from performance share plans.

NOTE 2 – SIGNIFICANT EVENTS, ACQUISITION AND DIVESTURES

– During 2016

Initiation of the financial restructuring process

In Q3 2016 earnings release in November CGG announced that it would take steps to evaluate its short- and long-term alternatives to address its capital structure constraints. The first steps taken in 2016 and 2017 led to the nomination of a ‘mandataire ad hoc’ on February 27, 2017. For more detail, please refer to note 30.

Issued shares

CGG increased its share capital through the distribution of preferential subscription rights to existing shareholders launched on January 13, 2016. The final gross proceeds amounted to 350,589,080.16, corresponding to the issuance of 531,195,576 new shares. The net proceeds of the issuance amounted to 337 million (or US\$368 million) and were used to reinforce the shareholders’ equity of CGG and improve its liquidity as it finances its Transformation Plan.

The transaction was fully underwritten (excluding the Bpifrance Participations and IFP Energies Nouvelles subscription commitments) by a syndicate of banks. The fees and costs related to this transaction amounted to 13 million (US\$14 million).

The listing of the new shares on the regulated market of Euronext Paris (Segment B) on the same line as the existing shares (FR0000120164) took place on February 5, 2016. As from that date, the share capital of CGG was composed of 708,260,768 shares with a nominal value of 0.40 each, for a total nominal share capital of 283,304,307.20.

Reverse stock split

The Company carried out on July 20, 2016 the reverse stock split that the Combined General Shareholders’ Meeting approved on May 27, 2016. All shareholders received one new share (with all rights pertaining to shares), in exchange for 32 former shares. The first share price on July 20 was calculated on the basis of the last share price traded on July 19 (0.69) multiplied by 32.

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The listing of the new shares on the regulated market of Euronext Paris (Segment B) on a new line (FR0013181864) took place on July 20, 2016. As from that date, the share capital of CGG was composed of 22,133,149 shares with a nominal value of 12.80 each, for a total nominal share capital of 283,304,307.20.

Change of nominal value of ordinary shares

The Company carried out on August 11, 2016 the change of nominal value of ordinary shares that the Combined General Shareholders' Meeting approved on May 27. The Company's share capital was reduced by 265,597,788 (or US\$304.1 million at historical exchange rate) to bring it down from 283,304,307 to 17,706,519 (or US\$20.3 million) by reducing the nominal value of the Company's shares after realization of the reverse split from 12.80 to 0.80.

The amount of 265,597,788, corresponding to the share capital reduction, was allocated in full to the "additional paid in capital" account.

Sale of the Multi-Physics Business Line

CGG announced on April 29, 2016, that it had entered into a binding agreement with NEOS for the sale of the Multi-Physics Business Line. On December 12, 2016, the transaction between NEOS and CGG did not proceed and the agreement for this sale was terminated.

Gardline CGG Pte Ltd

On March 24, 2016, CGG sold its 49% stake in Gardline CGG Pte Ltd., which was accounted for using the equity method in our financial statements.

– During 2015

In accordance with the Framework Agreement signed in late 2013 with Industrialization & Energy Services Company (TAQA), 98% of Ardiseis capital has been brought to Argas by CGG and TAQA (49% by CGG and TAQA, respectively). Through this Agreement, Argas has become the main shareholder of Ardiseis, with Argas and Ardiseis pooling all their resources to create a more efficient and powerful combined Argas Group. The new Argas group has a stronger capital base, covered a larger business scope, and is 51% owned by TAQA and 49% owned by CGG.

On October 31, 2015, CGG sold its Canadian Multi-Client Library and cashed-in the proceeds.

– During 2014

Framework agreement with Industrialization & Energy Services Company (TAQA) and sale of 2% of Ardiseis FZCO

On December 31, 2013, CGG and TAQA entered into a Framework Agreement which strengthens and extends their historical and long-term partnership in the Middle East.

CGG and TAQA were shareholders of two joint ventures in the Middle East: Argas, a Saudi company established in 1966, covering geophysical activities in the Kingdom of Saudi Arabia (KSA), of which TAQA owned 51% and CGG owned 49%; Ardiseis, a company established in 2006 in Dubai, covering land and shallow water data acquisition activities in the rest of the Middle East, of which CGG owned 51% and TAQA 49%.

Through the Framework Agreement, Argas would become the sole shareholder of Ardiseis, with Argas and Ardiseis pooling all their resources to create a more efficient and powerful combined Argas Group. The new Argas group would have a stronger capital base, covered a larger business scope, and would be 51% owned by TAQA and 49% owned by CGG.

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In relation with this agreement, net assets of Ardiseis were reclassified in Assets held for sales for an amount of US\$22 million as of December 31, 2013 (see note 5).

In June 2014, CGG and Industrialization & Energy Services Company (TAQA) signed a 'share sale and purchase agreement' under which CGG Services (UK) Ltd, a subsidiary of CGG, sold 2% of the share capital of Ardiseis FZCO to TAQA for a total consideration of US\$1.2 million. As a result of the transaction, CGG owned 49% of Ardiseis FZCO and did not control the company any longer. From June 30, 2014, Ardiseis FZCO was no longer fully consolidated in our consolidated financial statements but was accounted for under the equity method.

The net gain arising from this transaction amounted to US\$11.9 million and was recorded in the line item "Other revenues (expenses), net" in the 2014 consolidated statement of operations.

Agreement with Geokinetics Inc

On September 30, 2014 CGG sold its North American land contract assets and activities to Geokinetics Inc against a minority equity stake in this company. Our stake in Geokinetics was presented as a non-consolidated investment for US\$49 million in our statement of financial position and was measured at its fair value (see note 7). The net gain arising from this transaction was not significant.

Agreement with Alcatel-Lucent

On October 20, 2014, Sercel and Alcatel-Lucent Submarine Networks (ASN) have signed a binding agreement for the sale of Optoplan AS, a fully consolidated subsidiary of CGG for a total consideration of US\$20.7 million. The closing of the transaction was completed on October 31, 2014.

Purchase option over Geomar SAS with Louis Dreyfus Armateurs group (LDA)

On November 27, 2013, we agreed with LDA to exercise a purchase option on the shares held by LDA in Geomar SAS, the company owning the *CGG Alizé* vessel. This purchase took effect on April 1, 2014.

This transaction had no impact on the consolidation method of this subsidiary which remains fully consolidated. The change of ownership interests was accounted for as an equity transaction as of December 31, 2013.

NOTE 3 – TRADE ACCOUNTS AND NOTES RECEIVABLE

Analysis of trade accounts and notes receivables by maturity is as follows:

	December 31,		
	2016	2015	2014
	(In millions of US\$)		
Trade accounts and notes receivable gross – current portion	330.9	662.0	651.9
Less: allowance for doubtful accounts – current portion	(37.1)	(42.3)	(34.7)
Trade accounts and notes receivables net – current portion	293.8	619.7	617.2
Trade accounts and notes receivable gross – non-current portion	6.9	0.7	3.0
Less: allowance for doubtful accounts – non-current portion	–	–	–
Trade accounts and notes receivables net – non-current portion	6.9	0.7	3.0
Recoverable costs and accrued profit, not billed	134.1	192.1	322.3
Total accounts and notes receivables	434.8	812.5	942.5

Allowances for doubtful accounts only relate to overdue receivables as of December 31, 2016.

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As of December 31, 2016 the ageing analysis of net trade accounts and notes receivables is as follows:

	<u>Not past due</u>	<u>30 days</u>	<u>30 - 60 days</u>	<u>60 - 90 days</u>	<u>90 - 120 days</u>	<u>> 120 days</u>	<u>Total</u>
	(In millions of US\$)						
2016	189.1	33.6	17.5	3.1	6.5	50.9	300.7
2015	390.6	98.9	26.2	17.3	24.3	63.1	620.4
2014	<u>326.9</u>	<u>100.6</u>	<u>45.4</u>	<u>48.3</u>	<u>10.6</u>	<u>88.4</u>	<u>620.2</u>

Litigation

On March 18, 2013, CGG Services SAS, a fully owned subsidiary of CGG SA, initiated arbitration proceedings against ONGC, an Indian company, to recover certain unpaid amounts under three commercial contracts entered into by the two entities between 2008 and 2010. The proceedings are on-going. We believe that this arbitration proceeding will allow us to recover the receivables that are recorded on our statement of financial position as unpaid receivables.

Factoring agreements

There were no factoring agreements as of December 31, 2016 and 2015.

In 2014, we entered into several factoring agreements with various banks. We had transferred US\$81.1 million of notes receivable as part of these agreements. The risks retained by the Group were mainly the risk of payment delay up to 30 days and the risk of commercial litigation. Both were historically low with the transferred clients. As a consequence, the Group retained only non-significant amounts to the extent of its continuing involvement. Related costs recorded in operating income are not significant.

NOTE 4 – INVENTORIES AND WORK IN PROGRESS

	<u>December 31, 2016</u>			<u>December 31, 2015</u>			<u>December 31, 2014</u>		
	<u>Valuation</u>			<u>Valuation</u>			<u>Valuation</u>		
	<u>Cost</u>	<u>Allowance</u>	<u>Net</u>	<u>Cost</u>	<u>Allowance</u>	<u>Net</u>	<u>Cost</u>	<u>Allowance</u>	<u>Net</u>
	(In millions of US\$)								
Consumables and spares parts	12.0	(0.9)	11.1	15.2	(0.6)	14.6	36.4	(0.6)	35.8
Raw materials and sub-assemblies	67.0	(17.2)	49.8	76.0	(14.9)	61.1	91.9	(13.5)	78.4
Work in progress	138.4	(28.5)	109.9	159.0	(25.8)	133.2	197.0	(26.4)	170.6
Finished goods	110.0	(14.5)	95.5	134.5	(14.1)	120.4	143.8	(11.3)	132.5
Inventories and work in progress	<u>327.4</u>	<u>(61.1)</u>	<u>266.3</u>	<u>384.7</u>	<u>(55.4)</u>	<u>329.3</u>	<u>469.1</u>	<u>(51.8)</u>	<u>417.3</u>

Variation of inventories and work in progress

	<u>Variation of the period</u>	<u>December 31,</u>		
		<u>2016</u>	<u>2015</u>	<u>2014</u>
		(In millions of US\$)		
Balance at beginning of period		329.3	417.3	505.2
Variations		(52.6)	(45.0)	(30.8)
Movements in valuation allowance		(7.6)	(8.2)	(9.5)
Change in consolidation scope		–	–	(8.0)
Change in exchange rates		(6.8)	(33.0)	(39.6)
Others		4.0	(1.8)	–
Balance at end of period		<u>266.3</u>	<u>329.3</u>	<u>417.3</u>

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In 2014, change in consolidation scope corresponded to inventories and work in progress contributed to Alcatel-Lucent Submarine Networks (ASN) and Geokinetics (see note 2).

NOTE 5 – OTHER CURRENT ASSETS AND ASSETS HELD FOR SALE

Other current assets

	December 31,		
	2016	2015	2014
	(In millions of US\$)		
Personnel and other tax assets	31.8	40.8	41.9
Fair value of financial instruments	–	0.3	1.4
Other miscellaneous receivables ^(a)	46.7	43.3	32.1
Supplier prepayments	12.0	20.9	33.3
Prepaid expenses	15.3	13.9	17.8
Other current assets	105.8	119.2	126.5

^(a) Includes restricted cash for US\$4.0 million in 2016.

Assets held for sale

	December 31,		
	2016	2015	2014
	(In millions of US\$)		
Massy headquarters land	–	7.6	10.7
Seismic vessels	15.0	22.0	26.2
Equipment and others	3.6	4.8	1.4
Assets held for sale	18.6	34.4	38.3

In 2016, we sold the remaining part of Massy headquarters. We also recognized a US\$7.0 million impairment on a seismic vessel (see note 21).

In 2015, we sold a part of these headquarters, and two of the three seismic vessels that were previously classified as assets held for sale in 2014 as part of our transformation plan.

NOTE 6 – ASSET VALUATION ALLOWANCE

	December 31, 2016				
	Balance at beginning of year	Additions	Deductions	Unused Deductions	Balance at end of period
	(In millions of US\$)				
Trade accounts and notes receivables	42.3	12.3	(17.2)	–	(0.3) 37.1
Inventories and work-in-progress	55.4	9.0	(1.4)	–	(1.9) 61.1
Tax assets	6.9	0.5	(0.1)	–	(0.8) 6.5
Other current assets	7.5	0.3	(4.2)	–	– 3.6
Total assets valuation allowance	112.1	22.1	(22.9)	–	(3.0) 108.3

^(a) Includes the effects of exchange rate changes and changes in the scope of consolidation.

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	December 31, 2015					
	Balance at beginning of year	Additions	Deductions	Unused Deductions	Others ^(a)	Balance at end of period
	(In millions of US\$)					
Trade accounts and notes receivables	34.8	12.2	(6.4)	–	1.7	42.3
Inventories and work-in-progress	51.7	9.3	(1.1)	–	(4.5)	55.4
Tax assets	8.0	1.3	(2.1)	–	(0.3)	6.9
Other current assets	9.8	1.1	(1.1)	–	(2.3)	7.5
Total assets valuation allowance	104.3	23.9	(10.7)	–	(5.4)	112.1

^(a) Includes the effects of exchange rate changes and changes in the scope of consolidation.

	December 31, 2014					
	Balance at beginning of year	Additions	Deductions	Unused Deductions	Others ^(a)	Balance at end of period
	(In millions of US\$)					
Trade accounts and notes receivables	30.6	17.4	(12.4)	–	(0.8)	34.8
Inventories and work-in-progress	49.9	13.6	(4.1)	–	(7.7)	51.7
Tax assets	0.1	7.9	–	–	–	8.0
Other current assets	11.2	2.7	(3.9)	–	(0.2)	9.8
Loans receivables and other investments	0.1	–	–	–	(0.1)	–
Total assets valuation allowance	91.9	41.6	(20.4)	–	(8.8)	104.3

^(a) Includes the effects of exchange rate changes and changes in the scope of consolidation.

NOTE 7 – INVESTMENTS AND OTHER FINANCIAL ASSETS

	December 31,		
	2016	2015	2014
	(In millions of US\$)		
Non-consolidated investments	8.8	15.3	57.0
Loans and advances	18.2	65.1	72.5
Deposits and other	24.9	7.2	12.3
Total	51.9	87.6	141.8

The Group has pledged part of its long-term deposits in order to fulfil some collateral requirements.

Non-consolidated investments

	Country	2016 % of interests	December 31,		
			2016	2015	2014
			(In millions of US\$)		
<i>Other investments in non-consolidated companies</i>					
Tronic' s Microsystems SA	France	–	–	3.4	4.7
Geokinetics Inc.	USA	16.0 %	6.0	9.0	49.0

Other investments in non-consolidated companies	<u>2.8</u>	<u>2.9</u>	<u>3.3</u>
Total non-consolidated investments	<u>8.8</u>	<u>15.3</u>	<u>57.0</u>

On December 31, 2016, our non-consolidated investments decrease due to a US\$3.0 million depreciation of our financial stake in Geokinetics Inc. and the sale of our remaining 9.17% financial stake in Tronic' s Microsystems SA.

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On December 31, 2015, our non-consolidated investments decreased mainly due to a US\$40.0 million depreciation of our financial stake in Geokinetics Inc. During 2015, the Group's shareholding in Tronic's Microsystems SA decreased from 15.43% to 9.17%.

On September 30, 2014, CGG sold its North American land contract assets and activities to Geokinetics Inc. against a minority equity stake in this company. Our stake in Geokinetics is presented as a non-consolidated investment in our statement of financial position since this date. It was measured at its fair value for US\$49 million that was assessed using a market multiples approach.

No restriction or commitment exists between CGG and the non-consolidated investments.

Loans and advances

CGG participated in Seabed Geosolutions BV capital increase through the conversion of part of the existing loan for US\$19.0 million and the other US\$19.0 million has been fully repaid by Seabed Geosolutions BV as of December 31, 2016. CGG granted a loan amounting to US\$38.0 million as of December 31, 2015 and US\$45.1 million as of December 31, 2014 to Seabed Geosolutions BV.

Loans and advances also include a loan granted by CGG Holding BV to PTSC CGGV Geophysical Survey Limited for a net discounted amount of US\$13.0 million as of December 31, 2016, US\$24.0 million as of December 31, 2015 and US\$26.7 million as of December 31, 2014.

NOTE 8 – INVESTMENTS IN COMPANIES UNDER EQUITY METHOD

		2016 % of interests	December 31,		
	Country / Head office		2016	2015	2014
(In millions of US\$)					
<u>Marine acquisition</u>					
CGG Eidesvik Ship Management AS	Norway / Bergen	49.0 %	0.2	0.2	0.2
Eidesvik Seismic Vessels AS	Norway / Bomlo	49.0 %	21.0	19.0	16.6
Gardline CGG Pte Ltd ⁽¹⁾	Singapore	–	–	7.7	5.5
Geo Ship Management Services SAS (formerly Geofield Ship Management Services SAS) ⁽²⁾	France / Massy	–	–	(0.1)	(0.1)
Oceanic Seismic Vessels AS	Norway / Bomlo	49.0 %	27.0	25.4	23.5
PT Elnusa-CGGVeritas Seismic	Indonesia / Jakarta	49.0 %	0.4	0.3	0.5
PTSC CGGV Geophysical Survey Limited	Vietnam / Vung Tau City	49.0 %	9.6	18.9	23.9
<u>Land and Multi-Physics acquisition</u>					
Ardiseis FZCO ⁽³⁾	United Arab Emirates / Dubai	–	–	–	27.4
Argas ⁽³⁾	Saudi Arabia / Al-Khobar	49.0 %	64.5	73.4	37.2
Seabed Geosolutions BV	The Netherlands / Amsterdam	40.0 %	67.5	53.4	4.9
Veri-Illuq Geophysical Ltd.	Canada / Calgary	49.0 %	(0.1)	(0.1)	(0.1)
Yamoria Geophysical Ltd.	Canada / Calgary	49.0 %	(0.3)	(0.3)	(0.4)
<u>GGR</u>					
Magnitude Microseismic LLC	US / Houston	–	–	–	(4.6)
Petroleum Edge Limited	UK / London	50.0 %	(1.1)	–	–
Reservoir Evaluation Services LLP	Kazakhstan / Almaty	36.0 %	1.8	2.9	3.2
Investments in companies under the equity method			190.5	200.7	137.7

⁽¹⁾ On March 24, 2016, CGG sold its 49% stake in Gardline CGG Pte Ltd.

⁽²⁾ On June 13, 2016, CGG bought the remaining 50% stake in Geofield Ship Management Services SAS. Shortly after, the company was renamed Geo Ship Management Services SAS

⁽³⁾ From January 1, 2015, ARDISEIS is consolidated under ARGAS (see note 2).

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The variation of “Investments in companies under equity method” is as follows:

	December 31,		
	2016	2015	2014
	(In millions of US\$)		
Balance at beginning of period	200.7	137.7	325.8
Change in consolidation scope	(8.6)	4.9	29.2
Investments made during the year	19.0	40.0	4.9
Equity in income	(8.2)	21.4	(81.7)
Impairment	–	–	(107.0)
Dividends received during the period, reduction in share capital	(13.0)	(5.1)	(30.7)
Change in exchange rate and other	0.6	1.8	(2.8)
Balance at end of period	190.5	200.7	137.7

The changes in consolidation scope in 2016 correspond for US\$(8.6) million to the disposal of the shares we held in Gardline CGG PTE Ltd. In 2015, the changes in consolidation scope corresponded for US\$4.9 million to the disposal of the shares we held in Magnitude Microseismic LLC. In 2014, the changes in consolidation corresponded for US\$27.6 million to the change of consolidation method of Ardiseis in June 2014 (see note 2).

The investments in 2016 correspond for US\$19 million to our participation in Seabed Geosolutions BV capital increase through the conversion of part of the existing debt. In 2015, the investments corresponded for US\$40 million to our participation in Seabed Geosolutions BV capital increase through the conversion of part of the existing debt. In 2014, the investments corresponded for US\$4.9 million to our contribution in our joint venture Magnitude.

The 2014 impairment corresponded to the impairment of our shares in Seabed Geosolutions BV that is recorded in the line item “Other revenues (expenses) – net” in the consolidated statement of operations (see note 21).

Main contributive companies under equity method

The following tables illustrate summarized financial information as of December 31, 2016 of the main contributive entities operating in the Land and Multi-Physics acquisition business:

	Seabed Geosolutions	
	Argas	BV
	(In millions of US\$)	
Revenue	137.5	196.9
Depreciation and amortization	(31.3)	(45.5)
Cost of financial debt	(1.9)	(5.3)
Tax income (expense)	(1.4)	4.3
Net income (loss)	6.7	(30.8)
Cash and cash equivalents	12.6	4.6
Current assets	60.9	90.9
Total non-current assets	121.5	206.5
Current financial liabilities	20.0	–
Current liabilities	29.1	74.2
Non-current financial liabilities	–	11.8
Non-current liabilities	13.1	0.2
Equity	132.8	215.8

Dividends paid to CGG

5.6

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CGG granted a loan amounting to US\$38 million as of December 31, 2015 to Seabed Geosolutions BV. This loan was repaid for US\$19 million and for the remaining US\$19 million converted in capital as at December 31, 2016.

For transactions with investments in companies under the equity method, please see note 27 – Related party transactions.

Reconciliation of the summarized financial information above with the carrying amount of the main contributive entities in our statement of financial position and with our share of income as of December 31, 2016 is as follows:

	Argas	Seabed Geosolutions BV	Other entities	Total
		(In millions of US\$)		
Equity of main contributive entities	132.8	215.8		
% of interest	49 %	40 %		
% of equity of main contributive entities	65.1	86.3		
Adjustments and eliminations	(0.6)	(18.8)		
Investments in companies under the equity method	64.5	67.5	58.5	190.5

	Argas	Seabed Geosolutions BV	Other entities	Total
		(In millions of US\$)		
Net income of main contributive entities	6.7	(30.8)		
% of interest	49 %	40 %		
% of income of main contributive entities	3.3	(12.3)		
Adjustments and eliminations	(4.8)	7.5		
Share of income (loss) in companies accounted for under the equity method	(1.5)	(4.8)	(1.9)	(8.2)

NOTE 9 – PROPERTY, PLANT AND EQUIPMENT

	December 31,						
	2016			2015			2014
	Gross	Accumulated depreciation	Net	Gross	Accumulated depreciation	Net	Net
	(In millions of US\$)						
Land	17.4	–	17.4	17.1	–	17.1	19.6
Buildings	223.2	(114.9)	108.3	228.8	(106.0)	122.8	141.9
Machinery & equipment	982.5	(750.5)	232.0	989.3	(668.8)	320.5	486.2
Vehicles & vessels	607.4	(289.7)	317.7	597.6	(223.8)	373.8	501.4
Other tangible assets	113.5	(92.9)	20.6	115.9	(85.6)	30.3	38.4
Assets under constructions	12.6	–	12.6	20.7	–	20.7	50.7
Total Property, plant and equipment	1,956.6	(1,248.0)	708.6	1,969.4	(1,084.2)	885.2	1,238.2

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Variation of the period

	December 31,		
	2016	2015	2014
	(In millions of US\$)		
Balance at beginning of period	885.2	1,238.2	1,557.8
Acquisitions	57.2	78.5	201.0
Depreciation	(221.6)	(393.6)	(400.2)
Disposals	(4.4)	(13.3)	(16.7)
Change in exchange rates	(4.5)	(18.4)	(25.7)
Change in consolidation scope	–	–	(41.0)
Reclassification of tangible assets as “Assets held for sale”	(0.5)	(4.4)	(29.6)
Other	(2.8)	(1.8)	(7.4)
Balance at end of period	<u>708.6</u>	<u>885.2</u>	<u>1,238.2</u>

In 2016, the “Depreciation” line item includes a US\$24.4 million impairment of vessels. In 2015, the “Depreciation” line item included a US\$110 million impairment of vessels and related equipment’ s. The net book value of our owned vessels has been aligned on recoverable value assessed as fair value less cost of disposal. In 2014, it included US\$65 million impairment of marine fixed equipment mainly (see notes 19 and 21).

Disposals of assets mainly relate to marine seismic equipment scrapped or damaged.

In 2014, the “Change in consolidation scope” was mainly due to the sale of the North American land contract assets and activities to Geokinetics against a minority equity stake in this company (see note 2).

In 2014, as a consequence of the fleet downsizing plan of our fleet, three seismic vessels have been reclassified as “Assets held for sale”.

Reconciliation of acquisitions with the consolidated statements of cash flows

	December 31,		
	2016	2015	2014
	(In millions of US\$)		
Acquisitions of tangible assets, excluding finance lease	57.2	78.5	201.0
Development costs capitalized (see notes 10 and 20)	34.0	41.5	56.8
Additions in other intangible assets, excluding non-exclusive surveys (see note 10)	9.0	10.6	20.6
Variance of fixed assets suppliers	4.3	15.0	3.5
Total purchases of tangible and intangible assets according to cash flow statement	<u>104.5</u>	<u>145.6</u>	<u>281.9</u>

Land, buildings and geophysical equipment recorded under finance leases

	December 31,					
	2016			2015		
	Gross	Accumulated depreciation	Net	Gross	Accumulated depreciation	Net
	(In millions of US\$)					
Geophysical equipment and vessels under finance leases	7.9	(2.5)	5.4	7.3	–	7.3
Land and buildings under finance leases	<u>80.7</u>	<u>(16.3)</u>	<u>64.4</u>	<u>83.3</u>	<u>(13.6)</u>	<u>69.7</u>

Total Property, plant and equipment under finance leases							
	<u>88.6</u>	<u>(18.8)</u>	<u>69.8</u>	<u>90.6</u>	<u>(13.6)</u>	<u>77.0</u>	<u>97.9</u>

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Repairs and maintenance expenses

In 2016, Repairs and maintenance expenses included in cost of operations amount to US\$44.3 million due to repairs on equipment and seismic vessels. Repairs and maintenance expenses amounted to US\$64.2 million in 2015 and to US\$106.8 million in 2014.

NOTE 10 – INTANGIBLE ASSETS

	December 31,						
	2016			2015			2014
	Accumulated			Accumulated			
	Gross	depreciation	Net	Gross	depreciation	Net	Net
	(In millions of US\$)						
Multi-client surveys Marine	4,337.6	(3,598.4)	739.2	4,000.7	(3,191.5)	809.2	823.8
Multi-client surveys Land	683.4	(574.7)	108.7	653.3	(535.4)	117.9	123.6
Development costs capitalized	384.6	(183.1)	201.5	349.4	(149.5)	199.9	199.3
Software	106.9	(76.2)	30.7	106.0	(66.1)	39.9	41.9
Research – Technology	83.3	(82.3)	1.0	86.3	(82.1)	4.2	7.8
Customer relationships	246.2	(170.9)	75.3	248.2	(162.8)	85.4	136.7
Trade names	43.7	(31.2)	12.5	43.8	(31.4)	12.4	13.1
Other intangible assets	97.9	(82.1)	15.8	98.8	(81.0)	17.8	27.6
Total intangible assets	5,983.6	(4,798.9)	1,184.7	5,586.5	(4,299.8)	1,286.7	1,373.8

	December 31,		
	2016	2015	2014
	(In millions of US\$)		
Balance at beginning of period	1,286.7	1,373.8	1,271.6
Increase in multi-client surveys	337.4	357.4	713.3
Development costs capitalized	34.0	41.5	56.8
Other acquisitions	9.0	10.6	20.6
Depreciation on multi-client surveys	(417.2)	(369.5)	(565.8)
Other depreciation	(64.4)	(113.2)	(109.0)
Disposals	(0.1)	(6.0)	(0.1)
Change in exchange rates	(2.6)	(14.2)	(28.3)
Change in consolidation scope	–	–	0.2
Other	1.9	6.3	14.5
Balance at end of period	1,184.7	1,286.7	1,373.8

In 2014, high level of investments in multi-client surveys was related to ongoing programs in Gulf of Mexico.

In 2016, the “Depreciation on multi-client surveys” line item includes a US\$97.0 million of impairment of multi-client surveys. In 2015 and 2014, this line item included respectively US\$41.8 million and US\$112.7 million of impairment of multi-client surveys (see note 21).

In 2015, other depreciations included an impairment of customer relationship for US\$39.7 million mainly. In 2014, other depreciations included US\$21.7 million related to seabed activities (see note 21).

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Reconciliation of acquisitions with the consolidated statements of cash flows and capital expenditures in note 19

	December 31,		
	2016	2015	2014
	(In millions of US\$)		
Increase in multi-client surveys	337.4	357.4	713.3
Multi-client depreciations & amortizations capitalized	(42.3)	(72.8)	(130.0)
Investment in multi-client surveys according to cash flow statement	295.1	284.6	583.3

NOTE 11 – GOODWILL

Analysis of goodwill is as follows:

	December 31,		
	2016	2015	2014
	(In millions of US\$)		
<i><u>Variation of the period</u></i>			
Balance at beginning of period	1,228.7	2,041.7	2,483.2
Additions	–	1.9	–
Impairment	–	(803.8)	(415.0)
Reclassification to Assets held for sale (see note 5)	–	–	(13.7)
Change in exchange rates	(5.4)	(11.1)	(12.8)
Balance at end of period	1,223.3	1,228.7	2,041.7

We recognized an impairment of US\$804 million as of December 31, 2015 and US\$415 million as of December 31, 2014 resulting from the annual impairment test, which we booked under the line “Other revenues (expenses) net” in our statement of operations (see note 21).

Impairment review

Group management undertakes at least an annual impairment test covering goodwill, intangible assets and indefinite lived assets allocated to the cash generating units to consider whether impairment is required.

The recoverable value retained by the Group corresponds to the value in use of the assets, cash generating units or group of cash generating units, defined as the discounted expected cash flows. In certain occasions, the recoverable value retained is the fair value less costs of disposal, in which case defined by reference to an active market.

Following the CGG reorganization in four reportable segments in the third quarter of 2015, the cash generating units have been redefined in a consistent way with the new reportable segments. The marine cash generating unit has been split in three: i/ marine exclusive cash generating unit, ii/ marine multi-client, merged into the multi-client cash generating unit, and iii/ marine non-operated resources cash generating unit. The marine exclusive CGU is reported under the Contractual Data Acquisition segment, the marine multi-client has been merged in multi-client CGU and is reported under GGR segment and the marine non-operated resources CGU is reported under the Non-Operated Resources segment. Please refer to note 19 for further detail.

As a consequence, there are now nine cash generating units. A cash generating unit is a homogeneous group of assets that generates cash inflows that are largely independent of the cash inflows from other groups of assets.

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The following table provides the split of the total Group Goodwill per segment:

	December 31,		
	2016	2015	2014
	(In millions of US\$)		
Contractual Data Acquisition⁽¹⁾	–	–	366
Non-Operated Resources	–	–	–
<i>CGU Multi-client</i>	284	284	447
<i>CGUs in Subsurface Imaging and Reservoir</i>	770	770	455
<i>Group of CGUs GGR</i>	–	–	590
GGR	1,054	1,054	1,492
Equipment	169	175	184
Total	1,223	1,229	2,042

⁽¹⁾ Contractual Data Acquisition goodwill being carried by Marine cash generating units only in 2014.

The goodwill supported by the group of four CGUs of GGR has been allocated to the CGUs of this group in the third quarter of 2015. The allocation was performed using a relative value approach and was allocated as follows: US\$273 to Multi-client CGU and US\$317 to the CGUs of Subsurface Imaging and Reservoir.

Since 2013, the remaining goodwill in the Contractual Data Acquisition segment has been located within Marine cash generating unit only. Hence, the key assumptions used to determine the recoverable value and the analysis of sensitivities will be detailed only for the Marine cash generating unit and not for the Contractual Data Acquisition group of cash generating units.

Key assumptions used in the determination of recoverable value

In determining the asset recoverability through value in use, management makes estimates, judgments and assumptions on uncertain matters. For each cash generating unit, the value in use is determined based on economic assumptions and forecasted operating conditions as follows:

expected cash flows estimated in the 2017 budget and 2018-2019 outlook as presented to the Board of Directors on January 30, and March 2, 2017,

use of normative cash flows beyond Year 3, the discounted normative cash flows weight more than 85% of the total value in use,

long-term growth rate between 2% and 2.5% regarding the activity,

discount rates, unchanged compared to 2015, which we consider reflects the respective sector weighted average cost of capital (WACC):

- 10.0% for the Equipment segment (corresponding to a pre-tax rate of 12.9%);
- 8.5% for the Marine exclusive cash generating unit within the Contractual Data Acquisition segment (corresponding to a pre-tax rate of 11.9%);
- 9.5% for the cash generating units within the GGR segment (corresponding to a pre-tax rate from 11.7% up to 12.5%).

Our WACCs are calculated with the standard Capital Asset Pricing Model (CAPM) methodology. To comfort our calculations, we requested an external valuation firm to perform an independent assessment. They concluded the WACCs used by the Group for each segment were consistent with the range they estimated. Pre-tax WACCs are calculated by iteration: the pre-tax WACC is the discount rate leading to the same net present value calculated with post-tax WACC with tax expenses excluded from cash flows projections.

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In 2016

Our seismic activities (equipment, acquisition and imaging) are strongly correlated to exploration activity and given the tougher and longer difficult market conditions, we expect 2017 earnings at a similar level than 2016 and recovery pushed back to 2018/2019. Compared to 2016, the cash generation in 2017 will be hampered by the lack of positive change in working capital.

Cash flow projections have been made in the light of the above vision of the seismic market triggering:

significant decreases of the discounted cash flows over the three years sequence compared to 2016 test;

limited change of assessments on the normative years except Equipment cash generating unit for which we lowered our normative assumptions.

The decrease in the discounted cash flows per cash generating units did not however trigger any impairment of goodwill as they were either compensated by a decrease of capital employed (mainly multi-client cash generating unit) or still largely above the capital employed (mainly equipment cash generating unit). The decrease in capital employed at year end 2016 compared to year end 2015 mainly came from the decrease in operating working capital, the impairment recorded on our multi-client library at year end and the decrease in industrial fixed assets (our industrial capex for 2016 being below depreciations charge).

Lower exploration and production spending have driven GGR revenue down by 29% in 2016 as compared to 2015, with all service lines being affected. We are expecting a relatively flat market, from 2016, for most of our products and services in 2017. However, we have some expectations of increased MCNV sales in 2017, as we have good prospects for pre-funding revenue on our 2017 projects and feel our current survey portfolio fits well with particular areas of client interest, such as the Brazil pre-salt area. SIR expects to see a bottoming of demand during 2017, with a recovery beginning sometime in the second half of the year. We do expect a slow but steady improvement in commodity prices which should result in a substantially improved market for all GGR Business Lines in subsequent years.

Overall, our top line strategy for the GGR activities in 2017 is largely unchanged from that of 2016. We will strive to:

Maintain our investment in new MCNV surveys, at an acceptable level of pre-funding;

Continue to invest in research & development and people to maintain our lead in high end imaging and advance our software offering;

Expand our reservoir and geological operations through increased multi-client / subscription product investment and the geographic expansion of certain technologies;

Gain more value from integrated offerings.

The capital employed by the Multi-client cash generating unit amounted to US\$1,165 million as of December 31, 2016, including US\$284 million of goodwill. The decrease of capital employed of US\$179 million compared to December 31, 2015 is mainly explained by the decrease in operating working capital of US\$101 million and the impairment of US\$97 million of the library recorded at year end 2016.

The capital employed of the Sub Surface Imaging and Reservoir cash generating units amounted to US\$1,147 million as of December 31, 2016 including US\$770 million goodwill.

In 2017, Sercel revenue should remain quite similar to 2016 but with a different sales break down between land and marine. The marine market should reduce as no major order will be coming from CGG and due to the financing difficulties Sercel's clients are facing. Marine contractors continue to face a difficult market, restricting their ability to invest in new equipment. However their current fleets are aging and their excess of equipment generated by the stacking of vessels is shrinking

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At the contrary the land market should increase in 2017 with a slight rebound of land activity worldwide in a more stabilized oil context than in 2016. CGG should benefit from the 508^{XT} advanced technology compared to aging systems.

In this market environment, and notably considering its important installed base, Sercel estimates that, for 2017, it should maintain its leading position in the seismic equipment market by capitalizing on growth opportunities resulting from the strength of its current product range, the application of new technologies in all of its products as well as from its diversified geographical presence.

The capital employed by the Equipment cash generating unit amounted to US\$617 million as of December 31, 2016 including US\$169 million of goodwill.

CGG activity is correlated with exploration budget of oil companies (Majors, National and independents). Even if these latter have been overall driven down by the drop of barrel price, a significant portion of CGG activities are not directly correlated with the barrel price and the Group does not use it as a key parameter in its financial forecasts. As described above, CGG does not base its own recovery, starting progressively from 2018, on specific assumptions regarding the barrel price recovery.

In 2015

The Marine cash generating unit was strongly impacted by the deteriorated market conditions, which appeared to last far longer than expected before summer 2015. As a consequence of our fleet downsizing plan and the difficult market conditions, the impairment test of our Marine cash generating unit triggered a goodwill impairment for US\$365 million as of December 31, 2015. Since 2015, there were no more goodwill located in the marine exclusive CGU (hence no more goodwill in the Contractual Data Acquisition segment) and marine non operated resources CGU (hence no goodwill in the Non-Operated Resources segment).

While the GGR segment remained more resilient than Contractual Data Acquisition in these market conditions, the integration of marine capacity within GGR coupled with the revision of our financial forecasts triggered an impairment of goodwill of US\$439 million. Out of these US\$439 million, US\$436 million were related to Multi-client CGU and were mainly explained by the allocation of US\$273 million of the GGR goodwill. Post impairment, the capital employed by the Multi-client cash generating unit amounted to US\$1,344 million as of December 31, 2015 including US\$284 million of goodwill. Post impairment, the capital employed of the Sub Surface Imaging and Reservoir cash generating units amounted to US\$1,167 million as of December 31, 2015 including US\$770 million goodwill.

In 2014

In 2014, a goodwill impairment of US\$415 million was recognized for the Marine cash generating unit.

Sensitivity to changes in assumptions

Changing the assumptions selected by Group management, in particular the discount rate and the normative cash flows (based on EBITDAS) could significantly affect the evaluation of the value in use of our cash generating units and, hence, the Group's impairment result. The profile of the business cycle could affect, to a lesser extent compared to the two previous assumptions, the evaluation of the value in use of our cash generating units. The cash flow generated during 2018 (chosen as middle of the three years sequence) is an important assumption.

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The following changes to the assumptions used in the impairment test lead to the following:

		Excess of the expected future Discounted cash flows over the carrying value of assets including goodwill	Sensitivity on 2018 cash flows		Sensitivity on normative cash flows		Sensitivity on discount rate (after tax)	
	Goodwill		Decrease by 10%	Increase by 10%	Decrease by 10%	Increase by 10%	Decrease by 0.25bps	Increase by 0.25bps
(In millions of US\$)								
CGU Multi-client	284	84	(4)	+4	(122)	+122	+54	(51)
CGUs in Subsurface Imaging and Reservoir	770	604	(5)	+5	(150)	+150	+67	(63)
Equipment segment	169	515	(1)	+1	(106)	+106	+42	(39)
Total	<u>1,223</u>							

NOTE 12 – OTHER CURRENT LIABILITIES

	December 31,		
	2016	2015	2014
(In millions of US\$)			
Value added tax and other taxes payable	25.6	53.6	67.7
Deferred revenue	72.0	100.8	119.0
Fair value of financial instruments (see note 14)	–	1.0	2.6
Other liabilities	42.6	43.2	42.5
Other current liabilities	<u>140.2</u>	<u>198.6</u>	<u>231.8</u>

Other liabilities included an earn-out related to the acquisition of Geophysical Research Corporation, LLC in 2012 amounting to US\$15.7 million as of December 31, 2014. This debt based on the revenues of the entity from January 2012 to January 2015 was paid in February 2015.

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NOTE 13 – FINANCIAL DEBT

	December 31,						
	2016			2015			2014
	Current	Non-current	Total	Current	Non-current	Total	Total
(In millions of US\$)							
High yield bonds	8.3	1,421.8	1,430.1	–	1,438.4	1,438.4	1,731.3
Convertible bonds	–	332.9	332.9	–	329.0	329.0	367.0
Term loans ^(a)	1.0	331.8	332.8	3.4	331.2	334.6	–
Credit facilities ^(a)	13.5	535.4	548.9	25.0	515.1	540.1	273.0
Bank loans and other loans ^(a)	34.1	60.1	94.2	34.7	96.4	131.1	274.3
Finance lease debt	8.9	66.7	75.6	8.6	77.5	86.1	102.0
Sub-total	65.8	2,748.7	2,814.5	71.7	2,787.6	2,859.3	2,747.6
Accrued interests	34.3	–	34.3	24.8	–	24.8	28.4
Financial debt	100.1	2,748.7	2,848.8	96.5	2,787.6	2,884.1	2,776.0
Bank overdrafts	1.6	–	1.6	0.7	–	0.7	2.9
Total	101.7	2,748.7	2,850.4	97.2	2,787.6	2,884.8	2,778.9

Note: For the purposes of the table above, the various components of our financial debt are presented at their normal maturities even though these debts – except finance lease debt – are presented entirely as current due to the application of IAS 1 (see after in the note).

^(a) At December 31, 2016, US\$990.0 million (before issuing fees) out of US\$972.4 million of loans net of issuing fees (credit facilities, bank loans and other loans) were secured by tangible assets and receivables.

Financial debt by financing sources

	Issuing date	Maturity	Nominal amount Dec 31, 2016 (In millions of currency)	Net balance Dec 31, 2016 (In millions of US\$)	Interest rate
High yield bond 2017	2007	2017	US\$400	8.3	7 3/4 %
High yield bond 2020	2014	2020	400	417.9	5 7/8 %
High yield bond 2021	2011	2021	US\$650	587.2	6 1/2 %
High yield bond 2022	2014	2022	US\$500	416.7	6 7/8 %
Sub-total High yield bonds				1,430.1	
Convertible bond 2019	2012	2019	35	33.9	1 1/4 %
Convertible bond 2020	2015	2020	325	299.0	1 3/4 %
Sub-total Convertible bonds				332.9	
Term loans	2015	2019	US\$342	332.8	Libor + 5 1/2 % ^(a)
Credit facilities	–	–	–	548.9	–
Nordic Credit line (excluding credit facility)	2014	2019	US\$150	88.8	4 2/3 %
Other bank loans	–	–	–	1.9	–
Other loans	–	–	–	3.5	–
Sub-total bank loans and other loans				94.2	
Real estate finance lease	2010	2022	75	55.2	–
Other finance lease	–	–	–	20.4	–

Sub-total Finance lease debt	75.6
Total financial debt, excluding accrued interests and bank overdrafts	<u>2,814.5</u>

(a) At December 31, 2016, the term loans bear interests at 6.50%.

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Financial debt by currency

	December 31,		
	2016	2015	2014
	(In millions of US\$)		
US dollar	1,879.3	1,873.8	1,570.6
Euro	935.2	985.5	1,177.0
Other currencies	—	—	—
Total financial debt, excluding accrued interests and bank overdrafts	<u>2,814.5</u>	<u>2,859.3</u>	<u>2,747.6</u>

Financial debt by interest rate

	December 31,		
	2016	2015	2014
	(In millions of US\$)		
Variable rates (average effective rate December 31, 2016: 5.13%, 2015: 5.05%, 2014: 2.82%)	820.9	783.9	240.1
Fixed rates (average effective rate December 31, 2016: 5.43%, 2015: 6.48%, 2014: 6.46%)	1,993.6	2,075.4	2,507.5
Total financial debt, excluding accrued interests and bank overdrafts	<u>2,814.5</u>	<u>2,859.3</u>	<u>2,747.6</u>

Variable interest rates are generally based on inter-bank offered rates of the related currency.

Analysis of financial covenants as of December 31, 2016

We revised our financial covenants, effective on February 4, 2016. Our French revolving facility and our US revolving facility require that we meet the following new ratios, which are tested at the end of each quarter for the rolling 12-month testing period:

- a minimum Group Liquidity amount (cash and cash equivalents plus undrawn revolving credit facilities) of US\$175 million at each quarter end;

- a maximum leverage ratio (defined as total net financial debt to EBITDAS) of 5.00x for each rolling 12-month period ending in 2016, 4.75x for the rolling period ending in March 2017, 4.25x for the rolling period ending in June 2017, 4.00x for the rolling period ending in September 2017, 3.50x for the rolling period ending in December 2017, 3.25x for the rolling period ending in March 2018 and 3.00x thereafter; and

- an interest cover ratio (defined as consolidated EBITDAS to total interest costs) above 3.00:1.00.

Our Nordic credit facility requires that we meet the following ratios and tests:

- cash plus cash equivalents of not less than US\$100 million at all times;

- a maximum leverage ratio (defined as total net financial debt to EBITDAS) of 5.00x for each rolling 12-month period ending in 2016, 4.75x for the rolling period ending in March 2017, 4.25x for the rolling period ending in June 2017, 4.00x for the rolling period ending in September 2017, 3.50x for the rolling period ending in December 2017, 3.25x for the rolling period ending in March 2018 and 3.00x thereafter; and

- a ratio of EBITDAS to total interest costs of at least 3.00:1.00.

Our French revolving facility amendment has also led to an extension of maturity with a new schedule of the total commitments as follow:

- US\$325 million until July 2016;

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US\$300 million from July 2016 to July 2017; and

US\$275 million from July 2017 to July 2018.

On December 31, 2016, CGG signed with its secured lenders agreements whereby the lenders unconditionally and irrevocably consented that the leverage ratio and the interest cover ratio would not be tested as of December 31, 2016 (disapplication of covenants). These agreements are permanent amendments and they do not constitute a temporary or conditional waiver or the provision of a grace period. The disapplication of maintenance covenants as of March 31, 2017 was requested and obtained shortly before March 31, 2017 (see note 1.3 – Going concern assumptions).

CGG's secured financial debt does not meet the criteria of a current liability set out in IAS 1 §69. Especially as of December 31, 2016, CGG did not lose its unconditional right to defer the settlement of its debt for at least twelve months after December 31, 2016. CGG's unconditional right is still embodied in the maturity date (beyond twelve months as described above). As of December 31, 2016, the secured lenders have no right or ground to claim for an accelerated repayment of the secured debt.

As the long term loan arrangements with the secured lenders do not contain any covenant test as of December 31, 2016, there was no breaching of any provision of the arrangement. This permanent disapplication of testing is not equivalent to the provision of a three months grace period. A grace period is granted to cure a breach after having enacted a breach. Hence, CGG is not in the situation described in IAS 1 §74 and 75.

Having carefully analyzed the situation as of December 31, 2016 and March 2, 2017 in the light of IAS 1 § 69, 74 and 75, and considering reasonable assumptions on the progress of the negotiations on its financial restructuring CGG concluded that leaving its secured financial debt as a non-current liability was the appropriate accounting treatment for the financial statements authorized for issue by the Board of Directors as of March 2, 2017.

Considering the progress of the negotiations of the financial restructuring of the company and the timeline of the options contemplated, it appears that reclassifying the financial debt as a current liability is the most appropriate accounting treatment according to IAS 1 for the financial statements authorized for issue by the Board of Directors of April 27, 2017. This pure accounting reclassification does not question the going concern assumption, comforted by the main actions plans successfully implemented as of April 27, 2017 and does not make immediately payable (CGG never breached its financial covenants) the US\$2,682.0 million of finance debt classified as current liability nor does it reduce their maturity below 12 months.

In December 2016, CGG also negotiated further amendments to our French, US and Nordic revolving facilities allowing issuance of additional bonds up to US\$90 million.

As at December 31, 2016 and March 31, 2017, the financial covenants are as follows:

	Leverage Ratio^(a)	Interests Cover Ratio^(b)	Minimum Liquidity
French Revolving facility	Not applicable	Not applicable	> US\$175m ^(c)
US Revolving facility	Not applicable	Not applicable	> US\$175m ^(c)
US\$250 million Nordic credit facility	Not applicable	Not applicable	> US\$100m ^(d)

^(a) Leverage ratio is defined as total net financial debt to EBITDAS

^(b) Interests cover ratio is defined as EBITDAS to Interests Expenses

^(c) Minimum liquidity is defined as cash, cash equivalent and undrawn revolving credit facility

^(d) Minimum liquidity is defined as the available cash held by the Company

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EBITDAS is defined as earnings before interest, tax, depreciation, amortization net of amortization costs capitalized to multi-client surveys, and share-based compensation cost. Share-based compensation includes both stock options and shares issued under our performance share allocation plans. For the determination of ratios included in the covenants, EBITDAS is before non-recurring items.

Net financial debt is defined as bank overdrafts, plus current portion of financial debt, plus financial debt less cash and cash equivalents.

Starting June 2017, the ratios are the ones mentioned at the beginning of this section.

Term loans

The outstanding value at December 31, 2016, is US\$332.8 million net of issuing fees.

On November 19, 2015, CGG S.A. announced that its subsidiary, CGG Holding (U.S.) Inc. ("CGG US"), launched an Exchange Offer in relation to CGG S.A.'s 7.75% Senior Notes due 2017, 6.50% Senior Notes due 2021 and 6.875% Senior Notes due 2022 (the Notes). CGG US offered senior secured term loans (Term Loans) in exchange for any and all of the 7.75% Senior Notes due 2017 and a combined total of up to US\$135 million of the 6.5% Senior Notes due 2021 and/or 6.875% Senior Notes due 2022 if accompanied by the concurrent tender of an equal or greater corresponding amount of the 7.75% Senior Notes due 2017. US\$135 million of the 7.75% Senior Notes due 2017 was outstanding as of September 30, 2015.

On December 18, 2015, CGG announced that:

US\$126.7 million out of US\$135 million outstanding 2017 notes were replaced by a secured term loan due 2019.

US\$45.1 million out of US\$650 million outstanding 2021 notes were replaced by a secured term loan due 2019.

US\$80.4 million out of US\$500 million outstanding 2022 notes were replaced by a secured term loan due 2019.

In addition of the Exchange Offer the 84.4 million Fugro loan was also replaced by a secured term loan due 2019 amounting to US\$90 million.

The Term Loans will mature on May 15, 2019 and bear an interest, at the option of the Company, of adjusted LIBOR plus 5.50% per annum or adjusted base rate plus 4.50% per annum. Adjusted LIBOR had a floor of 1.00% and adjusted base rate shall not be less than 2.00%.

The term loans are secured indebtedness ranking pari passu with the existing US and French Revolving Credit Facilities sharing the same security package encompassing notably the fleet streamers, the US Multi-Client Library, the shares of the main Sercel operating entities (Sercel SAS and Sercel Inc), the shares of significant GGR operating entities, and some intercompany loans.

High Yield bonds

Since 2007, CGG SA issued several bonds in US dollar and euros, with maturities 2016 (fully redeemed), 2017, 2020, 2021 and 2022.

These notes are listed on the Luxembourg Stock Exchange; and are guaranteed on a senior basis by certain of our subsidiaries.

Those bonds include certain restrictive covenants, including limitations on additional indebtedness subscriptions, pledges arrangements, sales and lease-back transactions, issuance and sale of equity instruments and dividends payments by certain subsidiaries of the Group. In addition, the Company is required to maintain a ratio of EBITDAS to gross interest expenses equal to or greater than 3.

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High yield bonds – (US\$500 million, 6.875% Senior Notes, maturity 2022)

Following the debt exchange offer, our outstanding Senior Notes due 2022 is US\$419.6 million (see Term Loans above).

On May 1, 2014, we issued US\$500 million principal amount of our 6.875% Senior Notes due 2022.

The Senior Notes were issued at a price of 100% of their principal amount. We used the net proceeds from the notes to redeem the entire US\$225 million outstanding principal amount of our 9.50% Senior Notes due 2016 and to repay US\$265 million in principal amount of our 7.75% Senior Notes due 2017.

High Yield bonds – (US\$650 million, 6.50% Senior Notes, maturity 2021)

Following the debt exchange offer, our outstanding Senior Notes due 2021 is US\$604.9 million (see Term Loans above).

On May 31, 2011, we issued US\$650 million principal amount of 6.50% Senior Notes due June 1, 2021.

The Senior Notes were issued at a price of 96.45% of their principal amount, resulting in a yield of 7%. We used the net proceeds of the issuance to redeem the remainder of our US\$530 million 7.50% Senior Notes due May 2015 and to repay in full the US\$508 million outstanding under our term loan B facility.

High yield bonds – (400 million, 5.875% Senior Notes, maturity 2020)

On April 23, 2014, we issued 400 million (or US\$546.3 million, converted at historical closing exchange rate of US\$1.3658) principal amount of our 5.875% Senior Notes due 2020.

The Senior Notes were issued at a price of 100% of their principal amount. We used the net proceeds from the notes to fully repurchase our 1.75% convertible bonds due 2016 amounting to 360 million. The remaining net proceeds were used to reimburse the 28.1 million installment of the vendor loan granted by Fugro due in 2015.

High Yield bonds – (US\$400 million, 7.75% Senior Notes, maturity 2017)

Following the debt exchange offer, our outstanding Senior Notes due 2017 is US\$8.3 million (see Term Loans above).

On June 2, 2014, we redeemed US\$265 million of our 7.75% Senior Notes due 2017. This redemption was financed through the US\$500 million Senior Notes issuance described above. The notes were redeemed at 101.292% of their principal amount.

On February 9, 2007, we issued US\$400 million of 7.75% Senior Notes due 2017. We used the net proceeds from the notes to repay one part of US\$700 million outstanding under the bridge loan facility used to finance Veritas acquisition.

High Yield bonds – (US\$350 million, 9.50% Senior Notes, maturity 2016)

On June 2, 2014, we redeemed in full the US\$225 million outstanding principal amount of our 9.50% Senior Notes due 2016. This redemption was financed through the US\$500 million Senior Notes issuance described above. The notes were redeemed at 102.375% of their principal amount.

On August 21, 2013, we redeemed US\$125 million aggregate principal amount of our US\$350 million 9.50% Senior Notes due 2016 at a price of 104.75% plus accrued interest.

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On June 9, 2009, we issued US\$350 million principal amount of our 9.50% Senior Notes due May 15, 2016. The Senior Notes were issued at a price of 97.0% of their principal amount, resulting in a yield of 10.125%.

Convertible bonds

Convertible bonds – (325 million, 1.75% Senior Notes, maturity 2020)

As of December 31, 2016 the debt related to 2020 convertible bonds amounted to 283.6 million (or US\$298.9 million).

Following the reverse split and the change of nominal value of ordinary shares (see note 15) the conversion ratio is now 0.044 CGG share per one bond.

In May 2015, CGG initiated a simplified public exchange offer for its outstanding 11,200,995 bonds convertible into and/or exchangeable for new or existing share of the Company (convertible bonds) due 2019, with the intention to issue new convertible bonds due 2020 at a ratio of five 2020 convertible bonds for two 2019 convertible bonds tendered into the offer.

On June 26, 2015, holders exchanged 90.3% of the principal amount of the existing 2019 convertible bonds (or 10,114,014 bonds). In consideration, CGG issued 25,285,035 convertible bonds maturing on January 1, 2020 for a total nominal amount of 325.1 million (or US\$363.7 million converted at the historical closing exchange rate of US\$1.1189).

The 2020 convertible bonds' nominal value was set at 12.86 per bond (versus 32.14 for the 2019 convertible bonds). The new bonds bear interest at a rate of 1.75% payable semi-annually in arrears on January 1 and July 1 of each year (versus 1.25% for the 2019 convertible bonds). The bonds entitle the holders to receive new and/or existing CGG shares at the ratio of one share per one bond, subject to adjustments. Under certain conditions, the bonds may be redeemed prior to maturity at our option.

As of June 30, 2015, as a result of this transaction, we derecognized the financial liability and equity components related to the 2019 convertible bonds that were exchanged and we recognized the 2020 convertible bonds at their fair value. The impact of the transaction on the net income of the period was not significant. The impact on equity amounted to US\$8.6 million, net of taxes. The financial liability component was assessed using a 6.63% interest rate and amounted to 265.4 million (or US\$296.9 million).

Convertible bonds – (previously 360 million, now 35 million, 1.25% Senior Notes, maturity 2019)

As of December 31, 2016 the debt related to 2019 convertible bonds amounted to 32.2 million (or US\$33.9 million).

Following the reverse split and the change of nominal value of ordinary shares (see note 15) the conversion ratio is now 0.044 CGG share per one bond.

As a result of the simplified public exchange offer (see *Convertible bonds – 360 million, 1.25% Senior Notes, maturity 2020* above), the outstanding amount of the financial liability that corresponds to the 2019 convertible bonds that were not exchanged amounted to 30.3 million (or US\$34 million) in the consolidated statement of financial position as of December 31, 2015.

On November 20, 2012, we issued 11,200,995 bonds convertible into and/or exchangeable for new or existing shares of our company to be redeemed on January 1, 2019 for a total nominal amount of 360 million. We used the net proceeds of the issuance to finance a portion of the 1.2 billion acquisition price for Fugro Geoscience.

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The bonds' nominal value was set at 32.14 per bond, representing an issue premium of 40% of the CGG's reference share price on the regulated market of NYSE Euronext in Paris. The bonds bear interest at a rate of 1.25% payable semi-annually in arrears on January 1 and July 1 of each year. The bonds entitle the holders to receive new and/or existing CGG shares at the ratio of one share per one bond, subject to adjustments. Under certain conditions, the bonds may be redeemed prior to maturity at our option.

As of November 20, 2012, the financial liability component was US\$359 million (277 million) and the equity component was US\$98 million (75 million), net of issuing fees. The fair value of the financial liability was assessed using a 5.47% interest rate.

Convertible bonds – (360 million, 1.75% Senior Notes, maturity 2016)

The entire 360 million principal amount of the 2016 convertible bonds was cancelled by June 30, 2014. On 24 April 2014, we repurchased 81.3% of the principal amount through a reverse book building procedure at a price of 28.60 per bond for a total amount of 293 million. In May 2014, we then repurchased 16.8% of the bonds following a tender offer at a price of 28.60 per bond for a total amount of 60 million. The early redemption of the remaining 1.9% occurred on June 27, 2014.

Redemption premium and transaction costs were allocated to the liability and equity components at the date of the transaction. The net loss relating to the liability component amounting to US\$37.6 million is recorded in line item "Other financial income (loss)" of our consolidated statement of operations. The negative impact on equity amounts to US\$16.3 million, net of taxes.

Accelerated amortization of deferred expenditures is recorded for US\$2.4 million in the line item "Cost of financial debt net" in our consolidated statement of operations.

On January 27, 2011, we issued 12,949,640 bonds convertible into and/or exchangeable for new or existing shares of our company to be redeemed on January 1, 2016 for a total nominal amount of 360 million. We used the net proceeds of the issuance to partially redeem our US\$530 million 7.50% Senior Notes due May 2015, allowing us to reduce our cash interest expense.

The bonds' nominal value was set at 27.80 per bond, representing an issue premium of 25% of the CGG's reference share price on the regulated market of NYSE Euronext in Paris. The bonds bear interest at a rate of 1.75% payable semi-annually in arrears on January 1 and July 1 of each year. The bonds entitle the holders to receive new and/or existing CGG shares at the ratio of one share per one bond, subject to adjustments. Under certain conditions, the bonds may be redeemed prior to maturity at our option.

As of January 27, 2011, the financial liability component was US\$364 million (266 million) and the equity component was US\$121 million (89 million), net of issuing fees. The fair value of the financial liability was assessed using an 8.15% interest rate.

Credit facilities

Analysis of authorized credit lines as of December 31, 2016 is as follows:

	<u>Date</u>	<u>Maturity</u>	<u>Authorized amount</u>	<u>Used amount</u>	<u>Unavailable amount</u>	<u>Available amount</u>
				(In millions of US\$)		
US Revolving facility	2013	2018	165.0	165.0	–	–
French Revolving facility ⁽¹⁾	2013	2018	300.0	294.4	5.6	–
Nordic Revolving facility	2014	2019	100.0	100.0	–	–
Total credit facilities before issuing fees			565.0	559.4	5.6	–
Short-term credit lines (bank overdrafts)	–	–	1.6	1.6	–	–

⁽¹⁾ Authorized amount will decrease to US\$275 million in 2017.

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No significant credit line is expected to be renewed within the next twelve months (see note 18). Those credit facilities include certain restrictive covenants the Group is required to adhere to. For more information, please see covenants table and refer to note “1.3 Going concern assumption”.

US\$165 million Revolving Credit Agreement (US revolving facility)

During the twelve months ended December 31, 2016, we drew a net amount of US\$35 million from our US revolving facility, leading to an amount outstanding as of December 31, 2016 under this facility of US\$165 million.

On July 15, 2013, we entered into a new US revolving credit facility of up to US\$165 million with a five-year maturity.

US\$325 million Revolving Credit Agreement (French revolving facility)

During the twelve months ended December 31, 2016, we repaid a net amount of US\$31 million from our French revolving facility, leading to an amount outstanding as of December 31, 2016 under this facility of US\$294 million.

On July 24, 2014, we extended the maturity of our French revolving credit facility. Our French revolving credit facility is now US\$300 million until July 31, 2017 and US\$275 million from July 31, 2017.

On July 31, 2013, we entered into a new French revolving credit facility of up to US\$325 million with a three-year maturity with two extension options of one year each.

Nordic revolving facility

See bank loans below

Bank loans

Our US\$250 million Nordic credit facility and our US\$45 million Secured Term Loan Facility include certain restrictive covenants the Group is required to adhere to (see covenants table above).

US\$250 million Nordic credit facility

The outstanding value at December 31, 2016, is US\$186.4 million net of issuing fees.

On December 16, 2014, we completed the amendment and extension of our Nordic credit facility. The credit amount was increased from US\$175 million to US\$250 million and the maturity extended from May 2018 to December 2019. The new amount is split into a US\$100 million authorized revolving facility and a US\$150 million term loan. We entered into an interest rate swap to fix the annual rate at 4.3%.

On July 1, 2013, we entered into a five-year US\$200 million financing secured by vessel assets, split into two tranches of US\$100 million each, the proceeds of which were used in part to reimburse the 2013 tranche of the vendor loan granted by Fugro. We entered into an interest rate swap to fix the annual effective rate at 4.4%.

US\$25 million streamer financing

The outstanding value at December 31, 2016, is US\$1.9 million.

On September 29, 2014, the US\$25 million streamer financing line was reduced to US\$12.5 million and further reduced to US\$6.3 million on December 18, 2014, in line with the reduction of the capital expenditures and the fleet.

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On December 19, 2013, we signed a loan agreement for a maximum amount of US\$25 million with multiple drawings. This loan is dedicated to finance the acquisition of marine equipment to be delivered in up to twelve monthly lots over a period of one year. On December 30, 2014, we entered into an interest rate swap to fix the annual rate at 3.6%. This loan is to be reimbursed over five years after the deadline for drawing.

US\$45 million Secured Term Loan Facility

On February 12, 2016, we fully repaid our US\$45 million Secured Term Loan Facility.

On January 13, 2011, Exploration Vessel Resources II AS entered into a US\$45 million credit facility secured by a pledge over the seismic vessel *Geowave Voyager*.

US\$25 million Secured Term Loan Facility

This facility was fully repaid as of December 31, 2014.

On April 30, 2007, Geomar concluded a credit facility of US\$25 million. The proceeds from this credit facility were used to refinance the seismic vessel *CGG Alizé*.

Other loans

Vendor loan granted by Fugro

Following the debt exchange offer, Fugro vendor loan has been fully replaced by secured term loans due 2019 (see above).

On December 22, 2014, Fugro and CGG amended the Vendor loan including to the effect that 50% of the repayment scheduled on January 31, 2016 to be repaid by CGG on or before January 31, 2017 and the other 50% to be repaid on or before January 31, 2018 (i.e. 42.2 million payable on or before each of January 31, 2017 and January 31, 2018).

On June 27, 2014 we early redeemed the 28.1 million (or US\$38.6 million converted at historical average exchange rate of US\$1.3726) tranche annual repayment due on January 31, 2015. This redemption was financed with a portion of the proceeds from the 400 million Senior Notes due 2020 issued in April 2014.

On August 21, 2013, we repaid an amount of 112.5 million under the vendor loan to Fugro.

In connection with the Fugro's Geoscience Division acquisition, Fugro granted to us, on January 31, 2013, a 125 million vendor loan with a year maturity bearing an interest rate of 5.5% per annum, which was increased to 225 million at the date of effective acquisition of the Airborne business.

NOTE 14 – FINANCIAL INSTRUMENTS

Because we operate internationally, we are exposed to general risks linked to operating abroad. Our major market risk exposures are changing interest rates and currency fluctuations. We do not enter into or trade financial instruments including derivative financial instruments for speculative purposes. Please also refer to Item 11 of our annual report for qualitative information.

Foreign currency risk management

As a company that derives a substantial amount of its revenue from sales internationally, we are subject to risks relating to fluctuations in currency exchange rates. Our revenues and expenses are mainly denominated in US dollars, and to a significantly lesser extent, in Euros, Canadian dollars, Brazilian reais, Australian dollars, Norwegian kroner, British pounds and Chinese Renminbi-Yuan.

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Foreign currency sensitivity analysis

Fluctuations in the exchange rate of other currencies, particularly the euro, against the US dollar, have had in the past and will have in the future a significant effect upon our results of operations. We attempt to reduce the risks associated with such exchange rate fluctuations through our hedging policy. We cannot assure that fluctuations in the values of the currencies in which we operate will not materially adversely affect our future results of operations.

As of December 31, 2016, we estimate our annual fixed expenses in euros to be approximately 400 million and as a result, an unfavorable variation of US\$0.20 in the average yearly exchange rate between the US dollar and the euro would reduce our operating income and our shareholders' equity by approximately US\$80 million.

The following table shows our exchange rate exposure as of December 31, 2016:

	<u>Assets</u>	<u>Liabilities</u>	<u>Currency commitments</u>	<u>Net position before hedging</u>	<u>Off-balance sheet positions</u>	<u>Net position after hedging</u>
<i>(Converted in millions of US\$)</i>	<u>(a)</u>	<u>(b)</u>	<u>(c)</u>	<u>(d) = (a) - (b) ± (c)</u>	<u>(e)</u>	<u>(g) = (d) + (e)</u>
US\$(1)	1,794.5	1,853.8	–	(59.3)	–	(59.3)

(1) US\$-denominated assets and liabilities in the entities whose functional currency is the euro.

	<u>Assets</u>	<u>Liabilities</u>	<u>Currency commitments</u>	<u>Net position before hedging</u>	<u>Off-balance sheet positions</u>	<u>Net position after hedging</u>
<i>(Converted in millions of US\$)</i>	<u>(a)</u>	<u>(b)</u>	<u>(c)</u>	<u>(d) = (a) - (b) ± (c)</u>	<u>(e)</u>	<u>(g) = (d) + (e)</u>
EUR(1)	45.0	107.7	–	(62.7)	–	(62.7)

(1) Euro-denominated assets and liabilities in the entities whose functional currency is the US\$.

Our financial debt is partly denominated in euro and converted in US dollars at the closing exchange rate. As of December 31, 2016, our US\$2,312 million of net debt included a part of debt denominated in euro of 862 million based on the closing exchange rate of US\$1.0541. From one year end closing to another, a variation of US\$0.10 in the closing exchange rate between the US dollar and the euro would impact our net debt by approximately US\$86 million.

Foreign forward exchange contracts

Forward exchange transactions are aimed at hedging future cash flows against rate fluctuation in relation with awarded commercial contracts.

As of December 31, 2016 we have no forward exchange contracts outstanding.

Effects of forward exchange contracts on financial statements are as follows:

	<u>December 31,</u>		
	<u>2016</u>	<u>2015</u>	<u>2014</u>
	<u>(In millions of US\$)</u>		
Carrying value of forward exchange contracts (see notes 5 and 12)	–	(0.7)	(1.2)
Gains (losses) recognized in profit and loss (see note 21)	0.2	(2.5)	(0.9)
Gains (losses) recognized directly in equity	(0.2)	1.1	(1.8)

Interest rate risk management

Our policy is to manage interest rates through maximization of the proportion of fixed rate debt. As of December 31, 2016, 71% of our gross debt consisted of fixed-rate bonds, along with some fixed-rate finance

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leases and fixed-rate medium-term bank credit facilities with variable maturities. This debt is not exposed to interest rate fluctuations. However, drawings under our revolving credit facilities incur interest at variable rates that are reset at each interest period (generally between one and 12 months). Term loans issued December 18, 2015 also incur interest at variable rates. As a result, a portion of our interest expenses vary in line with movements in short-term interest rates. We may use interest rate swaps to adjust interest rate exposure when appropriate based upon market conditions.

Interest rate sensitivity analysis

The following table shows our variable interest rate exposure by maturity as of December 31, 2016.

	December 31, 2016									
	Financial assets ^(a)		Financial liabilities ^(a)		Net position before hedging		Off-balance sheet position		Net position after hedging	
	(a)		(b)		(c) = (a) - (b)		(d)		(e) = (c) + (d)	
	Fix rate	Variable rate	Fix rate	Variable rate	Fix rate	Variable rate	Fix rate	Variable rate	Fix rate	Variable rate
	(In millions of US\$)									
Overnight to 1 year	136	267	52	29	84	238	–	–	84	238
1 to 2 years	16	1	174	807	(158)	(806)	–	–	(158)	(806)
3 to 5 years	–	–	1,794	–	(1,794)	–	–	–	(1,794)	–
More than 5 years	–	–	1	–	(1)	–	–	–	(1)	–
Total	152	268	2,021	836	(1,869)	(568)	–	–	(1,869)	(568)

Note: For the purposes of the table above, the various components of the financial debt are presented at their normal maturities even though these debts – except finance lease debt – are presented entirely as current due to the application of IAS 1 (see note 13)

^(a) *Excluding bank overdrafts, accrued interest, IFRS adjustments and issue premium.*

Our sources of liquidity include credit facilities and debt securities which are or may be subject to variable interest rates. As a result, our interest expenses could increase if short-term interests' rates increase. The sensitivity analysis is based on a net liability exposure of US\$568 million. Our variable interest rate indebtedness carried an average interest rate of 5.1% in 2016, and our investments and other financial assets earned interest at an average rate of 0.8%. Each 100 basis points increase would increase our interest expenses by US\$5.7 million per year and each 100 basis point decrease in this rate would decrease our interest expenses by US\$5.7 million per year.

The following table shows our variable interest rate exposure over our financial assets and liabilities as of December 31, 2016:

	December 31, 2016	
	Impact on result before tax	Impact on shareholders' equity before tax
	(In millions of US\$)	
Impact of an interest rate increase of 100 basis points	(5.7)	(5.7)
Impact of an interest rate decrease of 100 basis points	5.7	5.7

Credit risk management

We seek to minimize our counter-party risk by entering into hedging contracts only with well rated commercial banks or financial institutions and by distributing the transactions among the selected institutions. Although our credit risk is the replacement cost at the then-estimated fair value of the instrument, we believe that the risk of incurring losses is remote and those losses, if any, would not be material.

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Our receivables and investments do not represent a significant concentration of credit risk due to the wide variety of customers and markets in which we sell our services and products and our presence in many geographic areas. Specific procedures have been put in place to monitor customers' payments and reduce risks. In 2016, the Group's two most significant customers accounted for 6.7% and 6.4% of the Group's consolidated revenues compared with 5.0% and 4.9% in 2015 and 7.1% and 5.2% in 2014.

Liquidity risk management

See note "1.3 Going concern assumption" for a discussion on our going concern assumptions.

See "Item 3: Key Information – Risks related to our indebtedness" for a discussion on our indebtedness and our covenants.

Financial instruments by categories in the Statement of financial position

The impact and the breakdown of the Group's financial instruments in the statement of financial position as of December 31, 2016 are as follows:

		December 31, 2016						
	Fair value hierarchy ⁽¹⁾	Carrying Amount	Fair Value	Fair value in income statement	Available-for-sale assets	Loans, receivables	Debts at amortized cost	Derivatives
(In millions of US\$)								
Non-consolidated investments	Level 3	8.8	8.8	–	8.8	–	–	–
Financial and non-current assets	Level 3	43.1	43.1	–	–	43.1	–	–
Notes receivables	Level 3	434.8	434.8	–	–	434.8	–	–
Financial instruments	Level 2	–	–	–	–	–	–	–
Cash equivalents	Level 2	123.7	123.7	123.7	–	–	–	–
Cash	Level 2	415.1	415.1	415.1	–	–	–	–
Total assets		1,025.5	1,025.5	538.8	8.8	477.9	–	–
Financial debts (see note 13)	Level 2	2,814.5	1,671.7	–	–	–	2,814.5	–
Bank overdraft facilities	Level 2	1.6	1.6	1.6	–	–	–	–
Notes payables	Level 3	157.4	157.4	–	–	157.4	–	–
Financial instruments	Level 2	–	–	–	–	–	–	–
Total liabilities		2,973.5	1,830.7	1.6	–	157.4	2,814.5	–

⁽¹⁾ Level 1 – Quoted (unadjusted) market prices in active markets for identical assets or liabilities

Level 2 – Valuation techniques for which the lowest level input that is significant to the fair value measurement is directly or indirectly observable

Level 3 – Valuation techniques for which the lowest level input that is significant to the fair value measurement is unobservable

There was no change of fair value hierarchy in 2016 compared to previous years.

Due to their short maturities, the fair value of cash, cash equivalents, trade receivables and trade payables is considered as being equivalent to carrying value.

For bank loans with fixed interest rates, the fair values have been estimated using discounted cash flow (interest payments and reimbursements) analysis based on the Group's incremental borrowing rates for similar types of borrowing arrangements. At December 31, 2016, the rate of 29.8% (source: Thomson Reuters) is used to

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determine the fair value of high yield bonds, the rate of 82.4% (source: BNP) is used to determine the fair value of convertible bond due 2020, the rate of 28.8% (source: BNP) is used to determine the fair value of convertible bond due 2019.

The market value of forward sales is assessed based on models commonly used by market participants to price such instruments, using forward rates, available on the financial markets for similar maturities.

We used the price quotation at the reporting date of our French revolver credit line (source: Thomson Reuters: 85% of the par) to estimate the fair value of our secured debt (our revolving credit facilities, our Nordic facilities and our term loans).

NOTE 15 – COMMON STOCK AND STOCK OPTION PLANS

The Company's share capital at December 31, 2016 consisted of 22,133,149 shares, each with a nominal value of 0.80 and 5,533,287 as of December 31, 2015 and 5,533,287 as of December 31, 2014.

CGG seeks to continuously enhance its financial structure through the equilibrium between its financial indebtedness and its equity as presented in our consolidated statement of financial position. The Group manages its financial structure and operates the adjustments deemed necessary considering the evolution of the financial environment. The managing objectives, policies and procedures have remained unchanged for many reporting periods. Excluding the legal requirements applicable in France, CGG SA is not bound to any requirement in terms of minimal amount of equity.

Rights and privileges related to ordinary shares

Ordinary shares give right to dividend. Ordinary shares registered held for more than two years give a double voting right.

Dividends may be distributed from the statutory retained earnings, subject to the requirements of French law and the Company's articles of incorporation.

Retained earnings available for distribution amounted to 1,200.0 million (US\$ 1,264.9 million) at December 31, 2016. We did not pay any dividend during the years ended December 31, 2016, 2015 and 2014.

Issued shares

CGG increased its share capital through the distribution of preferential subscription rights to existing shareholders launched on January 13, 2016. The final gross proceeds amounted to 350,589,080.16, corresponding to the issuance of 531,195,576 new shares. The net proceeds of the issuance amounted to 337 million (or US\$368 million) and were used to reinforce the shareholders' equity of CGG and improve its liquidity as it finances its Transformation Plan.

The transaction was fully underwritten (excluding the Bpifrance Participations and IFP Energies Nouvelles subscription commitments) by a syndicate of banks. The fees and costs related to this transaction amounted to 13 million (US\$14 million).

The listing of the new shares on the regulated market of Euronext Paris (Segment B) on the same line as the existing shares (FR0000120164) took place on February 5, 2016. As from that date, the share capital of CGG was composed of 708,260,768 shares with a nominal value of 0.40 each, for a total nominal share capital of 283,304,307.20.

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Reverse stock split

The Company carried out on July 20, 2016 the reverse stock split that the Combined General Shareholders' Meeting approved on May 27, 2016. All shareholders received one new share (with all rights pertaining to shares), in exchange for 32 former shares. The first share price on July 20 was calculated on the basis of the last share price traded on July 19 (0.69) multiplied by 32.

The listing of the new shares on the regulated market of Euronext Paris (Segment B) on a new line (FR0013181864) took place on July 20, 2016. As from that date, the share capital of CGG was composed of 22,133,149 shares with a nominal value of 12.80 each, for a total nominal share capital of 283,304,307.20.

Change of nominal value of ordinary shares

The Company carried out on August 11, 2016 the change of nominal value of ordinary shares that the Combined General Shareholders' Meeting approved on May 27, 2016. The Company's share capital was reduced by 265,597,788 (or US\$304.1 million at historical exchange rate) to bring it down from 283,304,307 to 17,706,519 (or US\$20.3 million) by reducing the nominal value of the Company's shares after realization of the reverse split from 12.80 to 0.80.

The amount of 265,597,788, corresponding to the share capital reduction, was allocated in full to the "additional paid in capital" account.

Stock options

Pursuant to various resolutions adopted by the Board of Directors, the Group has granted options to purchase Ordinary Shares to certain employees, Executive Officers and Directors of the Group.

Options granted under March 16, 2009 option plan, have an eight-year duration subject to the requirement, for all French residents, to hold the resulting shares in registered form from their purchase date until March 16, 2013, inclusive, except in limited cases listed in the plan regulations. Rights to these options vest by one-third during each of the first three years of the plan. 1,327,000 stock options were allocated to 149 beneficiaries; including 200,000 stock options to the Chairman and Chief Executive Officer and 125,000 stock options to the Chief Operating Officer.

On January 6, 2010, the Board of Directors allocated 220,000 stock options to one beneficiary pursuant to a shareholders' resolution. The exercise price of the stock options is 14.71. The stock options expire on January 6, 2018. 110,000 of these stock options vested immediately, 55,000 vested as of January 7, 2011 and 55,000 vested as of January 7, 2012.

On March 22, 2010, the Board of Directors allocated:

1,348,150 stock options to 338 beneficiaries pursuant to a shareholders' resolution. The exercise price of the stock options is 19.44. The stock options expire on March 22, 2018. Rights to these options vested by one-third during each of the first three years of the plan;

200,000 stock options to the Chairman and Chief Executive Officer. Their exercise price is 19.44. Rights to these options vest by one-third during each of the first three years of the plan. Such vesting is subject to performance conditions based on the fulfillment of one of the following objectives:

- A share price performance objective relative to the share price considering the SBF 120 index;
- A share price performance objective relative to the ADS price considering the PHLX Oil Services SectorSM (OSXSM) index; or
- A financial indicator in the form of an EBITDAS objective expressed in US dollars and related to the target for the annual variable part of compensation of the Chairman and Chief Executive Officer.

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On October 21, 2010, the Board of Directors allocated 120,000 stock options to three beneficiaries pursuant to a shareholders' resolution. The exercise price of the stock options is 16.88. The plan expires on October 21, 2018. Rights to these options vested by one-third during each of the first three years of the plan.

On March 24, 2011, the Board of Directors allocated:

964,363 stock options to 364 beneficiaries pursuant to a shareholders' resolution. The exercise price of the stock options is 25.48. The stock options expire on March 24, 2019. Rights to these options vest by one-third during each of the first three years of the plan;

66,667 stock options to the Chairman and 133,333 stock options to the Chief Executive Officer. Their exercise price is 25.48. Rights to these options vest by one-third during each of the first three years of the plan. Such vesting is subject to performance conditions based on the fulfillment of one of the following objectives:

- A share price performance objective relative to the share price considering the SBF 120 index;
- A share price performance objective relative to the ADS price considering the PHLX Oil Service SectorSM (OSXSM) index; or
- A financial indicator in the form of an EBITDAS objective expressed in US dollars and related to the target for the annual variable part of compensation of the Chairman and of the Chief Executive Officer.

The exercise price of each option is the average market value of the share during the 20-day period ending the day before the date the option is allocated.

On June 26, 2012, the Board of Directors allocated:

590,625 stock options to certain employees. Their exercise price is 18.77. The options vest in three batches, in June 2014 (for 50% of the options allocated), June 2015 (for 25% of the options allocated) and June 2016 (for 25% of the options allocated). The options have an eight-year duration.

420,000 stock options to the Executive Committee. Their exercise price is 18.77. The options vest in three batches, in June 2014 (for 50% of the options allocated), June 2015 (for 25% of the options allocated) and June 2016 (for 25% of the options allocated). The options have an eight-year duration. Such vesting is subject to performance conditions based on the fulfillment of the following objectives:

- A share price performance objective relative to the share price considering the SBF 120 index;
- A share price performance objective relative to the ADS price considering the PHLX Oil Service SectorSM (OSXSM) index;
- A financial indicator in the form of an EBITDAS objective expressed in US dollars and related to the target for the annual variable part of compensation of the Executive Committee members;
- A share price performance objective relative to the share price increase over the vesting period.

200,000 stock options to the Chief Executive Officer and 100,000 to each of the Corporate Officers. Their exercise price is 18.77. The options vest in three batches, in June 2014 (for 50% of the options allocated), June 2015 (for 25% of the options allocated) and June 2016 (for 25% of the options allocated). The options have an eight-year duration. Such vesting is subject to performance conditions based on the fulfillment of the following objectives:

- A share price performance objective relative to the share price considering the SBF 120 index;
- A share price performance objective relative to the ADS price considering the PHLX Oil Service SectorSM (OSXSM) index;

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- A financial indicator in the form of an EBITDAS objective expressed in US dollars and related to the target for the annual variable part of compensation of the Chief Executive Officer and Corporate Officers;
- A share price performance objective relative to the share price increase over the vesting period.

The exercise price of each option is the average market value of the share during the 20-day period ending the day before the date the option is allocated.

On June 24, 2013, the Board of Directors allocated:

1,062,574 stock options to certain employees. Their exercise price is 18.47. The options vest in three batches, in June 2015 (for 50% of the options allocated), June 2016 (for 25% of the options allocated) and June 2017 (for 25% of the options allocated). The options have an eight-year duration.

200,000 stock options to the Chief Executive Officer and 100,000 to each of the Corporate Officers. Their exercise price is 18.47. The options vest in three batches, in June 2015 (for 50% of the options allocated), June 2016 (for 25% of the options allocated) and June 2017 (for 25% of the options allocated). The options have an eight-year duration. Such vesting is subject to performance conditions based on the fulfillment of the following objectives:

- A share price performance objective relative to the share price considering the SBF 120 index;
- A share price performance objective relative to the ADS price considering the PHLX Oil Service SectorSM (OSXSM) index;
- A financial indicator in the form of an EBITDAS objective expressed in US dollars and related to the target for the annual variable part of compensation of the Chief Executive Officer and Corporate Officers;
- A share price performance objective relative to the share price increase over the vesting period.

180,000 stock options to the other Corporate Committee members. Their exercise price is 18.47. The options vest in three batches, in June 2015 (for 50% of the options allocated), June 2016 (for 25% of the options allocated) and June 2017 (for 25% of the options allocated). The options have an eight-year duration. Such vesting is subject to performance conditions based on the fulfillment of the following objectives:

- A share price performance objective relative to the share price considering the SBF 120 index;
- A share price performance objective relative to the ADS price considering the PHLX Oil Service SectorSM (OSXSM) index;
- A financial indicator in the form of an EBITDAS objective expressed in US dollars and related to the target for the annual variable part of compensation of the Corporate Committee members;
- A share price performance objective relative to the share price increase over the vesting period.

The exercise price of each option is the average market value of the share during the twenty-day period ending the day before the date the option is allocated.

On June 26, 2014, the Board of Directors allocated:

1,135,843 stock options to certain employees. Their exercise price is 10.29. The options vest in three batches, in June 2016 (for 50% of the options allocated), June 2017 (for 25% of the options allocated) and June 2018 (for 25% of the options allocated). The options have an eight-year duration.

200,000 stock options to the Chief Executive Officer and 100,000 to each of the Corporate Officers. Their exercise price is 10.29. The options vest in three batches, in June 2016 (for 50% of the options

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allocated), June 2017 (for 25% of the options allocated) and June 2018 (for 25% of the options allocated). The options have an eight-year duration. Such vesting is subject to performance conditions based on the fulfillment of the following objectives:

- A share price performance objective relative to the share price considering the SBF 120 index;
- A share price performance objective relative to the ADS price considering the PHLX Oil Service SectorSM (OSXSM) index;
- A financial indicator in the form of an EBITDAS objective expressed in US dollars and related to the target for the annual variable part of compensation of the Chief Executive Officer and Corporate Officers;
- A share price performance objective relative to the share price increase over the vesting period.

120,000 stock options to the other Corporate Committee members. Their exercise price is 10.29. The options vest in three batches, in June 2016 (for 50% of the options allocated), June 2017 (for 25% of the options allocated) and June 2018 (for 25% of the options allocated). The options have an eight-year duration. Such vesting is subject to performance conditions based on the fulfillment of the following objectives:

- A share price performance objective relative to the share price considering the SBF 120 index;
- A share price performance objective relative to the ADS price considering the PHLX Oil Service SectorSM (OSXSM) index;
- A financial indicator in the form of an EBITDAS objective expressed in US dollars and related to the target for the annual variable part of compensation of the Corporate Committee members;
- A share price performance objective relative to the share price increase over the vesting period.

The exercise price of each option is the average market value of the share during the 20-day period ending the day before the date the option is allocated.

On June 25, 2015, the Board of Directors allocated:

1,168,290 options to certain employees. Their exercise price is 6.01. The options vest in three batches, in June 2017 (for 50% of the options allocated), June 2018 (for 25% of the options allocated) and June 2019 (for 25% of the options allocated). The options have an eight-year duration.

220,600 options to the Chief Executive Officer and 111,000 to each of the Corporate Officers. Their exercise price is 6.01. The options vest in three batches, in June 2017 (for 50% of the options allocated), June 2018 (for 25% of the options allocated) and June 2019 (for 25% of the options allocated). The options have an eight-year duration. Such vesting is subject to performance conditions based on the fulfillment of the following objectives:

- A share price performance objective relative to the share price considering the SBF 120 index;
- A share price performance objective relative to the ADS price considering the PHLX Oil Service SectorSM (OSXSM) index;
- A financial indicator in the form of an EBITDAS objective expressed in US dollars and related to the target for the annual variable part of compensation of the Chief Executive Officer and Corporate Officers;
- A share price performance objective relative to the share price increase over the vesting period.

159,000 options to the other Corporate Committee members. Their exercise price is 6.01. The options vest in three batches, in June 2017 (for 50% of the options allocated), June 2018 (for 25% of the options allocated) and June 2019 (for 25% of the options allocated). Such vesting is subject to

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performance conditions. The options have an eight-year duration. Such vesting is subject to performance conditions based on the fulfillment of the following objectives:

- A share price performance objective relative to the share price considering the SBF 120 index;
- A share price performance objective relative to the ADS price considering the PHLX Oil Service SectorSM (OSXSM) index;
- A financial indicator in the form of an EBITDAS objective expressed in US dollars and related to the target for the annual variable part of compensation of the Corporate Committee members;
- A share price performance objective relative to the share price increase over the vesting period.

The exercise price of each option is the average market value of the share during the twenty-day period ending the day before the date the option is allocated.

On June 23, 2016, the Board of Directors allocated:

4,126,368 options to certain employees. Their exercise price is 0.68. The options vest in three batches, in June 2018 (for 50% of the options allocated), June 2019 (for 25% of the options allocated) and June 2020 (for 25% of the options allocated). The options have an eight-year duration.

882,400 options to the Chief Executive Officer and 444,000 to each of the Corporate Officers. Their exercise price is 0.68. The options vest in three batches, in June 2018 (for 50% of the options allocated), June 2019 (for 25% of the options allocated) and June 2020 (for 25% of the options allocated). The options have an eight-year duration. Such vesting is subject to performance conditions based on the fulfillment of the following objectives:

- A share price performance objective relative to the share price considering the SBF 120 index;
- A share price performance objective relative to the ADS price considering the PHLX Oil Service SectorSM (OSXSM) index;
- A financial indicator in the form of an EBITDAS objective expressed in US dollars and related to the target for the annual variable part of compensation of the Chief Executive Officer and Corporate Officers;
- A share price performance objective relative to the share price increase over the vesting period.

318,080 options to the other Corporate Committee members. Their exercise price is 0.68. The options vest in three batches, in June 2018 (for 50% of the options allocated), June 2019 (for 25% of the options allocated) and June 2020 (for 25% of the options allocated). The options have an eight-year duration. Such vesting is subject to performance conditions based on the fulfillment of the following objectives:

- A share price performance objective relative to the share price considering the SBF 120 index;
- A share price performance objective relative to the ADS price considering the PHLX Oil Service SectorSM (OSXSM) index;
- A financial indicator in the form of an EBITDAS objective expressed in US dollars and related to the target for the annual variable part of compensation of the Corporate Committee members;
- A share price performance objective relative to the share price increase over the vesting period.

The exercise price of each option is the average market value of the share during the twenty-day period ending the day before the date the option is allocated.

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Information related to options outstanding at December 31, 2016 is summarized below:

Date of Board of Directors' Resolution	Options granted	Options		Exercise price per share () (b) (c) (d)	Expiration date	Remaining duration
		Options granted after capital operations ^(a)	Options outstanding at Dec. 31, 2016 ^(b) (c) (d)			
March 16, 2009	1,327,000	52,269	30,581	224.00	March 16, 2017	2.5 months
January 06, 2010	220,000	8,668	8,668	373.44	January 06, 2018	12.2 months
March 22, 2010	1,548,150	60,980	51,493	493.44	March 22, 2018	14.7 months
October 21, 2010	120,000	4,727	3,128	428.80	October 21, 2018	21.7 months
March 24, 2011	1,164,363	45,863	39,541	646.72	March 24, 2019	26.7 months
June 26, 2012	1,410,625	55,563	20,141	476.48	June 26, 2020	41.9 months
June 24, 2013	1,642,574	61,443	42,485	493.44	June 24, 2021	53.8 months
June 26, 2014	1,655,843	61,939	48,404	274.88	June 26, 2022	65.9 months
June 25, 2015	1,769,890	66,205	60,581	160.64	June 25, 2023	77.8 months
June 23, 2016	6,658,848	208,089	205,815	21.76	June 23, 2024	89.8 months
Total	17,517,293	625,746	510,837			

^(a) Options granted adjusted following 2012 and 2016 capital increases and 2016 reverse split

^(b) Following the capital increase in October 2012, the stock options were adjusted as follows:

Date of stock options	Adjustment of		Adjusted exercise price per share ()
	number of options as of October 23, 2012	Exercise price before adjustment per share ()	
March 16, 2009	950,179	8.82	8.38
January 06, 2010	231,538	14.71	13.98
March 22, 2010	1,430,622	19.44	18.47
October 21, 2010	126,291	16.88	16.05
March 24, 2011	1,150,636	25.48	24.21
June 26, 2012	1,483,424	18.77	17.84

^(c) Following the capital increase in February 2016, the stock options were adjusted as follows:

Date of stock options	Adjustment of		Adjusted exercise price per share ()
	number of options as of February 29, 2016	Exercise price before adjustment per share ()	
March 16, 2009	986,869	8.38	7.00
January 06, 2010	277,370	13.98	11.67
March 22, 2010	1,675,700	18.47	15.42
October 21, 2010	100,072	16.05	13.40
March 24, 2011	1,287,848	24.21	20.21
June 26, 2012	1,061,569	17.84	14.89
June 24, 2013	1,495,770	18.47	15.42
June 26, 2014	1,782,127	10.29	8.59
June 25, 2015	1,998,861	6.01	5.02

(d) *Following the reverse split in July 2016, the stock options were adjusted as follows:*

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<u>Date of stock options</u>	<u>Adjustment of number of options as of July 20, 2016</u>	<u>Exercise price before adjustment per share ()</u>	<u>Adjusted exercise price per share ()</u>
March 16, 2009	30,778	7.00	224.00
January 06, 2010	8,668	11.67	373.44
March 22, 2010	52,183	15.42	493.44
October 21, 2010	3,128	13.40	428.80
March 24, 2011	40,167	20.21	646.72
June 26, 2012	20,766	14.89	476.48
June 24, 2013	43,238	15.42	493.44
June 26, 2014	49,660	8.59	274.88
June 25, 2015	63,013	5.02	160.64
June 23, 2016	208,089	0.68	21.76

A summary of the Company's stock option activity, and related information for the years ended December 31, 2016 follows:

	<u>2016</u>		<u>2015</u>		<u>2014</u>	
	<u>Number of options</u>	<u>Weighted average exercise price</u>	<u>Number of options</u>	<u>Weighted average exercise price</u>	<u>Number of options</u>	<u>Weighted average exercise price</u>
	<u>(weighted average exercise price in)</u>					
Outstanding-beginning of year	10,043,037	16.14	10,696,143	19.31	10,151,820	21.33
Granted	6,658,848	0.68	1,769,890	6.01	1,655,843	10.29
Adjustments followings the reverse split	(16,004,834)	235.79	—	—	—	—
Adjustments followings the capital increase	1,976,021	13.48	—	—	—	—
Exercised	—	—	—	—	—	—
Forfeited	(2,162,235)	274.26	(2,422,996)	22.75	(1,111,520)	24.29
Outstanding-end of year	510,837	235.86	10,043,037	16.14	10,696,143	19.31
Exercisable-end of year	209,618	450.25	6,018,303	20.11	6,757,509	21.85

The average price of CGG share was 20.33 in 2016, 154.88 in 2015, 261.12 in 2014 after adjustment following the reverse stock split.

Performance units

Allocation plan dated June 26, 2014

On June 26, 2014, the Board of Directors implemented a performance units plan for a maximum amount of 723,800 performance units out of which 27,500 were allocated to the Chief Executive Officer, 12,500 were allocated to each of the Corporate Officers, 20,000 were allocated to the other Corporate Committee members and 651,300 were allocated to certain employees.

The performance units vest upon the expiry of a three-year period from the vesting date subject to a presence condition in the Group at the time of vesting and achievement of certain performance conditions. These performance conditions are based on the achievement of Group objectives related to the return on capital employed and statement of financial position structure along with achievement of the segments' financial objectives aligned with the Group strategic orientations over a three-year period.

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The number of vested 2014 performance units is determined upon achievement of the Group objectives up to 60% of the global allocation. The balance will be acquired based on the achievement of the segments' objectives.

The valuation of each vested 2014 performance unit shall be equal to the average closing prices of the CGG share on Euronext over the five trading days prior to the vesting date. The vested performance units will be paid half in cash and half in existing CGG shares.

Allocation plan dated June 25, 2015

On June 25, 2015, the Board of Directors implemented a performance units plan for a maximum amount of 712,300 performance units out of which 27,500 were allocated to the Chief Executive Officer, 12,500 were allocated to each of the Corporate Officers, 20,000 were allocated to the other Corporate Committee members and 639,800 were allocated to certain employees.

The performance units vest upon the expiry of a three-year period from the vesting date subject to a presence condition in the Group at the time of vesting and achievement of certain performance conditions. These performance conditions are based on the achievement of Group objectives related to the return on capital employed and statement of financial position structure along with achievement of the segments' financial objectives aligned with the Group strategic orientations over a three-year period.

The number of vested 2015 performance units is determined upon achievement of the Group objectives up to 60% of the global allocation. The balance will be acquired based on the achievement of the segments' objectives.

The valuation of each vested 2015 performance unit shall be equal to the average closing prices of the CGG share on Euronext over the five trading days prior to the vesting date. The vested performance units will be paid half in cash and half in existing CGG shares.

Allocation plan dated June 23, 2016

On June 23, 2016, the Board of Directors implemented a performance units plan for a maximum amount of 2,566,880 performance units out of which 108,960 were allocated to the Chief Executive Officer, 49,600 were allocated to each of the Corporate Officers, 39,680 were allocated to the other Corporate Committee members and 2,269,440 were allocated to certain employees.

The performance units vest upon the expiry of a three-year period from the vesting date subject to a presence condition in the Group at the time of vesting and achievement of certain performance conditions. These performance conditions are based on the achievement of Group objectives related to the return on capital employed and statement of financial position structure along with achievement of the segments' financial objectives aligned with the Group strategic orientations over a three-year period.

The number of vested 2016 performance units is determined upon achievement of the Group objectives up to 60% of the global allocation. The balance will be acquired based on the achievement of the segments' objectives.

The valuation of each vested 2016 performance unit shall be equal to the average closing prices of the CGG share on Euronext over the five trading days prior to the vesting date. The vested performance units will be paid half in cash and half in existing CGG shares.

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Compensation cost on stock options, performance shares and units

The following table lists the assumptions used to value the 2014, 2015 and 2016 options plans, the 2014, 2015 and 2016 performance units allocation plan according to IFRS 2. The Group uses the Black & Scholes model.

	Options granted	Volatility ⁽¹⁾	Risk- free rate	Exercise price per share ()	Estimated Maturity (years)	Fair value per share at the grant date ()	Dividends yields
2014 stock options plan	1,655,843	39 %	0.34 %	10.29	4	3.23	0.0 %
2015 stock options plan	1,769,890	42 %	0.14 %	6.01	4	1.64	0.0 %
2016 stock options plan	6,658,848	47 %	-0.31 %	0.67	4	0.23	0.0 %

	Performance shares granted	Achievement of performance Conditions ⁽²⁾	Fair value per share at the grant date () ⁽³⁾	Dividends yields
2014 performance units allocation plan	723,800	0 %	10.44	0.0 %
2015 performance units allocation plan	712,300	50 %	5.48	0.0 %
2016 performance units allocation plan	2,566,880	100 %	0.67	0.0 %

⁽¹⁾ Corresponds to the average of restated historical volatility and implied volatility.

⁽²⁾ Estimated.

⁽³⁾ Corresponds to CGG share price at the date of allocation

According to IFRS 2, fair value of stock options and performance shares and units granted since November 7, 2002 must be recognized as an expense over the life of the plan. Detail of this expense is as follows:

	Year					
	IFRS 2 total expense			Of which for the executive managers of the Group		
	2016	2015	2014	2016	2015	2014
	(In millions of US\$)					
2011 stock options plan	–	–	0.3	–	–	0.2
2012 stock options plan	0.2	0.2	1.8	0.1	(0.2)	0.5
2013 stock options plan	0.3	1.1	3.5	–	0.1	1.1
2014 stock options plan	1.1	1.6	1.1	0.1	0.4	0.3
2015 stock options plan	0.9	0.5	–	0.2	0.1	–
2016 stock options plan	0.3	–	–	–	–	–
2012 performance shares plan	–	–	1.0	–	–	0.2
2013 performance units plan – paid in shares	–	(0.8)	0.2	–	(0.1)	–
2014 performance units plan – paid in shares	(0.6)	0.1	0.5	(0.1)	–	–
2015 performance units plan – paid in shares	0.1	0.4	–	–	–	–
2016 performance units plan – paid in shares	0.2	–	–	–	–	–
Recognized expense from equity-settled share based payment transactions	2.5	3.1	8.4	0.3	0.3	2.3

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NOTE 16 – PROVISIONS

	December 31, 2016						
	Balance at beginning of year	Additions	Deductions (used)	Deductions (unused)	Unwinding of the discount	Others ^(a)	Balance at end of period
	(In millions of US\$)						
Provisions for restructuring costs	148.4	9.5	(108.3)	(12.8)	–	0.2	37.0
Provisions for onerous contracts	60.4	41.0	(44.4)	–	0.7	6.9	64.6
Provisions for litigations	0.9	0.2	(0.1)	–	–	(0.2)	0.8
Provisions for tax contingencies	–	–	–	–	–	–	–
Other provisions related to contracts	8.3	3.2	(4.2)	–	–	0.4	7.7
Provisions for demobilization costs	1.5	0.6	(1.5)	–	–	–	0.6
Total current provisions	219.5	54.5	(158.5)	(12.8)	0.7	7.3	110.7
Provisions for cash-settled share-based payment arrangements (see note 15)	1.3	–	–	(0.6)	–	(0.5)	0.2
Retirement indemnity provisions	57.9	5.7	(2.9)	(5.7)	–	4.5	59.5
Provisions for tax contingencies	1.8	6.0	(0.4)	(0.5)	–	0.3	7.2
Provisions for onerous contracts	73.0	1.4	–	–	1.9	(5.9)	70.4
Customers Guarantee provisions	4.9	2.9	(5.6)	–	–	–	2.2
Provisions for customs and other contingencies	17.0	14.5	(5.9)	(5.1)	–	2.1	22.6
Total non-current provisions	155.9	30.5	(14.8)	(11.9)	1.9	0.5	162.1
Total provisions	375.4	85.0	(173.3)	(24.7)	2.6	7.8	272.8

^(a) Includes the effects of exchange rates changes, variations in scope, reclassification, and gain (loss) on actuarial changes.

Provision for restructuring costs

In 2016, we used part of the provisions for restructuring costs as part of our Group transformation plan.

In 2015, we recognized provisions for restructuring costs as part of our Group transformation plan. They mainly included redundancy costs and facilities exit costs (see note 21).

Provision for onerous contract (short term and long term)

In 2016, we used and recognized additional provisions for onerous contracts, taking into account the slower than initially anticipated recovery pace, as part of our marine fleet downsizing plan (see note 21).

In 2015, we recognized provisions for onerous contracts as part of our marine fleet downsizing plan (see note 21).

Customers Guarantee provisions

It corresponds to the warranty given by Sercel to external clients.

Retirement indemnity provisions

The Group has defined benefit pension plans in France, in the United States, in the UK, and in Mexico.

In addition, a supplemental pension and retirement plan was implemented in December 2004 for the members of the Group's Management Committee and members of the Management Board of Sercel Holding. No contribution was paid in 2016. A contribution amounting to US\$8.3 million was paid in 2015 and US\$4.3 million for 2014.

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The Group records retirement indemnity provisions based on the following actuarial assumptions:

- historical staff turnover and standard mortality schedule;
- age of retirement between 60 and 66 years old in France;
- actuarial rate and average rate of increase in future compensation;
- taxes on supplemental pension and retirement plan;

As of December 31, 2016, the net liability for these plans amounted to US\$59.5 million.

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The status of the retirement indemnity plans is as follows:

	December 31,			
	2016	2015	2014	2013
	(In millions of US\$)			
<u>Amount recognized in the statement of financial position</u>				
Present value of the obligation ^(a)	138.9	139.1	155.2	163.0
Fair value of plan assets	(79.4)	(81.2)	(81.3)	(79.4)
Deficit (surplus) of funded plans	59.5	57.9	73.9	83.6
Net liability (asset) recognized in the statement of financial position	59.5	57.9	73.9	83.6
<u>Amounts recognized in the income statement</u>				
Service cost	4.4	5.7	5.9	5.7
Interest cost (income)	1.3	1.2	2.3	2.2
Effects of curtailments/settlements	(5.7)	(6.9)	(12.4)	(4.1)
Payroll tax	—	—	—	—
Net periodic expense (profit)	—	—	(4.2)	3.8
<u>Movements in the net liability recognized in the statement of financial position</u>				
Net liability at January 1	57.9	73.9	83.6	73.2
Expense as above	—	—	(4.2)	3.8
Actuarial (gains)/losses recognized in other comprehensive income ^(b)	9.2	3.8	13.0	6.3
Contributions paid	(1.4)	(10.0)	(5.8)	(6.6)
Benefits paid by the Company	(1.5)	(3.0)	(3.3)	(2.1)
Consolidation scope entries and changes in exchange rates	(4.7)	(6.8)	(9.4)	8.4
Other	—	—	—	0.6
Net liability at December 31	59.5	57.9	73.9	83.6
<u>Change in benefit obligation</u>				
Benefit obligation at January 1	139.1	155.2	163.0	145.5
Payroll tax adjustment	—	—	—	—
Current service cost	4.4	5.7	5.9	6.0
Contributions paid	0.3	0.4	0.5	0.3
Interest cost	4.0	4.2	5.9	5.2
Past service cost	—	—	—	(0.3)
Benefits paid from plan	(2.8)	(12.9)	(8.4)	(7.2)
Actuarial (gains)/losses recognized in other comprehensive income	19.2	4.3	19.1	7.1
Effects of curtailments/settlements	(5.7)	(6.9)	(16.3)	(6.4)
Consolidation scope entries and changes in exchange rates	(19.6)	(10.9)	(14.5)	12.2
Other	—	—	—	0.6
Benefit obligation at December 31	138.9	139.1	155.2	163.0
<u>Change in plan assets</u>				
Fair value of plan assets at January 1	81.2	81.3	79.4	72.3
Interest income	2.7	3.0	3.6	3.0
Contributions paid	1.7	10.4	6.3	6.9
Benefits paid from plan	(1.3)	(9.9)	(5.1)	(5.1)
Actuarial gains/(losses) recognized in other comprehensive income	10.0	0.5	6.1	0.8
Effects of curtailments/settlements	—	—	(3.9)	(2.3)
Consolidation scope entries and changes in exchange rate	(14.9)	(4.1)	(5.1)	3.8
Other	—	—	—	—

Fair value of plan assets at December 31^(c)	79.4	81.2	81.3	79.4
Key assumptions used in estimating the Group' s retirement obligations are:				
Discount rate ^(d)	1.50 %	2.00 %	1.50 %	3.00 %
Average rate of increase in future compensation ^(e)	<u>2.41 %</u>	<u>2.84 %</u>	<u>3.00 %</u>	<u>3.31 %</u>

^(a) In 2016 the obligation amounts to US\$138.9 million of which US\$29.3 million for defined benefit plans not covered (US\$29.1 million in 2015, US\$46.2 million in 2014 and US\$54.3 million in 2013). The average duration of the defined benefit plan obligation at the end of the reporting period is 19.0 in 2016, 20.3 years in 2015, 17.7 years in 2014 and 15.3 years in 2013.

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(b) Other comprehensive income

Cumulative actuarial losses recognized in other comprehensive income amount to US\$26.6 million as of December 31, 2016.

Changes in the defined benefit obligation and fair value of plan assets are, as follows:

	December 31,			
	2016	2015	2014	2013
	(In millions of US\$)			
Amount recognized in the other comprehensive income				
Experience adjustment	(2.4)	3.2	(0.4)	4.0
Actuarial changes arising from changes in demographic assumptions	0.8	(1.7)	–	3.1
Actuarial changes arising from changes in financial assumptions	20.8	2.9	19.5	(0.1)
Return on plan assets (excluding amounts included in net interest expense)	(10.0)	(0.5)	(6.1)	(0.7)
Sub-total included in the other comprehensive income	9.2	3.9	13.0	6.3

(c) Plan assets

The major categories of plan assets as a percentage of the fair value of total plan assets are as follows:

	December 31,			
	2016	2015	2014	2013
Equity securities	49 %	51 %	48 %	48 %
Debt securities	18 %	19 %	19 %	22 %
Real estate	7 %	7 %	8 %	8 %
Other	26 %	23 %	25 %	22 %

(d) Discount rate

The discount rate for entities belonging to the “euro zone” is 1.50%. It has been defined by comparison to the following rates at December 31, 2016:

Bloomberg Corporate 15 years: 1.48%

IBOXX 10+ AA: 1.31%

IBOXX 10+ AA Financial: 1.48%

IBOXX 10+ AA Non Financial: 1.23%

For entities not included in the “euro zone”, the discount rates used are 2.70% for the United Kingdom, 3.93% for the United States and 6.75% for Mexico.

An increase of 0.25% of the discount rate would decrease the defined benefit plan (“DBO”) by US\$6.5 million, and a decrease of the discount rate of 0.25% would increase the DBO by US\$6.9 million.

A variation of 0.25% of the discount rate would have no significant impacts on Service Cost and on Interest Cost (calculated impact is within US\$0.2 million).

(e) Increase in future compensation

An increase of 0.25% of the average rate would increase the future compensation by US\$1.1 million, and a decrease of the average rate of 0.25% would decrease the future compensation by US\$1.1 million.

A variation of 0.25% of the average rate would have no significant impacts on Service Cost and on Interest Cost (calculated impact is within US\$0.1 million).

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NOTE 17 – OTHER NON-CURRENT LIABILITIES

Detail of other non-current liabilities is as follows:

	December 31,		
	2016	2015	2014
	(In millions of US\$)		
Research and development subsidies	0.9	1.5	2.7
Profit sharing scheme	12.7	18.0	28.0
Other non-current liabilities	7.8	–	–
Other non-current liabilities	21.4	19.5	30.7

NOTE 18 – CONTRACTUAL OBLIGATIONS, COMMITMENTS AND CONTINGENCIES

Status on contractual obligations

	December 31,		
	2016	2015	2014
	(In millions of US\$)		
Long-term debt obligations ⁽¹⁾	3,284.8	3,585.9	3,570.6
Finance lease obligations ⁽¹⁾	39.4	77.3	96.7
Bareboat agreements ⁽¹⁾	533.9	518.3	670.4
Operating leases obligations	234.7	309.0	382.3
Total obligations	4,092.8	4,490.5	4,720.0

⁽¹⁾ In 2016, the Bareboat agreements amount to US\$533.9 million of which US\$22.2 million for cold-stacked vessels. The figures presented above include the effect of the renegotiations of the Bareboat agreements, completed on January 20, 2017 and March 13, 2017, and the Fleet ownership change in April 2017 (see note 30 on subsequent events for further details), which have led to:

- an increase of Bareboat agreements of US\$146.8 million (of which US\$94.2 million decrease due to the Bareboat agreement renegotiations and US\$241.0 million increase due to the Fleet ownership change). Without these renegotiations, the Bareboat agreements would have amounted to US\$387.1 million.
- a decrease of US\$118.2 million of the long term debt repayment obligation (of which US\$91.0 million increase due to the Bareboat agreement renegotiations and US\$209.2 million decrease due to the Fleet ownership change). This renegotiation had no impact on our outstanding financial debt as of December 31, 2016. Without these renegotiations, the long term debt repayment obligation would have amounted to US\$ 3,403.0 million.
- a decrease of US\$23.6 million of the finance lease obligation. This renegotiation had no impact on our outstanding financial lease debt as of December 31, 2016. Without these renegotiations, the finance lease obligation would have amounted to US\$ 63.0 million.

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The following table presents payments in future periods relating to contractual obligations as of December 31, 2016:

	Payments due by period				
	Less than 1 year	2-3 years	4-5 years	After 5 years	Total
	(In millions of US\$)				
Long-term debt obligations:					
– Repayments: fixed rates	20.3	37.4	1,440.0	419.6	1,917.3
– Repayments: variables rates ^(a)	22.8	775.3	–	–	798.1
– Bonds and facilities interests	163.7	252.7	138.6	14.4	569.4
Total Long-term debt obligations	206.8	1,065.4	1,578.6	434.0	3,284.8
Finance leases:					
– Finance lease Obligations: fixed rates	8.2	14.0	13.7	3.5	39.4
– Finance lease Obligations: variables rates ^(a)	–	–	–	–	–
Total Finance lease obligations	8.2	14.0	13.7	3.5	39.4
Bareboat agreements	78.9	121.3	94.2	239.5	533.9
Other operating lease agreements	59.4	71.8	42.3	61.2	234.7
Total Contractual Obligations^(b)	353.3	1,272.5	1,728.8	738.2	4,092.8

Note: For the purposes of the table above, the various components of the financial debt are presented at their normal maturities even though these debts – except finance lease debt – are presented entirely as current due to the application of IAS 1 (see note 13)

^(a) Payments are based on the variable rates applicable as of December 31, 2016.

^(b) Payments in foreign currencies are converted in US\$ at December 31, 2016 exchange rates.

Contractual obligations – finance leases

The Group leases land, buildings and equipment under finance lease agreements expiring at various dates until 2023.

The following table presents reconciliation between finance lease obligations and finance lease debts as of December 31, 2016:

	Less than 1 year	1-5 years	After 5 years	Total
	(In millions of US\$)			
Finance lease Obligations	8.2	27.7	3.5	39.4
Management of marine liabilities and fleet ownership change	4.6	15.7	3.3	23.6
Discounting	(3.9)	(10.3)	(0.9)	(15.1)
Headquarters purchase option	–	–	27.7	27.7
Finance lease debt (see note 13)	8.9	33.1	33.6	75.6

Contractual obligations – operating leases

Operating lease agreements relate primarily to bareboat charter agreements for seismic vessels, geophysical equipment, offices and computer equipment.

Rental expenses were US\$245.7 million in 2016, US\$294.8 million in 2015 and US\$393.2 million in 2014.

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Guarantees

	December 31,		
	2016	2015	2014
	(In millions of US\$)		
<u>Operations</u>			
Guarantees issued in favor of clients (guarantees issued by the Company to mainly support bids made at the subsidiaries level)	534.4	562.3	457.7
Other guarantees and commitments issued (guarantees issued by the Company on behalf of subsidiaries and affiliated companies in favor of customs or other governmental administrations)	203.1	197.3	139.5
<u>Financing</u>			
Guarantees issued in favor of banks (mainly to support credit facilities)	–	23.2	0.7
Total	737.5	782.8	597.9

The duration of the guarantees and commitments is as follows:

	Due date				
	Less than 1 year	2-3 years	4-5 years	After 5 years	Total
	(In millions of US\$)				
<u>Operations</u>					
Guarantees issued in favor of clients	464.7	57.0	12.5	0.2	534.4
Other guarantees and commitments issued	82.9	59.8	1.4	59.0	203.1
<u>Financing</u>					
Guarantees issued in favor of banks	–	–	–	–	–
Total	547.6	116.8	13.9	59.2	737.5

Others

Commitments issued or received on behalf of related parties are presented in note 8.

The Group has no off-balance sheet obligations under IFRS that are not described above.

Legal proceedings, claims and other contingencies

The Group is a defendant in a number of legal proceedings arising in the ordinary course of business and has various unresolved claims pending. The outcome of these lawsuits and claims is not known at this time. The Group believes that the resulting liability, if any, net of amounts recoverable from insurance or other sources will not have a material adverse effect on its consolidated results of operations, financial position or cash flows.

Request for information from the Bureau of Industry and Security (BIS) of the United States Department of Commerce

Following an investigation by the BIS regarding some shipments to our vessels operating in or near Cuba that may not have complied fully with our internal policies and possibly violated applicable export controls and sanctions laws, a warning letter without any financial penalty was issued on September 10, 2015. On July 29, 2015, the U.S. Office of Foreign Assets Control (OFAC) issued a pre-penalty notice. On December 15, 2015, a settlement agreement was signed pursuant to which we paid a fine of US\$614,250.

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NOTE 19 – ANALYSIS BY OPERATING SEGMENT AND GEOGRAPHIC AREA

Since September 30, 2015, we have organized our activities in four segments for financial reporting: (i) Contractual Data Acquisition, (ii) Geology, Geophysics & Reservoir, (iii) Equipment and (iv) Non-Operated Resources. Financial information by segment is reported in accordance with our internal reporting system and provides internal segment information that is used by the chief operating decision maker to manage and measure performance.

Taking into account the long cyclical trough of the seismic market, which further worsened during the summer of 2015 as a consequence of a renewed bearish forward view on the price of oil, CGG decided, during the third quarter of 2015, to implement new adaptation measures throughout the Group as a new step in its Transformation Plan and further reduce its marine fleet to five vessels mainly dedicated to multi-client surveys. Going forward, the downsized CGG fleet will be dedicated on average two-thirds to multi-client surveys and only one-third to exclusive surveys. As a result of the reduction of the fleet, part of our owned vessels will not be operated for a certain period of time. The costs of these non-operated resources, as well as the costs of the Transformation Plan are reported, in the “Non-Operated Resources” segment.

A summary of our four segments is set out below:

Contractual Data Acquisition. This Operating segment comprises the following Business Lines:

- Marine: offshore seismic data acquisition undertaken by us on behalf of a specific client;
- Land and Multi-Physics: other seismic data acquisition undertaken by us on behalf of a specific client.

Geology, Geophysics & Reservoir (“GGR”). This operating segment comprises the Multi-Client Business Line (development and management of seismic surveys that we undertake and license to a number of clients on a non-exclusive basis) and the Subsurface Imaging and Reservoir Business Lines (processing and imaging of geophysical data, reservoir characterization, geophysical consulting and software services, geological data library and data management solutions). Both Business Lines regularly combine their offerings, generating overall synergies between their respective activities. The GGR segment includes the costs, industrial capital expenditures and capital employed related to the vessels dedicated to multi-client surveys.

Equipment. This operating segment comprises our manufacturing and sales activities for seismic equipment used for data acquisition, both on land and marine. The Equipment segment carries out its activities through our subsidiary Sercel.

Non-Operated Resources. This segment mainly comprises the costs of the non-operated marine resources as well as all the costs of our Transformation Plan (mainly restructuring provisions and provisions for onerous contracts). The capital employed includes the non-operated marine assets and the provisions related to the Transformation Plan. In this segment, the recoverable value retained is the fair value less costs of disposal.

As a complement to Operating Income, EBIT may be used by management as a performance indicator for segments because it captures the contribution to our results of the significant businesses that are managed through our joint ventures. We define EBIT as Operating Income plus our share of income in companies accounted for under the equity method.

Inter-company analytical transactions between segments are made at arm’s length prices. They relate primarily to geophysical equipment sales made by the Equipment segment to the Contractual Data Acquisition and GGR segments (with the reference being the spot market). As GGR includes marine capacity dedicated to multi-client surveys, there are no longer any services rendered by Contractual Data Acquisition to GGR for multi-client surveys. Transactions between subsidiaries of the Group are made at market prices.

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These inter-segment revenues and the related earnings are eliminated in consolidation in the tables that follow under the column “Eliminations and other”.

The inter-segment sales and the related earnings recognized by the Equipment segment are eliminated and presented in the tables that follow as follows: (i) Operating Income and EBIT for our Contractual Data Acquisition and GGR segments are presented after elimination of amortization expenses corresponding to capital expenditures between our Equipment segment and Contractual Data Acquisition and GGR segments; and (ii) capital expenditures for our Contractual Data Acquisition and GGR segments are presented after elimination of inter-segment margin.

Operating Income and EBIT may include non-recurring items, which are disclosed in the reportable segment if material. General corporate expenses, which include Group management, financing, and legal activities, have been included in the column “Eliminations and other” in the tables that follow. The Group does not disclose financial expenses or financial revenues by segment because they are managed at the Group level.

Identifiable assets are those used in the operations of each segment. Unallocated and corporate assets consist of “investments and other financial assets” and “cash and cash equivalents” of our consolidated statement of financial position. The group does not track its assets based on country of origin.

Capital employed is defined as “total assets” excluding “cash and cash equivalents” less (i) “current liabilities” excluding “bank overdrafts” and “current portion of financial debt” and (ii) “non-current liabilities” excluding “financial debt”.

The following tables also present operating revenues, Operating Income and EBIT by segment, and operating revenues by geographic area (by location of customers).

In 2016, the Group’s two most significant customers accounted for 6.7% and 6.4% of the Group’s consolidated revenues compared with 5.0% and 4.9% in 2015 and 7.1% and 5.2% in 2014.

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Analysis by segment

	2016					
	Contractual Data Acquisition	Non Operated Resources	GGR	Equipment	Eliminations And other	Consolidated Total
	(In millions of US\$, except for assets and capital employed in billions of US\$)					
Revenues from unaffiliated customers	232.2	–	784.0	179.3	–	1,195.5
Inter-segment revenues	5.8	–	–	75.7	(81.5)	–
Operating revenues	238.0	–	784.0	255.0	(81.5)	1,195.5
Depreciation and amortization (excluding multi-client surveys)	(62.7)	(93.5)	(101.1)	(35.5)	(0.4)	(293.2)
Depreciation and amortization of multi-client surveys	–	–	(417.2)	–	–	(417.2)
Operating income	(98.9)	(170.0)	(15.9)	(41.9)	(69.8)	(396.5)
Share of income in companies accounted for under equity method ⁽¹⁾	(6.0)	–	(2.2)	–	–	(8.2)
Earnings before interest and tax⁽²⁾	(104.9)	(170.0)	(18.1)	(41.9)	(69.8)	(404.7)
Capital expenditures (excluding multi-client surveys) ⁽³⁾	27.7	–	60.1	12.4	4.3	104.5
Investments in multi-client surveys, net cash	–	–	295.1	–	–	295.1
Capital employed	0.4	0.2	2.3	0.6	–	3.5
Total identifiable assets	0.6	0.4	2.5	0.7	0.1	4.3

⁽¹⁾ Share of operating results of companies accounted for under equity method is US\$(6.9) million for the year ended December 31, 2016.

⁽²⁾ At the group level, Operating Income and EBIT before costs related to the Transformation Plan and impairments amounted to US\$(212.7) million and US\$(220.9) million respectively, for the year ended December 31, 2016.
For the year ended December 31, 2016, Contractual Data Acquisition EBIT includes US\$(0.8) million relating to other intangible assets impairment;
For the year ended December 31, 2016, Non-Operated Resources EBIT includes US\$(54.3) million relating to the Transformation Plan and US\$(31.4) million relating to vessels impairment.
For the year ended December 31, 2016, GGR EBIT also includes US\$(96.8) million impairment of multi-client survey and US\$(0.5) million relating to tangible assets impairment.
For the year ended December 31, 2016, “eliminations and other” includes US\$(33.2) million of general corporate expenses and US\$(36.6) million of intra-group margin.

⁽³⁾ Capital expenditures include capitalized development costs of US\$(34.0) million for the year ended December 31, 2016.
“Eliminations and other” corresponds to the variance of suppliers of assets for the year ended December 31, 2016.

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	2015					
	Contractual	Non			Eliminations	Consolidated
	Data	Operated				
	Acquisition	Resources	GGR	Equipment	And other	Total
	(In millions of US\$, except for assets and capital employed in billions of US\$)					
Revenues from unaffiliated customers	593.2	–	1,107.6	400.1	–	2,100.9
Inter-segment revenues	22.3	–	–	37.2	(59.5)	–
Operating revenues	615.5	–	1,107.6	437.3	(59.5)	2,100.9
Depreciation and amortization (excluding multi-client surveys)	(653.4)	(28.6)	(586.9)	(41.7)	–	(1,310.6)
Depreciation and amortization of multi-client surveys	–	–	(369.5)	–	–	(369.5)
Operating income	(674.5)	(235.8)	(204.0)	25.9	(69.2)	(1,157.6)
Share of income in companies accounted for under equity method ⁽¹⁾	21.7	–	(0.3)	–	–	21.4
Earnings before interest and tax⁽²⁾	(652.8)	(235.8)	(204.3)	25.9	(69.2)	(1,136.2)
Capital expenditures (excluding multi-client surveys) ⁽³⁾	34.3	–	73.2	23.1	15.0	145.6
Investments in multi-client surveys, net cash	–	–	284.6	–	–	284.6
Capital employed	0.7	0.1	2.5	0.6	–	3.9
Total identifiable assets	0.9	0.3	2.9	0.8	0.1	5.0

⁽¹⁾ Share of operating results of companies accounted for under equity method was US\$38.3 million for the year ended December 31, 2015.

⁽²⁾ At the group level, Operating Income and EBIT before costs related to the Transformation Plan and impairments amounted to US\$60.9 million and US\$82.3 million respectively, for the year ended December 31, 2015.

For the year ended December 31, 2015, Contractual Data Acquisition EBIT included:

- (i) US\$(365.0) million of marine goodwill depreciation;
- (ii) US\$(110.0) million relating to impairment of marine equipment;
- (iii) US\$(33.0) million relating to other intangible assets impairment;
- (iv) US\$(10.9) million relating to tangible assets impairment.

For the year ended December 31, 2015, Non-Operated Resources EBIT included US\$(207.8) million relating to the Transformation Plan.

For the year ended December 31, 2015, GGR EBIT also included:

- (i) US\$(438.8) million related to GGR CGUs goodwill depreciation;
- (ii) US\$(41.8) million impairment of multi-client surveys;
- (iii) US\$(11.2) million impairment of intangibles assets.

For the year ended December 31, 2015, “eliminations and other” included US\$(38.6) million of general corporate expenses and US\$(30.6) million of intra-group margin.

⁽³⁾ Capital expenditures included capitalized development costs of US\$(41.5) million for the year ended December 31, 2015. “Eliminations and other” corresponded to the variance of suppliers of assets for the year ended December 31, 2015.

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	2014 (Restated)					Consolidated Total
	Contractual Data Acquisition	Non Operated Resources	GGR	Equipment	Eliminations And other	
	(In millions of US\$, except for assets and capital employed in billions of US\$)					
Revenues from unaffiliated customers	1,024.7	–	1,383.5	687.2	–	3,095.4
Inter-segment revenues	32.2	–	–	114.7	(146.9)	–
Operating revenues	1,056.9	–	1,383.5	801.9	(146.9)	3,095.4
Depreciation and amortization (excluding multi-client surveys)	(754.5)	(16.9)	(193.5)	(66.4)	–	(1,031.3)
Depreciation and amortization of multi-client surveys	–	–	(565.8)	–	–	(565.8)
Operating income	(653.8)	(234.9)	215.1	142.6	(166.5)	(697.5)
Share of income in companies accounted for under equity method ⁽¹⁾	(76.1)	–	(5.6)	–	–	(81.7)
Earnings before interest and tax⁽²⁾	(729.9)	(234.9)	209.5	142.6	(166.5)	(779.2)
Capital expenditures (excluding multi-client surveys) ⁽³⁾	104.3	–	115.0	59.1	3.5	281.9
Investments in multi-client surveys, net cash	–	–	583.3	–	–	583.3
Capital employed	1.2	(0.2)	3.5	0.7	–	5.2
Total identifiable assets	1.5	–	3.8	1.0	0.2	6.5

⁽¹⁾ Share of operating results of companies accounted for under equity method was US\$(68.2) million for the year ended December 31, 2014.

⁽²⁾ At the group level, Operating Income and EBIT before costs related to the Transformation Plan amounted to US\$241.9 million and US\$160.2 million respectively, for the year ended December 31, 2014.

For the year ended December 31, 2014, Contractual Data Acquisition EBIT included:

- (i) US\$(415.0) million of marine goodwill depreciation;
- (ii) US\$(64.7) million relating to tangible assets impairment;
- (iii) US\$(107.0) million impairment of our investment in the SBGS JV (Seabed Geosolutions BV) accounted for under equity method.

For the year ended December 31, 2014, Non-Operated Resources EBIT included US\$(218.0) million relating to the Transformation Plan.

For the year ended December 31, 2014, GGR EBIT included US\$(113.0) million impairment of multi-client surveys notably in Brazil (2007-2009 surveys) and North Sea.

For the year ended December 31, 2014, Equipment EBIT included a US\$(21.7) million impairment of intangible assets.

For the year ended December 31, 2014, “eliminations and other” included US\$(65.5) million of general corporate expenses and US\$(101.0) million of intra-group margin.

⁽³⁾ Capital expenditures included capitalized development costs of US\$(56.8) million for the year ended December 31, 2014. “Eliminations and other” corresponded to the variance of suppliers of assets for the year ended December 31, 2014.

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Analysis by geographic area

Analysis of operating revenues by location of customers

	<u>2016</u>		<u>2015</u>		<u>2014</u>	
	(In millions of US\$)					
North America	356.9	29.9%	528.4	25.2%	781.7	25.3%
Central and South Americas	170.2	14.2%	232.9	11.1%	366.5	11.8%
Europe, Africa and Middle East	481.7	40.3%	875.6	41.7%	1,297.8	41.9%
Asia Pacific	<u>186.7</u>	<u>15.6%</u>	<u>464.0</u>	<u>22.0%</u>	<u>649.4</u>	<u>21.0%</u>
Total operating revenues	1,195.5	100 %	2,100.9	100 %	3,095.4	100 %

Operating revenue attributed to France is US\$23.2 million for the year ended December 31, 2016.

Analysis of operating revenues by category

	<u>2016</u>		<u>2015</u>		<u>2014</u>	
	(In millions of US\$)					
Services rendered ^(a)	906.3	75.8%	1,451.3	69.1%	2,241.0	72.4%
Sales of goods	168.7	14.1%	378.3	18.0%	654.0	21.1%
After-sales on multi-client surveys	111.1	9.3 %	256.2	12.2%	185.5	6.0 %
Leases	<u>9.4</u>	<u>0.8 %</u>	<u>15.1</u>	<u>0.7 %</u>	<u>14.9</u>	<u>0.5 %</u>
Total operating revenues	1,195.5	100 %	2,100.9	100 %	3,095.4	100 %

^(a) Included services rendered and royalties.

NOTE 20 – RESEARCH AND DEVELOPMENT EXPENSES

Analysis of research and development expenses is as follows:

	<u>December 31,</u>		
	<u>2016</u>	<u>2015</u>	<u>2014</u>
	(In millions of US\$)		
Research and development costs	(93.2)	(143.1)	(189.0)
Development costs capitalized	34.0	41.5	56.8
Research and development expensed	<u>(59.2)</u>	<u>(101.6)</u>	<u>(132.2)</u>
Government grants recognized in income	45.6	32.9	31.0
Research and development costs – net	<u>(13.6)</u>	<u>(68.7)</u>	<u>(101.2)</u>

Research and development expenditures related primarily to:

for the Contractual Data Acquisition and GGR segments, projects concerning data processing services and marine acquisition; and

for the Equipment segment, projects concerning seismic data recording equipment.

The increase in Government grants recognized in income in 2016 compared to 2015 is mainly due to a higher level of US R&D tax credit in 2016.

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NOTE 21 – OTHER REVENUES AND EXPENSES

	December 31,		
	2016	2015	2014
	(In millions of US\$)		
Impairment of goodwill	–	(803.8)	(415.0)
Impairment of assets	(129.7)	(206.9)	(306.4)
Restructuring costs	(167.3)	(120.8)	(66.4)
Change in restructuring reserves	113.0	(87.0)	(151.6)
Other revenues (expenses)	1.0	6.2	11.3
Non-recurring revenues (expenses) – net	(183.0)	(1,212.3)	(928.1)
Exchange gains (losses) on hedging contracts	0.2	(2.5)	(0.9)
Gains (losses) on sales of assets	(0.1)	26.5	7.1
Other revenues (expenses) – net	(182.9)	(1,188.3)	(921.9)

Year ended December 31, 2016

Restructuring costs and change in restructuring reserves

As part of the Group Transformation Plan, we expensed US\$167.3 million in 2016, partially offset by the use of the corresponding provisions. The restructuring costs in excess of the release of provisions is mainly explained by additional provisions for onerous contracts booked in the fourth quarter of year 2016. Most of these provisions will be reclassified as financial debt in 2017 (see agreement with ship-owners in note 30 subsequent events) without any cash-out.

Impairment of assets

In 2016, we recognized a US\$(96.8) million impairment of multi-client surveys due to specific market conditions and a US\$(31.4) million impairment of vessels.

Year ended December 31, 2015

Impairment of goodwill

In 2015, we recognized a US\$365.0 million of Marine goodwill impairment and a US\$438.8 million impairment on GGR CGUs (see note 11).

Impairment of assets

This line item included:

- (i) a US\$(110.0) million impairment of vessels and related equipment' s. The net book value of our owned vessels has been aligned on recoverable value assessed as fair value less cost of disposal;
- (ii) a US\$(41.8) million impairment of multi-client surveys due to specific market conditions; and
- (iii) a US\$(55.1) million impairment of intangible assets mainly.

Restructuring costs and change in restructuring reserves

As part of the Group Transformation Plan, we expensed US\$120.8 million in 2015, offset by the use of the corresponding provisions.

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We also recognized additional provisions relating to the restructuring part of the further steps of the transformation plan as announced internally and externally in November 2015. This restructuring plan included the reduction of 930 positions worldwide and across the Group, redundancy costs and further maintenance costs of cold stacked vessels.

Gains (losses) on sales of assets

This line item included gains arising from the sales of some of our assets; and also losses related to marine seismic equipment damaged or scrapped. These costs were fully offset by insurance indemnities included in the line “Other non-recurring revenues (expenses)”.

Year ended December 31, 2014

Impairment of goodwill

In 2014, we recognized US\$415.0 million of Marine goodwill impairment as a consequence of the fleet downsizing plan and deterioration of market conditions (see note 11).

Impairment of assets

This line item included:

- (i) a US\$(128.7) million impairment related to seabed activities of which US\$(107.0) million is impairment of our investment in the Seabed Geosolutions BV JV accounted for under the equity method and US\$(21.7) million is impairment of intangible assets;
- (ii) a US\$(112.7) million impairment of multi-client surveys notably in Brazil (2007-2009 surveys) and North Sea; and
- (iii) a US\$(65.0) million impairment of marine fixed equipment mainly.

Restructuring costs and change in restructuring reserves

As part of the group transformation plan, we paid US\$66.4 million in 2014, mostly offset by the use of the corresponding provisions. Additional provisions have also been booked for the second step of this plan in the fourth quarter of year 2014 (provisions for onerous contracts mainly).

Gains (losses) on sales of assets

This line item included a net gain arising from the sale of Ardiseis FZCO amounting to US\$11.9 million (see note 2); and losses related to marine seismic equipment damaged or scrapped. These costs were fully offset by insurance indemnities included in the line “Other revenues (expenses)”.

NOTE 22 – COST OF FINANCIAL DEBT

	December 31,		
	2016	2015	2014
	(In millions of US\$)		
Current interest expenses related to financial debt	(168.6)	(167.4)	(180.6)
Amortization of deferred expenditures on financial debts	(8.3)	(12.8)	(21.7)
Income provided by cash and cash equivalents	2.7	1.7	1.7
Cost of financial debt, net	<u>(174.2)</u>	<u>(178.5)</u>	<u>(200.6)</u>

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On June 26, 2015, we exchanged 90.3% of the principal amount of the existing 2019 convertible bond (see note 13). Accelerated amortization of deferred expenditures is recorded for US\$4.6 million in line “Amortization of deferred expenditures on financial debts”.

On June 2, 2014, we redeemed in full the US\$225 million outstanding principal amount of our 9.50% Senior Notes due 2016 and US\$265 million of our 7.75% Senior Notes due 2017 (see note 13). Accelerated amortization of deferred expenditures for early repayment is recorded for US\$6.3 million and US\$2.3 million respectively in line “Amortization of deferred expenditures on financial debts”.

By June 30, 2014, the entire 360 million principal amount of the 2016 convertible bonds was cancelled (see note 13). Accelerated amortization of deferred expenditures is recorded for US\$2.4 million in the line item “Amortization of deferred expenditures on financial debts” in our consolidated statement of operations.

NOTE 23 – OTHER FINANCIAL INCOME (LOSS)

	December 31,		
	2016	2015	2014
	(In millions of US\$)		
Exchange gains (losses) net	12.6	(20.5)	2.2
Other financial income (expenses)	(24.0)	(34.0)	(45.2)
Other financial income (loss)	(11.4)	(54.5)	(43.0)

In 2016, other financial expenses include a US\$13.3 million expense related to a risk assessment on a loan to a subsidiary.

In 2016 and 2015, other financial expenses include respectively US\$3.0 million and US\$40.0 million expense related to an impairment of our shares in Geokinetics Inc (see note 7).

In 2014, other financial expenses included a US\$36.5 million expense related to the early repayment of our 360 million convertible bonds due 2016. These expenses also included a US\$5.2 million premium for the early repayment of our US\$350 million 9.50% Senior Notes due 2016, and a US\$3.4 million premium for the early repayment of our US\$400 million 7.75% Senior Notes due 2017.

NOTE 24 – INCOME TAXES

Income tax benefit (expense)

The Company and its subsidiaries compute income taxes in accordance with the applicable tax rules and regulations of the numerous tax authorities where the Group operates. The tax regimes and income tax rates legislated by these taxing authorities vary substantially. In foreign countries, income taxes are often accrued based on deemed profits calculated as a percentage of sales as defined by local government tax authorities.

Due to the mobile nature of seismic acquisition activities, current relationships between the French and foreign components of such tax items are not reliable indicators of such relationships in future periods.

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	December 31,		
	2016	2015	2014
	(In millions of US\$)		
France			
Current income tax expense	–	–	–
Adjustments on income tax recognized in the period for prior periods	0.2	(0.6)	–
Deferred taxes on temporary differences for the period	(5.5)	(15.6)	(14.2)
Deferred taxes recognized in the period for prior periods ⁽¹⁾	0.1	(46.1)	(38.0)
Deferred taxes on currency translation	–	–	(12.0)
Total France	(5.2)	(62.3)	(64.2)
Foreign countries			
Current income tax expense, including withholding taxes ⁽²⁾	(21.3)	(39.4)	(34.3)
Adjustments on income tax recognized in the period for prior periods ⁽³⁾	9.9	(0.9)	36.2
Deferred taxes on temporary differences for the period	44.0	30.0	7.5
Deferred taxes recognized in the period for prior periods ⁽⁴⁾	(12.7)	(2.8)	(65.1)
Deferred taxes on currency translation	(1.0)	(1.6)	(3.9)
Total Foreign countries	18.9	(14.7)	(59.6)
Total income tax benefit (expense)	13.7	(77.0)	(123.8)

- ⁽¹⁾ In 2015 & 2014, included a reversal of deferred tax assets on French losses carried forward amounting to US\$48.0 million and US\$32.0 million respectively based on tax planning.
- ⁽²⁾ In 2014, foreign income tax expense was reduced by a carry back of US\$27.0 million in the United-States.
- ⁽³⁾ In 2016, the current foreign tax is mainly impacted by changes in estimates, use of tax credits and carry-back in North America. In 2014, the current foreign income tax was impacted by the change of tax amortization method on assets in several entities.
- ⁽⁴⁾ In 2016, includes valuation allowances on deferred tax assets in several countries amounting to US\$7.5 million based on revised 2017-2021 tax planning for several entities.
In 2015, included a reversal on deferred tax asset on losses carried forward amounting to US\$4.0 million based on revised 2016-2020 tax planning for the Norway tax group.
In 2014, deferred taxes liabilities related to multi-client surveys increased by US\$85.0 million due to a change of tax amortization methods. This line also included a valuation allowance on deferred tax asset on losses carried forward amounting to US\$26.7 million for Norway and Australia. Both impacts were partially offset by the recognition of a deferred tax asset on 2013 losses carried forward for the US tax group amounting to US\$48.0 million.

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Income tax reconciliation

The reconciliation between income tax expense in the income statement and the theoretical tax charge is detailed below:

	2016	2015	2014
	(In millions of US\$)		
Net income (loss)	(576.6)	(1,446.2)	(1,146.6)
Income taxes	13.7	(77.0)	(123.8)
Net Income (loss) before taxes	(590.3)	(1,369.2)	(1,022.8)
Equity investment companies income	(8.2)	21.4	(81.7)
Theoretical tax basis	(582.1)	(1,390.6)	(941.1)
Enacted tax rate in France	34.43 %	38.00 %	38.00 %
Theoretical taxes	200.4	528.4	357.6
<i>Differences on tax:</i>			
Differences in tax rates between France and foreign countries	23.9	37.1	18.5
Non-deductible part of dividends	(1.8)	(1.1)	(5.8)
Adjustments on the tax expense recognized in the period for prior periods ⁽³⁾	10.1	(2.1)	36.2
Adjustments on the deferred tax expense recognized in the period for prior periods	(5.1)	5.2	(44.4) ⁽⁴⁾
Valuation allowance on deferred tax assets previously recognized on losses on the French tax group ⁽¹⁾	–	(48.0)	(32.0)
Valuation allowance on deferred tax assets previously recognized on losses on foreign entities ⁽⁴⁾	(7.5)	(6.1)	(26.7)
Other permanent differences (including withholding taxes) ⁽²⁾	(6.0)	(342.9)	(206.8)
Deferred tax unrecognized on losses of the period on the French tax group ⁽⁵⁾	(150.4)	(173.9)	(122.0)
Deferred tax unrecognized on losses of the period on foreign entities ⁽⁵⁾	(51.7)	(73.2)	(82.5)
Unrecognized deferred tax on losses of prior periods	2.6	2.8	1.1
Income tax and deferred tax on Argas net income (equity method company)	0.2	(1.6)	(1.1)
Deferred tax on currency translation adjustments	(1.0)	(1.6)	(15.9)
Income taxes	13.7	(77.0)	(123.8)

⁽¹⁾ ^{(3) (4)} See comments on income tax benefit (expense) above.

⁽²⁾ In 2015, permanent differences included US\$365 million impairment of the Marine goodwill and US\$438.8 million related to GGR CGUs goodwill depreciation (see note 21).
In 2014, permanent differences included US\$415 million impairment of the Marine goodwill and US\$107.0 million impairment of our investment in Seabed Geosolutions BV.

⁽⁵⁾ Corresponds notably to the French and Norwegian tax groups according to short and medium term uncertainties and revised 2017-2021 tax planning.

Deferred tax assets and liabilities

	December 31,		
	2016	2015	2014
	(In millions of US\$)		
Total deferred tax assets	26.0	52.2	98.2
Total deferred tax liabilities	(67.6)	(136.3)	(153.8)
Total deferred taxes, net	(41.6)	(84.1)	(55.6)

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Net deferred tax assets (liabilities) per nature

	December 31,		
	2016	2015	2014
	(In millions of US\$)		
Non-deductible provisions (including pensions and profit sharing)	28.9	38.5	38.4
Tangible assets	46.9	42.5	77.4
Effect of currency translation adjustment not recognized in income statement	(42.5)	(44.5)	(30.7)
Multi-client surveys (including deferred revenues)	(152.8)	(185.7)	(190.2)
Assets reassessed in purchase accounting of acquisitions	(59.4)	(64.2)	(93.1)
Development costs capitalized	(26.9)	(25.2)	(25.7)
Other deferred revenues	2.0	(3.8)	2.0
Convertible bonds and other financial instruments	1.6	0.8	(23.9)
Other ^(a)	43.9	49.8	11.8
Total deferred tax assets net of deferred tax (liabilities) related to timing differences	(158.3)	(191.8)	(234.0)
Tax losses carried forward	116.7	107.7	178.4
Total deferred tax assets net of deferred tax (liabilities)	(41.6)	(84.1)	(55.6)

^(a) Includes deferred tax assets linked to R&D credits for US\$39.4 million in 2016, US\$27.0 million in 2015 and US\$5.4 million in 2014.

Deferred tax assets (liabilities) per tax group as of December 31, 2016

	France ⁽¹⁾	Norway ⁽¹⁾	US ⁽¹⁾	Other	Total
	(In millions of US\$)				
Net deferred tax assets (liabilities) related to timing differences	(74.3)	–	(67.4)	(16.6)	(158.3)
Deferred tax assets on losses carried forward	42.5	13.0	45.0	16.2	116.7
Total deferred tax assets (liabilities)	(31.8)	13.0	(22.4)	(0.4)	(41.6)

⁽¹⁾ The deferred taxes recognized on losses carried forward are recoverable without expiration date.

The deferred tax assets recognized on losses carried forward of the Norwegian and US tax group are based on revised 2017-2021 tax planning.

The Group records valuation allowances on any deferred tax asset recognized on losses carried forward for entities that have a recent history of generating losses and low recovery perspectives or, for which there is a dispute with tax authorities.

Net operating loss carried forward not recognized as of December 31, 2016

	France	Foreign countries	Total
	(In millions of US\$)		
Losses scheduled to expire in 2017	–	0.6	0.6
Losses scheduled to expire in 2018 and thereafter	–	178.0	178.0
Losses available indefinitely	1,235.3	104.6	1,339.9
Total	1,235.3	283.2	1,518.5

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Tax audit and litigation

US

The tax audit regarding CGG Holding (U.S.) Inc. for the 2007 fiscal year and extended to 2008-2011 is finalized but the procedure is still pending until the conclusions of the CGG Americas litigation. In December 2016, IRS informed that they intend to close the issue in 2017 without further contest.

The Group is litigating the tax authorities' position related to the tax audit of CGG Americas covering fiscal years 2006 and 2007 before the Civil Courts and does not expect any material consequences. All petitions, motions, objections and rebuttals have been filed during 2012. Courts decisions are still pending.

In 2012, CGG Holding (U.S.) Inc. has received a redetermination notice regarding its Texas State tax for the years 2007 and 2008 for US\$3.4 million. The Group is litigating the Texas Comptroller's position before the Civil Courts. Depositions occurred in June 2013 and were favorable to the Company. A favorable decision was rendered in February 2014 and confirmed in October 2014. The Comptroller appealed in November 2014. Hearing took place in November 2015. In March 2016, the Third Court of Appeals rendered their decision in favor of CGG and issued the Mandate in June 2016. Refunds are awaited.

No provision is recognized as the Group considers it more likely than not that there will be favorable outcomes from the litigations.

Brazil

Municipality of Rio de Janeiro has claimed that services taxes (ISS) are payable for 2001 to 2008 which has been duly disputed. Further to the favorable decisions of the judicial court received by Veritas do Brasil Ltda in 2014, the administrative procedure covering 2001 to May 2003 has been officially terminated in March 2015 and the tax assessment cancelled in January 2016. In March 2016, the Municipality filed a Rescission Action in order to have the favorable decision cancelled and the Group filed the response to the action in June 2016. The Group considers that there is no proper ground for this action.

For years September 2003-2008 (taxes at stake: US\$12 million), the administrative procedure is still ongoing and should result in the same cancellation considering that the reassessment is based on the same arguments than those cancelled by the judicial court.

Following a 2012 audit on year 2009, CGG do Brasil Participacoes Ltda was reassessed US\$6.1 million of withholding tax and US\$4 million of CIDE (Contribution for Intervening in Economic Domain) on charter contracts. The reassessment is disputed. In 2014, the company received and appealed against an unfavorable decision from the Administrative Court. There is no update in 2016.

Following an audit conducted in 2013 and 2014 for the tax years 2009 to 2013, CGG do Brasil Participacoes Ltda received in August 2014 a reassessment of US\$17 million for ISS on charter and services imports. The company's appeal against the reassessment has been rejected in 2015. The company appealed against the negative decision in Jan 2016.

No provision is recognized as the Group considers that the above contingencies should resolve in its favor.

Peru

The Peru tax authorities are claiming additional withholding taxes on technical services for 2012 and 2013 for CGG Land (U.S.) Inc Sucursal del Peru for an amount of US\$13 million. The company has disputed the reassessment and the litigation is now at the Fiscal Tribunal stage. As it is more likely than not that the company should prevail at the Tribunal stage, no provision is recognized. The oral hearing took place in Dec 2016 and resolution is awaited.

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Middle East

In Egypt, there are ongoing discussions with the tax authorities on the US\$15 million tax claim, based on revenues earned without any deduction of costs incurred. In 2015, there is an issuance of executive regulations that confirms the deemed profit taxation principle. A provision has been recognized based on the Group's assessment of the potential tax risk. An agreement has been reached with the tax authorities in Feb 2017 to settle the taxes at approximately US\$1.5 million which is consistent with the existing provision in the accounts.

Norway

In 2015, the Norwegian tax authorities issued a reassessment of US\$24 million before interest and penalties against CGG Marine Resources Norge AS which is primarily due to transfer pricing adjustments. The reassessment has been duly disputed. No provision is recognized as the Group has strong grounds to support its position.

India

The Group has litigations with Indian Tax authorities regarding the application of the specific regime dedicated to activities in connection with exploration of mineral oil (subject to 4.2% withholding tax) for years 2006 to 2012. Indian Tax Authorities has changed its interpretation indeed, by requesting a 10% withholding tax as fees for technical services.

In January 2012, Delhi Income Tax Appellate Tribunal (ITAT) has confirmed the reassessment. However, the Group considers that the ITAT decision has been based on a wrong interpretation of the law and the facts, and filed an appeal accordingly to the Nainital High Court. The High Court hearing has been constantly adjourned in 2015 and no definite date has been set for the hearing.

The whole industry is concerned. Several judgments were issued in favor of seismic companies, stating that seismic activities are eligible to the specific regime issued from Section 44BB. In 2015, the Supreme Court of India pronounced a ruling on the application of Section 44BB to a non-resident oil field service provider which is binding on all courts in India.

In 2016, the Section 44BB litigations have been largely concluded in favor of the Group, leaving only one assessment year which has not been resolved. However, the Group anticipates similar favorable outcome and therefore no provision is recognized.

NOTE 25 – PERSONNEL

The analysis of personnel is as follows:

	Year ended December 31,		
	2016	2015	2014
Personnel employed under French contracts	1,393	1,742	1,901
Personnel employed under local contracts	4,373	5,535	6,639
Total	5,766	7,277	8,540
Including field staff of:	547	992	1,225

The total cost of personnel employed was US\$653.5 million in 2016, US\$810.2 million in 2015 and US\$1,002.6 million in 2014.

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NOTE 26 – KEY MANAGEMENT PERSONNEL COMPENSATION

From February 1st 2013, the Corporate Committee (“C-Com”) replaced the Executive Committee. The C-Com is chaired by the Chief Executive Officer and is composed of the CEO, three Senior Executive Vice Presidents – the Chief Financial Officer and the two Group Chief Operating Officers – and the Human Resources Executive Vice President.

The Director fees and C-Com members’ remuneration were:

	Year ended December 31,		
	2016	2015	2014
		(in US\$)	
Short-term employee benefit paid ^(a)	3,923,272	3,458,169	4,038,503
Directors’ fees	646,042	887,344	1,021,984
Long-term employee benefit – pension ^(b)	28,444	37,433	77,848
Long-term employee benefit – supplemental pension ^(c)	778,027	832,804	920,437
Share-based payments ^(d)	443,575	270,940	2,340,198

^(a) Excludes social contributions.

^(b) Cost of services rendered and interest cost.

^(c) Cost of services rendered and interest cost on the supplemental pension implemented by the end of 2004.

^(d) Expense in the income statement related to the stock options and performance shares plans.

Contractual indemnity in case of termination

Chief Executive Officer

Agreement in force until January 4, 2017

On June 4, 2014, the Board of Directors renewed the term of office of Mr. Jean-Georges Malcor for a three-year period, and also renewed, for the duration of his term in office, the terms and conditions of the advantages granted to Mr. Jean-Georges Malcor in case of termination of his term of office, which were previously approved by the Board of Directors on May 10, 2012 and ratified at the General Meeting of May 3, 2013. The renewal of the advantages was ratified at the General Meeting held on May 29, 2015.

These advantages are the following:

Mr. Jean-Georges Malcor does not benefit from any contractual termination indemnity, except in case of a forced departure relating to a change of control or a change of strategy. In such case, his indemnity shall be equal to the difference between:

- (i) a gross amount of 200% of the gross fixed compensation paid by the Company to Mr. Jean-Georges Malcor during the 12-month period preceding his departure date, to which is added the annual average of the variable compensation paid by the Company to Mr. Jean-Georges Malcor over the 36-month period preceding his departure date, (hereinafter “the Reference Annual Compensation”), and
- (ii) any sum to which Mr. Jean-Georges Malcor may be entitled as a result of his departure from the Group, including any sums to be paid pursuant to his non-competition agreement.

The indemnity global amount shall not exceed 200% of the Reference Annual Compensation.

Pursuant to Article L.225-42-1 of the Commercial Code, the payment of the special termination indemnity referred to hereinabove shall remain subject to the achievement of the following performance conditions, related to the Company’s performance:

The average, calculated over the 60 trading days preceding the departure date, of the ratio of the CGG ADS price over the PHLX Oil Service SectorSM (OSXSM) index shall equal at least two-thirds of the same average ratio over the same 60-day period four years before the date on which Mr. Malcor leaves the Group;

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The average, calculated over the 60 trading days preceding the departure date, of the ratio of the CGG share price over the SBF 120 index shall equal at least two-thirds of the same average ratio over the same 60-day period four years before the date on which Mr. Malcor leaves the Group;

The average margin rate of the Group EBITDAS over the four years preceding the date on which Mr. Malcor leaves the Group shall be at least 25%.

Payment of the full amount of the special termination indemnity is subject to the fulfillment of two out of three aforementioned conditions. If only one condition is fulfilled, then Mr. Jean-Georges Malcor will be entitled to receive only 50% of the special termination indemnity.

Finally, pursuant to said Article L.225-42-1 of the French Commercial Code in particular, the Board of Directors shall verify prior to the payment of the special severance payment (i) that the performance conditions described above are duly fulfilled and (ii) that the payment of such special termination indemnity complies with the Corporate Governance Code applicable at the date of departure.

Amended agreement dated January 4, 2017:

On January 4, 2017, the Board of Directors amended the triggering events and the performance conditions of the advantages granted to Mr. Jean-Georges Malcor in case of termination of his term of office. They are now as follows:

Mr. Jean-Georges Malcor is entitled to receive the special termination indemnity in case of dismissal, non-renewal of his term of office or in any other event of a forced departure linked to a change of control resulting in a substantial change in situation or a change of strategy.

The payment of the special termination indemnity will depend on the level of the average rate of achievement of the objectives relating to Mr. Jean-Georges Malcor's variable compensation calculated over the three financial years preceding his departure date as follows:

If such average rate is below 40%, no special termination indemnity will be paid;

If such average rate is higher than 40%, the special termination indemnity will be equal to 100% of the Reference Annual Compensation.

The other provisions of the agreement remain unchanged.

Pursuant to said Article L.225-42-1 of the French Commercial Code, this amended agreement shall be subject to the ratification of the General Meeting convened to approve the 2016 financial statements.

Corporate Officers (Directeurs Généraux Délégués)

The benefits to be granted to Messrs. Frydman and Rouiller in the case of their departure from the Group were renewed by the Board of Directors on February 25, 2015 upon renewal of their term of office and were ratified by the General Meeting of May 29, 2015.

The benefits to be granted to Ms. Zurquiyah in the case of departure from the Group were approved by the Board of Directors on July 30, 2015 and were ratified during the General Meeting of May 27, 2016.

These benefits include the following:

Messrs. Frydman and Rouiller and Ms. Zurquiyah will benefit from a special termination indemnity in the event of a forced departure relating to a change of control or a change of strategy. The amount of such indemnity shall be equal to the difference between:

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- (i) a gross amount of 200% of the gross fixed compensation paid by the Company and/or any of its affiliates during the 12-month period preceding their departure date, to which is added the annual average of the variable compensation paid by the Company and/or any of its affiliates over the 36-month period preceding their departure date (hereinafter “the Reference Annual Compensation”), and
- (ii) any other amounts to which they may claim in case of departure from the Group, particularly, the indemnities that could be paid in connection with their non-compete agreement referred to below.

The global amount of such special termination indemnity shall not exceed 200% of the Reference Annual Compensation.

In accordance with Article L.225-42-1 of the French Commercial Code, payment of the special termination indemnity is subject to performance conditions to be assessed with regard to the Company’s performance based on the fulfillment of at least two of the following three objectives:

The average of the ratio between the CGG ADS price over the PHLX Oil Service SectorSM (OSXSM) index over the 60 trading days preceding the date of departure shall equal at least two-thirds of the same average ratio assessed over the same period of 60 trading days four years before the beneficiary leaves the Group;

The average of the ratio of the CGG share price over the SBF 120 index over the 60 trading days preceding the date of departure shall equal at least two-thirds of the same average ratio assessed over the same period of 60 trading days four years before the beneficiary leaves the Group;

The average Group EBITDAS margin over the four years preceding the date of departure shall be at least 25%.

Payment of the full amount of the special termination indemnity is subject to the fulfillment of two out of three aforementioned conditions. Should only one of the conditions be fulfilled, then the beneficiary would only be entitled to 50% of his/her special termination indemnity.

Finally, pursuant to said Article L.225-42-1 of the French Commercial Code in particular, the Board of Directors shall verify prior to the payment of the special severance payment (i) that the performance conditions described above are duly fulfilled and (ii) that the payment of such special termination indemnity complies with the Corporate Governance Code applicable at the date of departure.

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NOTE 27 – RELATED PARTY TRANSACTIONS

The Group enters into contracts with related parties concluded at arm's length.

	December 31,						
	2016			2015			2014
	Joint		Total	Joint		Total	Total
	Ventures	Associates		Ventures	Associates		
	(a)	(b)		(a)	(b)		
(In millions of US\$)							
Sales of geophysical equipment	1.3	3.9	5.2	1.7	68.8	70.5	67.8
Equipment rentals and services rendered	9.8	18.2	28.0	12.5	48.0	60.5	40.3
Operating Revenue	11.1	22.1	33.2	14.2	116.8	131.0	108.1
Charter expenses	(28.3)	–	(28.3)	(29.9)	–	(29.9)	(29.9)
Ship management expenses	(36.2)	–	(36.2)	(70.6)	–	(70.6)	(110.7)
Costs of services rendered	(4.1)	(3.6)	(7.7)	(7.8)	(6.8)	(14.6)	(27.7)
Cost of operations	(68.6)	(3.6)	(72.2)	(108.3)	(6.8)	(115.1)	(168.3)
Other financial income (loss)	(1.3)	1.5	0.2	(1.6)	3.4	1.8	–
Trade accounts and notes receivable, including agency arrangements	20.7	15.6	36.3	23.1	35.0	58.1	46.6
Financial assets (see note 7)	14.9	–	14.9	24.0	38.4	62.4	71.8
Receivables	35.6	15.6	51.2	47.1	73.4	120.5	118.4
Trade accounts and notes payable, including agency arrangements	25.9	33.6	59.5	23.9	55.3	79.2	82.1
Financial liabilities - Finance lease debt	15.0	–	15.0	16.8	–	16.8	18.5
Payables	40.9	33.6	74.5	40.7	55.3	96.0	100.6
Future leases commitments	203.5	–	203.5	236.7	–	236.7	269.9
Future ship management costs	66.7	–	66.7	97.7	–	97.7	162.4
Contractual Obligations	270.2	–	270.2	334.4	–	334.4	432.3

(a) Mainly correspond to investments in companies accounted for using the equity method in our Marine acquisition Segment (see note 8);

(b) Mainly correspond to investments in companies accounted for using the equity method in our Land and Multi-Physics acquisition Segment (see note 8);

No credit facility or loan was granted to the Company by shareholders during the last three years.

NOTE 28 – SUPPLEMENTARY CASH FLOW INFORMATION

Operating activities

In 2016, depreciation and amortization, together with multi-client surveys depreciation, include US\$129.7 million of asset impairment as described in note 21

In 2015, depreciation and amortization, together with multi-client surveys depreciation, included US\$365.0 million of Marine goodwill impairment as described in note 11, US\$438.8 million impairment on GGR CGUs as described in note 11 and US\$206.9 million of asset impairment as described in note 21. In 2014, depreciation and amortization, together with multi-client surveys depreciation, included US\$415.0 million of Marine goodwill impairment and US\$306.4 million of asset impairment as described in note 21.

In 2016, 2015 and 2014, variance in provisions mainly related to restructuring and onerous contracts linked to the transformation plan (see notes 16 and 21). In 2015, variance in provision also included US\$40.0 million of depreciation of our shares in Geokinetics.

In 2014, other non-cash items corresponded notably to the elimination of call premiums for early repayment of high yield bonds and 2016 convertible bonds (see note 13).

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The impact of changes in exchange rate on financial items corresponded to the elimination of the unrealized exchange gains (losses) resulting from the gross financial debt in US dollars located in those subsidiaries whose functional currency is euro.

Investing activities

In 2014, proceeds from disposal of financial assets mainly related to the sale of Optoplan to Alcatel-Lucent Submarine Networks (ASN) (see note 2).

In 2015, acquisition mainly related to the earn-out linked to the acquisition of Geophysical Research Corporation, LLC in 2012.

In 2016, 2015 and 2014, variation in loan granted mainly related to a loan to Seabed Geosolutions BV (see note 8).

In 2016, variation in other financial assets mainly relates to long-term deposits made to fulfil some collateral requirements.

Financing activities

In 2016, we received net proceeds 337 million from our capital increase (or US\$367.5 million).

In 2014, dividends paid and share capital reimbursements to non-controlling interests of integrated entities included the payment of the purchase option on the shares of Geomar SAS (see note 2).

In 2015 and 2014, non-cash investing and financing transactions that are excluded from the consolidated statements of cash flows were not material.

Cash and cash equivalents

	Year ended December 31,		
	2016	2015	2014
	(In millions of US\$)		
Cash	415.1	318.5	285.0
Cash equivalents (mainly short-term deposits)	123.7	66.8	74.1
Total cash and cash equivalents	538.8	385.3	359.1

In 2016, Cash and Cash equivalents included trapped cash amounting to US\$93 million. Trapped cash means any cash and cash equivalent held by a subsidiary that operates in a country where exchange controls or other legal restrictions apply when the balances are not available for general use by the Group (cash in subsidiaries not available at Group level). The cash equivalents do not include US\$21 million of cash pledged to fulfil some collateral requirements.

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NOTE 29 – EARNINGS PER SHARE

	Year		
	2016 ^{(3) (4)}	2015 ^{(3) (4)}	2014 ^{(3) (4)}
	(In millions of US\$, excepted per share data)		
Net income attributable to shareholders ^(a)	(573.4)	(1,450.2)	(1,154.4)
Less financial expenses on convertible bond, net of tax	14.3	16.8	14.8
Adjusted net income attributable to shareholders for diluted earnings per shares^(b)	(559.1)	(1,433.4)	(1,139.6)
<u>Effect of dilution</u>			
Ordinary shares outstanding at the beginning of the year ^(c)	6,080,535	6,080,535	6,074,549
Weighted average number of ordinary shares outstanding during the year ^(d)	14,714,896	–	3,243
Weighted average number of ordinary shares outstanding^{((e) =(c) +(d))}	20,795,431	6,080,535	6,077,792
Dilutive potential shares from 2007 stock options	–	–	(1)
Dilutive potential shares from 2008 stock options	–	(1)	(1)
Dilutive potential shares from 2009 stock options	(1)	(1)	(1)
Dilutive potential shares from 2010 stock options	(1)	(1)	(1)
Dilutive potential shares from 2011 stock options	(1)	(1)	(1)
Dilutive potential shares from 2012 stock options	(1)	(1)	(1)
Dilutive potential shares from 2013 stock options	(1)	(1)	–
Dilutive potential shares from 2014 stock options	(1)	–	–
Dilutive potential shares from 2015 stock options	–	–	–
Dilutive potential shares from 2016 stock options	–	–	–
Total dilutive potential shares from stock options	–	–	–
Dilutive potential shares from 2013 performance shares allocation	–	–	–
Dilutive potential shares from 2014 performance shares allocation	(2)	(2)	(2)
Dilutive potential shares from 2015 performance shares allocation	(2)	(2)	–
Dilutive potential shares from 2016 performance shares allocation	(2)	–	–
Total dilutive potential shares from performance shares allocation	–	–	–
Dilutive potential shares from Convertible bonds maturity 2016	–	–	–
Dilutive potential shares from Convertible bonds maturity 2019	(2)	(2)	(2)
Dilutive potential shares from Convertible bonds maturity 2020	(2)	(2)	–
Dilutive weighted average number of shares outstanding adjusted when dilutive^(f)	20,795,431	6,080,535	6,077,792
<u>Earnings per share</u>			
Basic^{(a)/(e)}	(27.57)	(238.50)	(189.95)
Diluted^{(b)/(f) (5)}	(27.57)	(238.50)	(189.95)

⁽¹⁾ Exercise price of these stock options was higher than the average market price of the underlying shares.

⁽²⁾ As our net result was a loss, stock options, performance shares plans and convertible bonds had an anti-dilutive effect; as a consequence, potential shares linked to those instruments were not taken into account in the dilutive weighted average number of shares or in the calculation of diluted loss per share.

⁽³⁾ As a result of the 5 February 2016 CGG SA capital increase via an offering of preferential subscription rights to existing shareholders, the calculation of basic and diluted earnings per shares for 2016, 2015 and 2014 has been adjusted retrospectively. Number of ordinary shares outstanding has been adjusted to reflect the proportionate change in the number of shares.

⁽⁴⁾ As a result of the July 20, 2016 reverse stock split the calculation of basic and diluted earnings per shares for 2015 and 2014 has been adjusted retrospectively. Number of ordinary shares outstanding has been adjusted to reflect the proportionate change in the number of shares.

⁽⁵⁾ *As our net result was a loss, the restatement of “financial expenses on convertible bond, net of tax” had an anti-dilutive effect and shouldn’t be taken into account in the calculation of diluted loss per share. As a result the formula for the diluted loss per share is (a) / (f).*

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NOTE 30 – SUBSEQUENT EVENTS

Proactive management of marine liabilities

On January 20, CGG entered into agreements to substantially reduce the cash burden of the charter agreements in respect of three cold-stacked seismic vessels. As part of the agreements to settle those amounts on a non-cash basis, CGG issued US\$58.6 million of its 2021 Notes bearing a 6.5% interest to the relevant charter counterparties. The consequences of these agreements are reflected in the note 18 “Contractual obligations, commitments and contingencies”.

On March 13, CGG entered into an agreement to substantially reduce the cash burden of the charter agreement in respect of the “*Oceanic Champion*”, an active seismic vessel. As part of the agreements to settle those amounts on a non-cash basis, CGG issued US\$12.1 million of its 2021 Notes bearing a 6.5% interest to the relevant charter counterparties. The consequences of this agreement are reflected in the note 18 “Contractual obligations, commitments and contingencies”.

Initiation of the financial restructuring process

On February 6, CGG solicited consents from the holders of each series of Senior Notes and the creditors under the Term Loan B to permit the appointment of a ‘mandataire ad hoc’ without such action constituting an Event of Default.

On February 20, CGG announced receipt of requisite majority consent from holders of its Term loan B, 2020 Notes, 2021 Notes and 2022 Notes and extension of consent solicitation in respect of its 2017 Notes.

On February 23, CGG announced execution of supplemental indentures in respect of its 2020 Notes, 2021 Notes and 2022 Notes to allow for appointment of a ‘mandataire ad hoc’ and its intention to discharge and satisfy the indenture in respect of its 2017 Notes. The payment to the indenture trustee, in trust for the bondholders, of the aggregate outstanding principal (\$8.3m) and interest on the 2017 Notes was done on Friday, February 24, 2017. Following this operation, the amount of unsecured debt (Senior Notes and Convertibles) reached US\$1.884bn.

On February 27, 2017, a ‘mandataire ad hoc’ has been nominated to better organize and facilitate discussions with and between all stakeholders of the financial restructuring of the Group.

Fleet ownership changes

In April 2017, we entered into agreements with Eidesvik, the lenders under our Nordic credit facility and the lenders under the credit facilities of Eidesvik Seismic Vessels (“ESV”) and Oceanic Seismic Vessels (“OSV”), for the implementation of a new ownership set up for our seismic fleet.

Under the new arrangements, Global Seismic Shipping AS (“GSS”), a company organized under the laws of Norway and 50% owned by each of us (through our subsidiary, Exploration Investment Resources II AS) and Eidesvik, holds (i) CGG Geo Vessels AS (to be renamed Geo Vessels AS), our former wholly-owned subsidiary, which owns the five previously cold-stacked vessels (*Geo Coral* (having been re-rigged), *Geo Caribbean*, *Geo Celtic*, *CGG Alizé* and *Oceanic Challenger*), and (ii) ESV and OSV (in which we previously held direct 49% stakes), which respectively own the *Oceanic Vega* and *Oceanic Sirius*. For more details related to the new ownership set up of our seismic fleet, see “Item 4: Information on the Company – Recent Developments – Fleet ownership changes”.

In connection with the new ownership set up of our seismic fleet, Geo Vessels AS continues to be the borrower of the loan outstanding under our Nordic credit facility. The removal of Geo Vessels AS from our consolidated perimeter is expected to result in a reduction of the gross debt of the Group by US\$182.5 million,

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corresponding to the principal amount of loans under the Nordic credit facility outstanding as of March 31, 2017. We expect that the new ownership set up of our seismic fleet will further improve our competitiveness through the reduction of the charter day-rate of our 3D high-capacity seismic vessels and increase our cost-savings due to the reduction of charter liabilities of certain non-operated vessels and the externalization of cold-stacking costs, thus improving our liquidity in the short- and medium-term.

Consent from lenders

On March 31, 2017, we obtained consent from the requisite majority of the lenders to disapply the leverage ratio (defined as total net financial debt to EBITDAS) and the interest cover ratio (defined as consolidated EBITDAS to total interest costs) threshold as of March 31, 2017 under our Revolving Credit Facilities, our Term Loan B and our Nordic Facility.

NOTE 31 – LIST OF PRINCIPAL CONSOLIDATED SUBSIDIARIES AS OF DECEMBER 31, 2016

Subsidiaries are fully consolidated from the date of their acquisition, being the date on which the Group obtains the control.

Dormant subsidiaries of the Group have not been included in the list below.

Percentage of interest generally corresponds to percentage of control in the company.

Siren			% of
Number ^(a)	Companies Names	Country of incorporation	interest
403 256 944	CGG Services SAS	France	100.0
410 072 110	CGG Explo SARL	France	100.0
413 926 320	Geomar SAS	France	100.0
	CGG Holding BV	Netherlands	100.0
	CGG Marine BV	Netherlands	100.0
	CGG Data Management (Netherlands) BV	Netherlands	100.0
	CGG Services (NL) BV	Netherlands	100.0
	CGG International SA	Switzerland	100.0
	CGG Data Services AG	Switzerland	100.0
	CGG Marine Resources Norge AS	Norway	100.0
	CGG Geo Vessels AS	Norway	100.0
	CGG Services (Norway) AS	Norway	100.0
	Exploration Investment Resources II AS	Norway	100.0
	Exploration Vessel Resources II AS	Norway	100.0
	CGG Services (UK) Limited	United Kingdom	100.0
	CGG Data Management (UK) Limited	United Kingdom	100.0
	Robertson (UK) Limited	United Kingdom	100.0
	Robertson GeoSpec International Limited	United Kingdom	100.0
	CGG Holding I (UK) Limited	United Kingdom	100.0
	CGG Holding II (UK) Limited	United Kingdom	100.0
	CGG Holding III (UK) Limited	United Kingdom	100.0
	CGG do Brasil Participações Ltda	Brazil	100.0
	Veritas do Brasil Ltda	Brazil	100.0
	LASA Prospeccoes SA	Brazil	100.0
	CGG Mexico, SA de CV	Mexico	100.0
	Geoinnovation Corporativa S. de RL de CV	Mexico	100.0
	CGG Holding (U.S.) Inc.	United States of America	100.0
	CGG Services (U.S.) Inc.	United States of America	100.0
	CGG Land (U.S.) Inc.	United States of America	100.0

Viking Maritime Inc.	United States of America	100.0
CGG Canada Services Ltd	Canada	100.0

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Siren			% of
Number ^(a)	Companies Names	Country of incorporation	interest
	CGG Services (Canada) Inc.	Canada	100.0
	CGG Services (Australia) Pty Ltd	Australia	100.0
	CGG Aviation (Australia) Pty Ltd	Australia	100.0
	PT CGG Services Indonesia ⁽¹⁾	Indonesia	95.0
	CGG Services India Private Ltd	India	100.0
	CGG Technology Services (Beijing) Co. Ltd	China	100.0
	CGG Geoscience (Beijing) Ltd	China	100.0
	CGG Services (Singapore) Pte Ltd	Singapore	100.0
	CGG Services (Malaysia) Sdn Bhd	Malaysia	100.0
	CGG Vostok	Russia	100.0
	Compagnie Générale de Géophysique (Nigeria) Ltd	Nigeria	100.0
	Veritas Geophysical (Nigeria) Ltd	Nigeria	100.0
	CGG Airborne Survey (Pty) Ltd	South Africa	100.0
866 800 154	Sercel Holding SAS	France	100.0
378 040 497	Sercel SAS	France	100.0
	Sercel England Ltd	United Kingdom	100.0
	Sercel-GRC	United States of America	100.0
	Sercel Inc.	United States of America	100.0
	Sercel Canada Ltd	Canada	100.0
	Sercel Australia Pty Ltd	Australia	100.0
	Hebei Sercel-Junfeng Geophysical Prospecting Equipment Co. Ltd ⁽¹⁾	China	51.0
	Sercel (Beijing) Technological Services Co. Ltd	China	100.0
	Sercel Singapore Pte Ltd	Singapore	100.0
	De Regt Marine Cables BV	Netherlands	100.0
	De Regt Germany GmbH	Germany	100.0

^(a) Siren number is an individual identification number for company registration purposes under French law.

⁽¹⁾ % of control for these subsidiaries amount to 100%.

Non-controlling interests

The Group does not fully consolidate any significant entity in which it holds less than a majority of voting rights.

Subsidiaries with non-controlling interests do not contribute materially to the activities of the Group, the consolidated net income, cash flows, liabilities or assets as of December 31, 2016. Hebei Sercel-Junfeng Geophysical Prospecting Equipment Co. Ltd, a subsidiary of Sercel SAS based in China, is the major entity with non-controlling interests.

NOTE 32 – CONDENSED CONSOLIDATING INFORMATION FOR CERTAIN SUBSIDIARIES

At December 31, 2016 the obligations to pay our outstanding Senior Notes are guaranteed by certain subsidiaries: CGG Canada Services Ltd, CGG Marine Resources Norge AS, CGG Holding (U.S.) Inc, Alitheia Resources Inc, CGG Land (U.S.) Inc., CGG Services (U.S.) Inc., Viking Maritime Inc., CGG Marine BV, CGG Holding BV, CGG Holding I (UK) Ltd, CGG Holding II (UK) Ltd, as the “Services guarantors”, and Sercel Inc., Sercel Australia Pty Ltd, Sercel Canada Ltd and Sercel GRC as the “Equipment guarantors”.

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The following table presents condensed consolidated financial information in IFRS for the year ended December 31, 2016 for the Company, the Guarantor subsidiaries, the Non-Guarantor subsidiaries and the Eliminations to arrive at CGG on a consolidated basis.

	Year ended December 31, 2016					
	CGG	Services Guarantors	Equipment Guarantors	Non Guarantors	Consolidation Adjustments	Group Consolidated
	(In millions of US\$)					
Goodwill	–	1,056.0	88.1	79.2	–	1,223.3
Intangible assets (including multi-client surveys)	21.4	492.8	24.5	934.9	(288.9)	1,184.7
Property, plant and equipment	68.1	278.1	31.1	513.9	(182.6)	708.6
Investment in affiliates	1,771.6	2,684.7	7.1	405.8	(4,869.2)	–
Other non-current assets	1,229.4	349.0	4.5	842.3	(2,156.8)	268.4
Current assets	623.6	536.9	307.0	1,306.9	(1,297.9)	1,476.5
Total assets	3,714.1	5,397.5	462.3	4,083.0	(8,795.4)	4,861.5
Financial debt (including bank overdrafts, current and non-current portion)	2,139.7	2,170.9	–	693.6	(2,153.8)	2,850.4
Other non-current liabilities (excluding financial debt)	40.7	11.3	19.8	219.8	(40.5)	251.1
Current liabilities (excluding current portion of debt)	376.9	472.0	62.9	1,053.4	(1,362.0)	603.2
Total liabilities (excluding equity)	2,557.3	2,654.2	82.7	1,966.8	(3,556.3)	3,704.7
Equity	1,156.8	2,743.3	379.6	2,116.2	(5,239.1)	1,156.8
Operating revenues	54.3	427.2	100.7	1,554.1	(940.8)	1,195.5
Depreciation and amortization	7.4	326.0	12.4	410.6	(46.0)	710.4
Operating income (loss)	165.3	(73.8)	3.0	(368.8)	(122.2)	(396.5)
Equity in income of affiliates	335.9	(128.6)	–	1.9	(209.2)	–
Net income (loss)	(576.6)	(138.6)	7.2	(385.3)	516.7	(576.6)
Cash flow from operating activities	678.9	105.0	(0.6)	119.6	(547.8)	355.1
Cash flow from investing activities	4.0	(44.3)	(3.5)	(346.0)	8.6	(381.2)
Cash flow from financing activities	(531.1)	(50.5)	4.6	217.4	535.6	176.0
Effect of exchange rates on cash	–	–	–	–	3.6	3.6
Impact of changes in consolidation scope	–	–	–	–	–	–
Cash at opening	178.6	49.1	2.3	155.3	–	385.3
Cash at closing	330.4	59.3	2.8	146.3	–	538.8

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The following table presents condensed consolidated financial information in IFRS for the year ended December 31, 2015 for the Company, the Guarantor subsidiaries, the Non-Guarantor subsidiaries and the Eliminations to arrive at CGG on a consolidated basis.

	Year ended December 31, 2015					Group Consolidated
	CGG	Services Guarantors	Equipment Guarantors	Non Guarantors	Consolidation Adjustments	
	(In millions of US\$)					
Goodwill	–	1,056.0	88.1	84.6	–	1,228.7
Intangible assets (including multi-client surveys)	24.9	644.4	27.9	866.7	(277.2)	1,286.7
Property, plant and equipment	74.1	341.2	38.3	624.9	(193.3)	885.2
Investment in affiliates	2,327.4	2,299.8	7.1	588.0	(5,222.3)	–
Other non-current assets	1,130.9	524.9	4.3	690.3	(2,009.9)	340.5
Current assets	559.2	603.9	287.0	1,799.6	(1,477.8)	1,771.9
Total assets	4,116.5	5,470.2	452.7	4,654.1	(9,180.5)	5,513.0
Financial debt (including bank overdrafts, current and non-current portion)	2,173.6	1,835.9	–	898.0	(2,022.7)	2,884.8
Other non-current liabilities (excluding financial debt)	51.6	44.0	23.9	205.4	(13.2)	311.7
Current liabilities (excluding current portion of debt)	532.9	613.9	58.5	1,489.2	(1,736.4)	958.1
Total liabilities (excluding equity)	2,758.1	2,493.8	82.4	2,592.6	(3,772.3)	4,154.6
Equity	1,358.4	2,976.4	370.3	2,061.5	(5,408.2)	1,358.4
Operating revenues	82.4	701.5	140.6	2,713.5	(1,537.1)	2,100.9
Depreciation and amortization	17.8	1,088.3	16.9	616.0	(58.9)	1,680.1
Operating income (loss)	(261.6)	(581.3)	(0.9)	856.3	(1,170.1)	(1,157.6)
Equity in income of affiliates	(1,922.9)	(155.9)	–	0.5	2,078.3	–
Net income (loss)	(1,446.2)	(503.0)	6.1	824.0	(327.1)	(1,446.2)
Cash flow from operating activities	1,602.0	269.8	11.3	869.3	(2,344.3)	408.1
Cash flow from investing activities	(1,253.9)	(19.4)	(18.4)	938.8	(70.4)	(423.3)
Cash flow from financing activities	(336.8)	(241.3)	–	(1,795.2)	2,436.1	62.8
Effect of exchange rates on cash	–	–	–	–	(21.4)	(21.4)
Impact of changes in consolidation scope	–	–	–	–	–	–
Cash at opening	167.3	40.0	9.4	142.4	–	359.1
Cash at closing	178.6	49.1	2.3	155.3	–	385.3

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The following table presents condensed consolidated financial information in IFRS for the year ended December 31, 2014 for the Company, the Guarantor subsidiaries, the Non-Guarantor subsidiaries and the Eliminations to arrive at CGG on a consolidated basis.

	Year ended December 31, 2014					Group Consolidated
	CGG	Services Guarantors	Equipment Guarantors	Non Guarantors	Consolidation Adjustments	
	(In millions of US\$)					
Goodwill	–	1,797.7	90.2	153.8	–	2,041.7
Intangible assets (including multi-client surveys)	31.1	722.0	28.3	870.3	(277.9)	1,373.8
Property, plant and equipment	86.9	552.8	51.1	796.3	(248.9)	1,238.2
Investment in affiliates	3,878.3	2,172.4	7.1	438.0	(6,495.8)	–
Other non-current assets	1,963.1	548.7	5.3	253.1	(2,392.5)	377.7
Current assets	376.4	790.2	304.0	2,902.4	(2,343.4)	2,029.6
Total assets	6,335.8	6,583.8	486.0	5,413.9	(11,758.5)	7,061.0
Financial debt (including bank overdrafts, current and non-current portion)	2,460.2	1,993.1	–	756.5	(2,430.9)	2,778.9
Other non-current liabilities (excluding financial debt)	22.8	117.1	23.4	267.7	(26.2)	404.8
Current liabilities (excluding current portion of debt)	1,106.6	761.4	95.4	1,646.6	(2,478.9)	1,131.1
Total liabilities (excluding equity)	3,589.6	2,871.6	118.8	2,670.8	(4,936.0)	4,314.8
Equity	2,746.2	3,712.2	367.2	2,743.1	(6,822.5)	2,746.2
Operating revenues	122.8	931.9	294.3	3,821.5	(2,075.1)	3,095.4
Depreciation and amortization	8.2	915.3	15.8	617.1	40.7	1,597.1
Operating income (loss)	(179.2)	(371.3)	57.8	(265.1)	60.3	(697.5)
Equity in income of affiliates	(359.5)	(60.2)	–	(0.1)	419.8	–
Net income (loss)	(1,146.6)	(464.6)	40.5	(440.6)	864.7	(1,146.6)
Cash flow from operating activities	804.5	389.6	32.9	96.2	(459.0)	864.2
Cash flow from investing activities	(3.1)	(483.3)	(26.0)	(521.1)	140.0	(893.5)
Cash flow from financing activities	(900.6)	40.8	(1.5)	400.7	358.1	(102.5)
Effect of exchange rates on cash	–	–	–	–	(8.7)	(8.7)
Impact of changes in consolidation scope	–	–	–	–	(30.4)	(30.4)
Cash at opening	266.5	92.9	4.0	166.6	–	530.0
Cash at closing	167.3	40.0	9.4	142.4	–	359.1

CGG

Public Company with a Registered Capital of 17,706,519

Registered Office : Tour Maine Montparnasse, 33 avenue du Maine, 75015 Paris

Trade Register Paris No. 969 202 241

ARTICLES OF ASSOCIATION

PART I

FORM - OBJECT - NAME - HEAD OFFICE - TERM

Article 1 - FORM OF THE COMPANY

A Company has been formed between the holders of the shares hereinafter issued and those which may be issued subsequently, which Company shall be governed by the laws in force and these Articles of Association.

Article 2 - OBJECT

The corporate object is as follows:

Development and operation in any form and under any conditions whatsoever, of all and any business relating to the geophysical survey of the soil and subsoil in any all countries, on behalf of third parties or on its own behalf.

Direct or indirect participation in any business, firm or Company whose object would be likely to promote the corporate object.

And, generally, any business, industrial, mining, financial, personal or real property operations relating directly or indirectly to the above object without limitation or reserve.

Article 3 - CORPORATE NAME

The Company shall have the corporate name of: CGG.

Article 4 - REGISTERED OFFICE

The registered office will be at Tour Maine Montparnasse, 33 avenue du Maine, 75015 Paris.

It may be transferred to any other place in the same “département” (County) or to one of the adjacent “départements” by mere decision of the Board of Directors, subject to said decision being ratified by the earliest Ordinary Shareholders’ Meeting, and it may be transferred anywhere else by a decision of the Extraordinary Meeting.

Offices, agencies and branch offices may be established in any countries.

Article 5 - TERM

The Company has been founded for a term of ninety-nine years as from the date of its final incorporation, barring cases of early winding up or further extension, as provided for in these Articles of Association.

PART II

REGISTERED CAPITAL - SHARES

Article 6 - REGISTERED CAPITAL

1. The registered capital amounts to 17,706,519 divided into 22,133,149 shares of 0.80 each.
2. The registered capital may be increased either by the issuance of new shares or by raising the face value of existing shares.

The new shares shall be paid up either in cash or by offsetting liquidated claims against the Company, or by drawing on reserves, earnings or share premiums, or by assets contributed in kind, or by conversion of debentures or bonds.

The new shares are issued at their face value or at face value increased by a share premium; they can be either ordinary or preferential shares enjoying some advantages over the other shares and granting priority rights on earnings or assets, or any other indirect privilege.

The Extraordinary Shareholders' Meeting alone is entitled to decide an increase in capital, upon the Board of Director's report. However, when the increase in capital is made by drawing on reserves, earnings or share premiums, the Shareholder's Meeting deciding thereon deals with the matter under the requirements of quorum and majority of the Ordinary Shareholder's Meetings.

In the event of capital increase in cash, the old capital shall first be fully paid up, and the shareholders are entitled to the preferential allotment of new stock granted to them by law.
3. Earnings and reserves other than the legal reserve may be assigned to amortization of the Company's capital by decision of the Extraordinary Shareholder's Meeting. Said amortization may be carried out only by equal repayment on each share of same class, and does not involve any reduction of the capital.
4. The Extraordinary Shareholders' Meeting may also decide or authorize the reduction of the Company's registered capital for any reason and in any way whatsoever, especially by reason of losses or by means of partial refund or purchase of the shares, by reduction of their number or face value, but under no circumstances should the reduction of capital affect shareholder's equality.

Article 7 - SHARES

1. Fully paid up shares are either registered shares or bearer shares, at the shareholder's option.

They are subject to entry in an account under the terms and procedures provided by law.

Said account is kept by the Company or a representative appointed by the Company if securities are requested in the registered form ; it is kept by an authorized trustee if securities are requested in the form of bearer shares.

The Company may at any time make use of the legal and regulatory provisions for the purpose of identifying the owners of shares granting immediately or at a later date a voting right in Shareholders' meetings.

2. Share assignment is finalized through account-to-account transfer.

Shares that are not fully paid up by the amounts due are not assignable.

Any shareholder holding directly or indirectly a portion amounting to 1 percent of the stock capital or of the voting rights or a multiple of this percentage shall give notice to the Company of the number of shares or voting rights he holds, within five trading days from the date on which one of these thresholds was exceeded. Pursuant to applicable regulations, in the event of failure to comply with this notification requirement, and upon request of one or several shareholders holding at least 1 percent of the capital, such request being recorded in the minutes of the Meeting, those shares in excess of the fraction that should have been declared shall be deprived of their voting rights from the date of said Meeting and for any other subsequent Meeting to be held until the expiry of a 2-year period following the date on which the required notification of the passing of the threshold will have been regularized.

Similarly, any shareholder whose shareholding is reduced below one of these thresholds shall give notice thereof to the Company within the same 5-day period.

3. Shares are indivisible with regard to the Company. Co-owners of jointly held shares are bound to have themselves represented by only one of the two shareholders or by a sole proxy; in the event of disagreement, such proxy shall be appointed by the president of the Commercial Court deciding the case in Chambers at the request of the first mover of the contending co-owners.

The voting right is exercised by the owner of securities held in pledge or as security, i.e. by the usufructuary at the Ordinary Shareholder' s Meetings, and by the bare-owner at the Extraordinary Shareholder' s Meeting.

4. At the time of application, it is compulsory that shares applied for in cash be fully paid up by at least one quarter of their face value and, as the case may be, by the entire share premium.

The share value surplus is payable from time to time, within a maximum period of five years as from the day when the increase of capital became final, at the times and under the terms specified by the Board of Directors.

Shareholders are given notice of calls for funds at least fifteen days before the time specified for each payment, either by registered letter sent to the shareholders or by a notice published in a legal announcement gazette of the Head Office district.

Sums due on the value of the shares not fully paid up yield a day-by-day interest calculated at a rate of seven percent (7 %) as from the date of their falling due, without there being any need for legal action or formal summons to pay.

To obtain payment of the fraction of shares not fully paid up and called, the Company is entitled to forced execution, action for guarantee and penalties as provided by law.

5. Every share is entitled to a portion of earnings and ownership of the capital stock in proportion to the amount of stock it represents.

Any shares, both old and new, are fully assimilated when they bear same bonus, provided they are of same type and of same nominal stock paid up for the same value. In the event of dividend distribution as in the event of full or part reimbursement of their nominal stock, they receive the same net value, any taxes and duties they may be liable to being evenly distributed among them.

Ownership of a share implies de jure adhesion to the Company' s Articles of Association and to the decisions of the Shareholder' s Meeting.

Any rights and duties attached to a share follow the share certificate and pass into the hands of the new owner, whoever he may be.

The heirs, assigns or creditors of a shareholder may not, for any reason whatsoever, require that seals be affixed to the Company's assets or property, or demand the partition or sale by auction thereof, or meddle in any way whatsoever in the acts of its management; in order to exercise their rights, they must abide by the corporate accounts and decisions made by the Shareholders' Meeting.

The shareholders are responsible for the Company's liabilities only up to the face value of the shares they hold.

Whenever it is necessary to hold several shares to exercise any right whatsoever, in the case of exchange, pooling or allotment of shares, or as a result of an increase or reduction of capital, a merger or any other transaction concerning the Company, the holders of isolated shares or of a number of shares less than that required, may exercise said rights, provided only they arrange to pool and, as the case may be, purchase or sell the required number of share certificates.

PART III

MANAGEMENT OF THE COMPANY

Article 8 - BOARD OF DIRECTORS

1. The Company is managed by a Board of at least six members and at most fifteen members appointed during the Company's lifetime by the Ordinary Shareholders' Meeting, unless a decision increases this maximum to a higher number in the event of merger.

2. A legal entity may be duly appointed as a Director.

When appointed, any such legal entity must appoint a permanent representative who is bound by the same conditions and duties and incurs the same liabilities just as if he were a director in his own name, without prejudice to the joint liability of the legal entity which he represents. If the legal entity dismisses its representative, it must proceed to his replacement at the same time.

3. In the event of vacancy by decease or by the resignation of one or several directors, the Board of Directors may - between two Shareholder's Meetings - make temporary appointments.

The director appointed in replacement of another director remains in office only for the term remaining to run of his predecessor's term of office.

When the number of directors has fallen below the legal minimum required, the remaining directors must immediately convene the Ordinary Shareholder's Meeting with a view to completing membership of the Board.

When the number of directors has fallen below the number required by the Articles of Association - without however being less than the legal minimum - the Board of Directors must proceed to make temporary appointments with a view to completing its membership within a period of three months from the day the vacancy occurred.

Any temporary appointments made the Board are subject to ratification by the earliest Ordinary Shareholders' Meeting. Failing ratification, the decisions made and the acts accomplished previously by the Board shall remain nonetheless valid.

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4. As of the general meeting to be held to approve the 2007 financial statements, the directors are appointed for a four-year term. However, the terms of directors that are currently in force will remain until expiration of their term as initially set.
- The office of a director comes to an end at the end of the Ordinary Shareholders' Meeting deciding on the last financial statements and held within the year during which said term of office expires.
- The Board is renewed every year by an adequate number of members so that the term of office of each director shall not exceed six years. Renewal takes place by order of seniority of appointment.
- Directors are always eligible for re-election.
- They may be dismissed at any time by the Ordinary Shareholders' Meeting.
5. Throughout his term of office, each director must own at least one share.
6. The Board of Directors determines the strategy of the Company and sees its implementation. Subject to the powers expressly attributed to shareholders' meetings, and within the limits of the purpose of the Company, it considers any question relating to the proper functioning of the Company and by discussion settle the affairs which concern it.
- The Board of Directors carries out any controls and checks it deems necessary. The Chairman or the Chief Executive Officer of the Company must provide each Director with all documents and information necessary for the accomplishment of his mission.
7. The Board of Directors may confer on one or more of its Members or on third parties, whether they are shareholders or not, any special mandates for one or more specific objectives.
- It may decide to create committees responsible for examining questions which it or its Chairman submit to them for their opinion. It will establish the composition and the attributions of committees which exercise their activity under its authority.

Article 9 - RESOLUTIONS OF THE BOARD OF DIRECTORS

1. From among its members, the Board of Directors elects a chairman who must be a natural person. The Board decides the amount of his compensation.
- The chairman is appointed for a period which may not exceed that of his office as a director. He is eligible for re-election.
- The Board may dismiss him at any time.
- The Chairman's office comes to an end at the latest after the annual Ordinary Shareholders' Meeting following the date on which he reaches the age of 65. However, the Board of Directors may further extend the office of the Chairman, once or several times for a total period not to exceed three years.
- The Chairman organises and directs the Board's work on which he reports to the General Meeting. He ensures that the organs of the Company function properly and in particular makes sure that the Directors are able to carry out their mission.
- If it deems appropriate, the Board also appoints one or several vice-chairmen selected from among its members.
- Should the Chairman, vice-chairman (or vice-chairmen) happen to be absent, the Board shall appoint, for each meeting, one of the members present to carry out the duties of chairman.
- Should the Chairman die or be temporarily indisposed, the Board of Directors may delegate a Member of the Board to carry out the function of Chairman.
- Furthermore, the Board appoints a Secretary, who need not be one of the shareholders.

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2. The Board of Directors meets when summoned to do so by the Chairman, as often as required in the Company' s interests, either at the Head Office or in any other place indicated in the summons.

When a meeting has not been held for more than two months, at least one third of the Members of the Board may request the Chairman to convene a meeting with a predetermined agenda. The Managing Director may also ask the Chairman to convene a meeting of the Board of Directors with a predetermined agenda.

Any director may give by a written document a proxy to another director to represent him at a Board Meeting. Each director may have only one power of attorney in a single meeting.

The actual presence of at least half the members of the Board is required for the resolutions to be valid.

Resolutions are carried by a majority of votes of the members attending or represented. In case of equal voting, the Chairman of the Board has a casting vote ; However, should the meeting be chaired by a person other than the Chairman of the Board, then the chairman of the meeting does not have a casting vote

An attendance book is kept which is signed by the directors participating in the meeting of the Board.

The directors, as well as any person likely to attend the board meetings are bound to secrecy with regard to any information of a confidential nature and supplied as such by the Chairman of the Board.

3. The resolutions of the Board of Directors are recorded by minutes entered in a special minute-book or on loose sheets, in accordance with regulations.

The minutes are signed by the chairman of the meeting and by at least one director. In case of prevention of the chairman of the meeting, the minutes are signed by at least two directors.

Copies or abstracts of the minutes of resolutions are validly certified by the Chairman of the Board, one managing director temporarily delegated to take over the duties of chairman or an authorized representative qualified for this purpose.

The number of directors in office and also their presence or representation at a meeting of the Board of Directors, is adequately evidenced by the production of a copy or abstract of said minutes.

Article 10 - GENERAL MANAGEMENT

1. Principles of organisation :

In accordance with the legal provisions, the general management of the Company will be assumed under his responsibility either by the Chairman of the Board of Directors or by another natural person, whether he is a Member of the Board or not, who is appointed by the Board of Directors with the title of Chief Executive Officer.

The choice between these two means of exercising general management will be made by the Board of Directors, who must inform the shareholders and third parties of this, in accordance with the law.

The deliberations of the Board of Directors relating to the choice of the means of exercising general management will be taken on a majority vote by the Members of the Board who are present or represented.

The option selected by the Board of Directors must be retained for a period that may not be less than one year.

At the end of the period set by the Board of Directors, the Board must once more deliberate on the means of exercising general management.

Should the management of the Company be assumed by the Chairman of the Board the following dispositions relating to the Chief Executive Officer will apply to him.

2. The Chief Executive Officer :

The Board of Directors will establish the duration of the mandate of the Chief Executive Officer and determine his remuneration. Should the function of Chief Executive Officer be assumed by the Chairman of the Board of Directors, the Chief Executive Officer will be appointed for the duration of his mandate as Chairman.

The functions of Chief Executive Officer will terminate at the latest at the end of the ordinary general meeting which follows the date on which he reaches the age of 65 years. However, the Board of Directors may extend the Chief Executive Officer 's term of office beyond this limit, all at once or on several occasions, for a total duration that may not exceed three years.

The Chief Executive Officer may be revoked at any time by the Board of Directors. Should the Chief Executive Officer not assume the functions of Chairman of the Board of Directors, his revocation may give rise to damages and interest, if the decision is taken without due cause.

The Chief Executive Officer represents the Company in its relationships with third parties and may delegate to any special representative he chooses part of his powers.

Within the legal limits, the Chief Executive Officer is invested with the most extensive powers to act in the Company' s name under all circumstances. However, with regard to the in-house rules and without this limitation being enforceable against third parties, the Board of Directors may limit the extent of his powers.

3. Chief Operating Officers :

At the proposal of the Chief Executive Officer, whether this function is assumed by the Chairman of the board of Directors or by another person, The Board of Directors may appoint one or more natural persons, whether they are Members of the Board or not, in charge of assisting the Chief Executive Officer, with the title of Chief Operating Officers.

The maximum number of Chief Operating Officers is fixed at five.

In agreement with the Chief Executive Officer, the Board of Directors will determine the extent and duration of the powers granted to the Chief Operating Officers.

The functions of a Chief Operating Officer will be terminated at the end of the ordinary general meeting which follows the date on which he reaches the age of 65 years. However, the Board of Directors may, on a proposal from the Chief Executive Officer extend the term of office of the Chief Operating Officer, all at once or on several occasions, beyond this limit one or more times, for a total duration that may not exceed three years.

The Chief Operating Officer holds the same powers as the Chief Executive Officer vis a vis third parties .

The Board of Directors will determine the remuneration of the Chief Operating Officers.

Should the functions of the Chief Executive Officer cease or be impeded, the Chief Operating Officers retain their functions and attributions until a new Chief Executive Officer is appointed, unless the board of Directors decides otherwise.

The Chief Operating Officers may be revoked at any time by the Board of Directors on a proposal by the Chief Executive Officer.

4. Acts concerning the Company are signed either by the Chief Executive Officer or by a Chief Operating Officer or by any special holder of a power of attorney.

Article 11 - BOARD MEMBERS' COMPENSATION

The Shareholders' Meeting may allow the Directors an annual fixed sum as attendance fees, the amount of which remains unchanged until further decision.

The Board allocates these attendance fees between its members in the manner it deems appropriate.

Article 12 - REGULATED AGREEMENTS

1. The agreements referred to in Article L.225-38 of the Commercial Code are subject to the prior consent of the Board of Directors and to approval by the Shareholders' Meeting under the provisions of law.

These provisions are not applicable to agreements bearing on routine transactions, which are concluded under normal conditions.

2. It is forbidden to directors other than legal entities to take out loans with the Company in any form whatsoever or to have the Company grant them an overdraft in current account or otherwise; it is also forbidden to have the Company stand surety for them or back their commitments in respect of third parties.

The same prohibition applies to Managing Directors and to permanent representatives of legal entity-directors. It also applies to the spouses, ascendants or descendants of the persons referred to in this paragraph and also to any trustee.

Article 13 - OBSERVERS

The board of directors may appoint one or several Observers to a maximum number of 3.

In case of a vacancy resulting from death or resignation of one or several Observers, the board of directors may proceed to appointments on a temporary basis.

The Observers shall be appointed for a 6 year period ending at the end of the general meeting convened to approve the financial statements of the latest fiscal year and held within the year during which their tenure lapse.

The Observers are convened to the board of directors' meetings and will take part in the discussions in an advisory capacity, however their absence cannot render such discussions void.

PART IV

SHAREHOLDERS' MEETINGS

Article 14 - GENERAL RULES

1. The shareholders meet every year at an Ordinary Shareholders' Meeting, on the day and at the time and place indicated in the notice of convening; said meeting takes place within the first six months following the closing of the financial year, subject to the extension of this period by order of the Presiding Judge of the Commercial Court deciding on petition or request.

The ordinary Shareholders' Meeting may furthermore be convened extraordinarily.

The extraordinary Shareholders' Meeting is convened whenever it is required to amend these Articles of Association.

2. The Shareholders' Meeting is convened and takes decision under the conditions set forth by law.

The Shareholders' Meeting meets at the head office or at any other place as may be indicated in the notice of convening.

3. The Shareholders' Meetings shall be convened under the terms and within the periods provided by law.

4. The agenda shall be prepared by the author of the notice of convening. However, one or more shareholders representing at least the percentage of stock capital provided for by law, are entitled to require that draft resolutions be put on the agenda under the terms provided by law.

The meeting cannot consider a matter that has not been put on the agenda. However, it may under circumstances dismiss one or more directors and provide for their replacement.

5. The Board of Directors shall either send off or make available to the shareholders any documents provided by law.

6. The Shareholders' Meeting is composed of all the shareholders, whatever the number of shares they hold.

The right to attend General Meetings is subject to the book entry of the shares in the name of the shareholder or of the financial intermediary registered on such shareholder's behalf pursuant to article L.228-1, seven paragraph, of the Commercial Code, either in the shares account of the Company or in the bearer shares accounts of the financial intermediary on the second business day prior to the date of the General Meeting at 12 a.m., Paris time.

The book-entry of the shares in the bearer shares accounts of the financial intermediary is evidenced by a certificate delivered by the latter and attached to the postal voting, proxy forms or admission card's request delivered in the name of the shareholder or on its behalf by the financial intermediary. Such a certificate is also delivered to the shareholder willing to attend the General Meeting in a person but who has not received its admission card two business days prior to the date of the General Meeting at 12 a.m., Paris time.

A shareholder may be represented by another shareholder or by his spouse, and if he is a non-resident he may, in addition, be represented by the a registered intermediary ; in this respect, the representative must justify his mandate.

Any shareholder may receive the powers of attorney given by other shareholders with a view to being represented at a Meeting, without any other limits than those established by the legal provisions specifying the maximum number of votes to be used by the same person, both in his/her own name and as a proxy.

The legal representatives of shareholders who are disqualified by law and natural persons representing legal entities which are shareholders may attend the Meetings, whether they are themselves shareholders or not.

Each shareholder has as many votes as the shares he possesses or represents subject to the provisions set out below.

As from May 22 1997, a double voting right is allocated to all registered and fully paid-up shares registered in the name of the same holder for at least two years.

In the event of an increase in capital by incorporation of reserves, profits or paid in capital, this double voting right is granted as soon as they are issued, to registered shares allocated free to a shareholder at the rate of the former shares for which he benefits from this right.

The double voting right ceases ipso jure for any share having been subject to a conversion to the bearer or a transfer of ownership subject to exceptions provided for by law.

Any shareholder can vote by mail, as provided by law, either by using a paper form prepared and sent to the Company, or, by decision of the Board of Directors published in the notice of meeting by tele-transmission.

Any voting forms shall be received by the Company on the day preceding the Shareholders' meeting. Electronic voting forms shall be received before 3:00 p.m (Paris time) on the day preceding the General Meeting.

If the Board of Directors so decides when the General Meeting is called, the entry of data and the electronic signature of the form may be made directly of the website set up by the Company by any process adopted by the Board of Directors that meets the conditions set forth in the first sentence of the second paragraph of the article 1316-4 of the French Civil Code, which may consist, in particular of an identification code and a password, or any other system which complies with the specifications of the first sentence of the second paragraph of the article 1316-4 of the French Civil Code.

The proxy form and the vote cast in this manner prior to the Meeting by this electronic means, and the acknowledgement of receipt given, shall be considered as irrevocable written evidence that is enforceable with regard to all the parties involved, being specified that in the event of a sale of shares that take place before the second working day prior to the Meeting at zero hour (Paris time), the Company shall invalidate or amend accordingly the proxy form or vote cast expressed prior to such date and time through the electronic system set up by the Board of Directors.

Any shareholder attending a Shareholders' Meeting will not be entitled to vote through a proxy or by mail.

Any shareholder may also, if the Board of Directors or its Chairman allows at the time of the convocation to a general meeting, assist this meeting via visio-conference or by electronic telecommunication or tele-transmission means subject to and in accordance with the conditions laid down by the legislation or the regulations in force. This shareholder is then considered to be present at this meeting when calculating the quorum and the majority.

7. The Shareholders' Meeting is presided over by the Chairman of the Board or, in his absence, by the person or one of the persons who convened the Meeting.

In the event a meeting has been called by the Auditors, a court-appointed proxy or the liquidators, the meeting shall be chaired by the person or one of the persons calling the meeting.

The duties of scrutineers are carried out by the two members of the Meeting having the largest number of voting rights and accepting said duties.

The officers' committee appoints a secretary, who need not be a shareholder.

An attendance sheet shall be kept and initialed by the shareholders or their proxies ; it shall be certified true by the members of the officers' committee and deposited at the head office.

8. The resolutions of the Shareholders' Meeting are recorded in Minutes which are signed by the members of the officers' committee. The minutes are entered in a special minute-book or in a loose-leaf ledger or binder, in accordance with legal regulations.

Copies or abstracts of the minutes of the Shareholders' Meetings are validly certified true by the Chairman of the Board or by a director carrying out the duties of Managing Director. They may also be certified true by the Secretary to the Meeting.

9. The Shareholders' Meeting, regularly formed, represents all the shareholders without any exception ; its resolutions are binding upon all shareholders, even those who were absent, dissenting or legally disqualified.

Article 15 - ORDINARY SHAREHOLDERS' MEETINGS

1. The Ordinary Shareholders' Meeting may validly proceed under the quorum and majority conditions provided for by law.
2. The Ordinary Shareholders Meetings hears the reports of the Board of Directors and of the Auditors ; It discusses, approves or adjusts the financial statements, determines the dividends and directors' fees, appoints or dismisses directors and auditors, gives them full discharge for performance of their duties, ratifies cooptations of directors, decides on any covenants subject to prior consent, cancels any covenants made without prior consent, grants authority to the Board of Directors for acts exceeding the powers granted to it and considers any proposals carried on its agenda that do not fall within the powers of the Extraordinary Shareholders' Meeting.

Article 16 - EXTRAORDINARY SHAREHOLDERS' MEETINGS

1. Extraordinary Shareholders' Meetings are formed regularly and may validly proceed under the quorum and majority conditions provided for by law.
2. The Extraordinary Shareholders' Meeting may amend the Articles of Association in all or any of their provisions, provided that they do not increase the shareholders' liabilities, excepting the shareholders' obligation to buy or sell fractions in the case of share pooling, increase or reduction of capital, merger or split.

In particular, the Extraordinary Meeting may change the Company' s nationality under the provisions laid down by the law, or it may change the Company' s life, decide its merger or split with another Company or companies, wind it up before due date, transform it into a Company of any other type under the terms and conditions provided by law.

PART V**AUDITORS****Article 17 - APPOINTMENT AND DUTIES OF THE AUDITORS**

Under the provisions of law, the Ordinary Shareholders' Meeting appoints at least two auditors and, if necessary, one or more deputy Auditors.

The Auditors are vested with the duties and powers conferred on them by law.

Their compensation is determined according to the regulations in force.

PART VI

FINANCIAL STATEMENTS AND APPROPRIATION OR DISTRIBUTION OF EARNINGS

Article 18 - FINANCIAL STATEMENTS

The Company' s fiscal year starts on January first and ends on December thirty-first.

At the close of every financial year, the Board of Directors draws up an inventory of the various items of assets and liabilities existing at that date.

The Board also prepares the financial statements, including the balance sheet, profit & loss statement and a note to the financial statements and, if case may be, consolidated financial statements including a consolidated balance-sheet and profit & loss statement and a note to the financial statements.

The Board prepares a report about the Company' s position in the last fiscal year and, if case may be, that of the group of companies controlled by the Company, about their predictable development, the major events that have occurred since the closing of the fiscal year, and their research and development efforts.

Said documents are made available to the Auditors under the terms provided for by law.

In the cases provided by law, the Board shall also prepare financial management documents that are to be analyzed in reports about the Company' s development.

Article 19 - EARNINGS

Out of the earnings of the fiscal year, reduced if necessary by previous losses, at least five percent shall be first appropriated to form the reserve fund required by law, until said reserve fund has reached one tenth of the stock capital.

The balance, increased by retained earnings, if any, forms the distributable earnings.

Any amounts that the Shareholders' Meeting would decide, either on proposal by the Board or by its own decision, to allocate to one or more general or special reserve funds or to carry forward, shall be withdrawn from said earnings.

The balance shall be distributed among the shareholders as a dividend.

The terms and conditions for the payment of dividends are determined by the Shareholders' Meeting or, failing such, by the Board of Directors.

The Shareholders' meeting deciding on the financial statements is entitled to give each shareholder, for the dividend or part of the dividend to be distributed or for any advance payments on a dividend, the choice between payment of the dividend in cash or in stock.

PART VII

WINDING UP - LIQUIDATION - DISPUTES

Article 20 - WINDING UP - LIQUIDATION

On the expiry of the term provided for by the Articles of Association, or in case of early winding-up for any reason whatsoever, the Shareholders' Meeting or, if case may be, the Commercial Court, specifies the liquidation procedure, appoints one or more liquidators and specifies their powers.

Subject to the restrictions provided by Law, the Liquidators have the most extensive powers for the purpose of realizing, even by amicable agreement, all of the Company's assets and wiping out its liabilities. On grounds of a resolution of the Extraordinary Shareholders' Meeting, they may make contribution or agree to the transfer of the whole of the property and assets, rights, shares and bonds of the liquidated Company.

The net proceeds of liquidation after settlement of liabilities shall be used to entirely reimburse the stock capital fully paid up and not redeemed, any surplus being distributed either in cash or securities among the shareholders.

Article 21 - DISPUTES

Any disputes likely to arise during the lifetime of the Company or during its liquidation, either between the shareholders and the Company or among the shareholders themselves, in relation to, or on account of corporate affairs, are referred to the jurisdiction of the Competent Courts in the judicial area of the Corporate Head Office.

To this effect, in case of dispute, each shareholder shall elect domicile within the judicial area of the aforementioned Courts, and any and all summons or notices will be validly and regularly served to this domicile.

Failing election of domicile, all and any summons or notices shall be validly served to the office of the Public Prosecutor (District Attorney) attached to the District Court ("Tribunal de Grande Instance") of the place of the Corporate Head Office.

Updated on August 11, 2016

Certified true copy,

Béatrice PLACE-FAGET
Secretary of the Board

CGG S.A.

and

the Guarantors named herein

6 ½% SENIOR NOTES DUE 2021

THIRD SUPPLEMENTAL INDENTURE

DATED AS OF FEBRUARY 22, 2017

THE BANK OF NEW YORK MELLON

Trustee

This THIRD SUPPLEMENTAL INDENTURE, dated as of February 22, 2017, is among CGG S.A., a *société anonyme* incorporated in France and registered at the Paris commercial register under number 969 202 241 (the “**Company**”), each of the parties identified under the caption “Guarantors” on the signature page hereto (the “**Guarantors**”) and The Bank of New York Mellon, as Trustee.

RECITALS

WHEREAS, the Company and the Trustee entered into an Indenture, dated as of May 31, 2011 (the “**Original Indenture**”), as amended by a First Supplemental Indenture dated as of May 31, 2012 and a Second Supplemental Indenture dated as of January 7, 2016, each of which was executed in order for the Additional Guarantors named therein to execute and deliver a guarantee (the Original Indenture, together with such Supplemental Indentures, the “**Indenture**”), pursuant to which the Company has originally issued \$650,000,000 and \$58,554,000 in principal amount of 6 ½% Senior Notes due 2021 (the “**Notes**”); and

WHEREAS, Section 9.02 of the Indenture provides that the Company, the Guarantors, any other obligor under the Notes and the Trustee may amend certain sections of the Indenture with the consent of the Holders of at least a majority in principal amount of the Notes then outstanding; and

WHEREAS, the Holders of at least a majority in principal amount of the Notes outstanding have consented to the amendments effected by this Fifth Supplemental Indenture; and

WHEREAS, the Company and the Guarantors desire to amend certain provisions of the Indenture and to ratify and confirm the Indenture and the Guarantors desire to become parties to the previous Supplemental Indentures to the extent not already parties thereto, as set forth in Articles 2 and 3 hereof; and

WHEREAS, the Guarantors intend to execute a new notation of Subsidiary Guarantee to comply with Sections 9.01 and 10.02 of the Indenture, which Section 9.01(f) provides that the Company, the Guarantors and the Trustee may amend or supplement the Indenture in order to execute a guarantee without the consent of the Holders of the Notes; and

WHEREAS, all acts and things prescribed by the Indenture, by law and by the charter and the bylaws (or comparable constituent documents) of the Company, of the Guarantors and of the Trustee necessary to make this Third Supplemental Indenture a valid instrument legally binding on the Company, the Guarantors and the Trustee, in accordance with its terms, have been duly done and performed;

NOW, THEREFORE, to comply with the provisions of the Indenture and in consideration of the above premises, the Company, the Guarantors and the Trustee covenant and agree for the equal and proportionate benefit of the respective Holders of the Notes as follows:

ARTICLE 1

Section 1.01. This Third Supplemental Indenture is supplemental to the Indenture and does and shall be deemed to form a part of, and shall be construed in connection with and as part of, the Indenture for any and all purposes.

Section 1.02. This Third Supplemental Indenture shall become effective immediately upon its execution and delivery by each of the Company, the Guarantors and the Trustee.

ARTICLE 2

Section 2.01. The following additions are hereby made in Section 1.01 of the Indenture: ““**French Revolving Facility**” means the revolving credit facility in an initial principal amount of \$325 million under the Company’ s senior secured French-law revolving facility agreement dated July 31, 2013, as last amended and restated pursuant to an amendment and restatement agreement dated February 4, 2016, and as further amended and/or restated from time to time.”;

““**MAH Appointment**” means the taking of any corporate action or other steps or the opening of proceedings by the Company or any Restricted Subsidiaries for the appointment of a *mandataire ad hoc* in accordance with articles L.611-3 and L.611-15 to L.611-16 of the French *Code de commerce*; to the extent that (i) such proceedings are started on or prior to July 31, 2017 and no such proceedings shall be continuing after February 28, 2018 and (ii) any such proceedings are opened by the Company only following the receipt of all consents or waivers required in connection with such action in respect of any Relevant Financial Indebtedness.”;

““**Nordic Facility**” means the \$250 million term and revolving facilities agreement, dated July 1, 2013, as amended and restated on December 16, 2014, and as may be further amended from time to time, entered into between, among others, CGG Geo Vessels AS, as borrower, and Nordea Bank Finland Plc, London Branch, as administrative agent and as security agent.”;

““**Relevant Financial Indebtedness**” means Indebtedness of any member of the Group outstanding under any of the following: (a) the French Revolving Facility; (b) the U.S. Revolving Facility; (c) the Nordic Facility; or (d) the Term Loan B Facility.”;

““**Term Loan B Facility**” means the \$342 million term loan facility under the Company’ s term loan credit agreement dated November 19, 2015, as amended and/or restated from time to time.”; and

““**U.S. Revolving Facility**” means the revolving credit facility in an initial principal amount of \$165 million under the Company’ s senior secured credit agreement dated July 15, 2013, as last amended and restated pursuant to an amendment and restatement agreement dated January 10, 2016 (as amended on February 4, 2016), and as further amended and/or restated from time to time.”.

Section 2.02. Clause (k) of Section 6.01 of the Indenture is hereby amended and restated in its entirety as follows:

“SECTION 6.01 EVENTS OF DEFAULT

An “Event of Default” occurs if:

[...]

- (k) the Company or any Significant Subsidiary takes any corporate action or other steps are taken or legal proceedings are started under applicable bankruptcy laws for its *redressement judiciaire*, *liquidation judiciaire*, *réglement amiable* or other winding-up, dissolution, administration or reorganization (whether by way of voluntary arrangement, scheme of arrangement or otherwise) or for the appointment of a *mandataire ad hoc*, *administrateur provisoire*, *mandataire liquidateur*, *conciliateur* or other liquidator, receiver, administrator, administrative receiver, conservator, custodian, trustee or similar officer of it or of any or all of its revenues and assets, other than an action, legal proceeding or other step on vexatious or frivolous grounds or which is withdrawn or discharged within 40 days (*provided that*, notwithstanding anything herein to the contrary, an MAH Appointment shall not constitute a Default or an Event of Default under this Section 6.01(k)); or”.

SECTION 2.03. The following provisions are hereby added under a new Section 4.24:

“SECTION 4.24 INFORMATION UNDERTAKINGS

The Company hereby undertakes to:

- (a) by January 31, 2017, cooperate and to take all steps as may be reasonably required of the Company so that an independent business review covering a financial review of the budget for the fiscal year 2017 and the business plan up to the fiscal year 2019 and an illustrative recovery analysis in respect of the Company and its consolidated group is made available by PricewaterhouseCoopers LLP to those beneficial owners of Notes and their advisers who have signed non-disclosure agreements in a form satisfactory to the Company (acting reasonably) and any hold-harmless letters required by PricewaterhouseCoopers LLP, it being acknowledged and agreed that the Company cannot procure that PricewaterhouseCoopers LLP makes available such independent business review to such beneficial owners of Notes;
- (b) deliver to those beneficial owners of Notes and their advisers who have signed non- disclosure agreements in a form satisfactory to the Company (acting reasonably) the business plan in respect of the Company and its consolidated group for the next three-year period in a form approved by the Company’ s Board of Directors;
- (c) by the date such plan is delivered to the lenders under the French Revolving Facility and the U.S. Revolving Facility, deliver to those beneficial owners of Notes and their advisers who have signed non-disclosure agreements in a form satisfactory to the Company (acting reasonably), subject to a cleansing mechanism to be separately agreed by the Company and the advisers of the beneficial owners of Notes, a plan addressing the capital structure constraints of the Company and its consolidated group approved by the Company’ s Board of Directors;

-
- (d) provide access to meetings or calls with those beneficial owners of Notes and their advisers who have signed non-disclosure agreements in a form satisfactory to the Company (acting reasonably), subject to a cleansing mechanism to be separately agreed by the Company and the advisers of the beneficial owners of Notes, to discuss overall progress in respect of the capital structure constraints of the Company and its consolidated group no less than every two weeks; and
 - (e) deliver to the Trustee within five Business Days of the end of each calendar month written confirmation as to whether the aggregate amount of cash, Cash Equivalents and the amount under committed credit facilities which is available to be drawn by the Company and the members of its consolidated group is greater than \$175,000,000 (or its equivalent in other currencies) as at the end of each calendar month.”.

ARTICLE 3

Section 3.01. Except as specifically modified herein, the Indenture and the Notes are in all respects ratified and confirmed (*mutatis mutandis*) and shall remain in full force and effect in accordance with their terms with all capitalized terms used herein without definition having the same respective meanings ascribed to them as in the Indenture, and the Guarantors hereby become parties to the previous Supplemental Indentures to the extent not already parties thereto.

Section 3.02. Except as otherwise expressly provided herein, no duties, responsibilities or liabilities are assumed, or shall be construed to be assumed, by the Trustee by reason of this Third Supplemental Indenture. This Third Supplemental Indenture is executed and accepted by the Trustee subject to all the terms and conditions set forth in the Indenture with the same force and effect as if those terms and conditions were repeated at length herein and made applicable to the Trustee with respect hereto.

The Company and each Guarantor each represents and warrants to the Trustee that this Third Supplemental Indenture has been duly and validly executed and delivered by it and constitutes its legal, valid and binding obligations, enforceable against it in accordance with its terms.

The Trustee shall not be responsible or accountable in any way whatsoever for or with respect to the validity, execution (by any party other than the Trustee) or sufficiency of this Third Supplemental Indenture and makes no representation with respect thereto.

Section 3.03. THE LAW OF THE STATE OF NEW YORK SHALL GOVERN AND BE USED TO CONSTRUE AND ENFORCE THIS THIRD SUPPLEMENTAL INDENTURE.

Section 3.04. The parties may sign any number of copies of this Third Supplemental Indenture. Each signed copy shall be an original, but all of such executed copies together shall represent the same agreement.

[NEXT PAGE IS SIGNATURE PAGE]

IN WITNESS WHEREOF, the parties hereto have caused this Third Supplemental Indenture to be duly executed, all as of the date first written above.

CGG S.A.

By /s/ Jean-Georges Malcor

Name: Jean-Georges Malcor

Title: CEO

[signature page to Third Supplemental Indenture (2021 Notes)]

THE GUARANTORS

CGG HOLDING B.V.

By /s/ Beatrice Place-Faget

Name: Beatrice Place-Faget

Title: Managing Director

[signature page to Third Supplemental Indenture (2021 Notes)]

CGG MARINE B.V.

By /s/ Agatha Cottin

Name: Agatha Cottin

Title: Managing Director

[signature page to Third Supplemental Indenture (2021 Notes)]

By /s/ Marianne Lefdal

Name: Marianne Lefdal

Title: Chairman of the Board of Directors

[signature page to Third Supplemental Indenture (2021 Notes)]

CGG HOLDING (U.S.) INC.

By /s/ Vincent Thielen

Name: Vincent Thielen

Title: SVP Treasurer

[signature page to Third Supplemental Indenture (2021 Notes)]

CGG SERVICES (U.S.) INC.

By /s/ Vincent Thielen

Name: Vincent Thielen

Title: SVP Treasurer

[signature page to Third Supplemental Indenture (2021 Notes)]

CGG LAND (U.S.) INC.

By /s/ Vincent Thielen

Name: Vincent Thielen

Title: SVP

[signature page to Third Supplemental Indenture (2021 Notes)]

VIKING MARITIME INC.

By /s/ Vincent Thielen

Name: Vincent Thielen

Title: SVP Treasurer

[signature page to Third Supplemental Indenture (2021 Notes)]

ALITHEIA RESOURCES INC.

By /s/ Vincent Thielen

Name: Vincent Thielen

Title: SVP Treasurer

[signature page to Third Supplemental Indenture (2021 Notes)]

CGG CANADA SERVICES LTD.

By /s/ Meng Meng Wang _____

Name: Meng Meng Wang

Title: Secretary and Treasurer

[signature page to Third Supplemental Indenture (2021 Notes)]

By /s/ S. Boast

Name: S. Boast

Title: Director

[signature page to Third Supplemental Indenture (2021 Notes)]

CGG HOLDING II (UK) LIMITED

By /s/ S. Boast

Name: S. Boast

Title: Director

[signature page to Third Supplemental Indenture (2021 Notes)]

SERCEL, INC.

By /s/ Pascal Rouiller

Name: Pascal Rouiller

Title: CEO

[signature page to Third Supplemental Indenture (2021 Notes)]

SERCEL-GRC CORP.

By /s/ Richard Kelly

Name: Richard Kelly

Title: Treasurer & Company Secretary

[signature page to Third Supplemental Indenture (2021 Notes)]

SERCEL CANADA LTD.

By /s/ Pascal Rouiller

Name: Pascal Rouiller

Title: President

[signature page to Third Supplemental Indenture (2021 Notes)]

Executed in accordance with section 127

of the *Corporations Act* 2001 by SERCEL

AUSTRALIA PTY LTD:

/s/ Pascal Rouiller

Director Signature

Pascal Rouiller

Print Name

/s/ Valérie Féry-Norris

Director Signature

Valérie Féry-Norris

Print Name

[signature page to Third Supplemental Indenture (2021 Notes)]

THE BANK OF NEW YORK MELLON, as Trustee

By /s/ Catherine F. Donohue

Name: Catherine F. Donohue

Title: Vice President

[signature page to Third Supplemental Indenture (2021 Notes)]

CCG S.A.

AND

GUARANTORS PARTY HERETO

5.875% Senior Notes due 2020

INDENTURE

Dated as of April 23, 2014

THE BANK OF NEW YORK MELLON

Trustee

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This Indenture, dated as of April 23, 2014 is among CCG, a *société anonyme* incorporated in France and registered at the Paris Commercial Registry under Number 969 202 241 (the “**Company**”), any Guarantors (as hereinafter defined) party hereto and The Bank of New York Mellon, as trustee (the “**Trustee**”).

RECITAL:

The Company, the Guarantors and the Trustee agree as follows for the benefit of each other and for the equal and ratable benefit of the Holders of the 400,000,000 principal amount of 5.875% Senior Notes due 2020 issued on the Issue Date (the “**Original Notes**”) and additional Notes for original issue from time to time after the Issue Date pursuant to Section 2.02 (together with the Original Notes, the “**Notes**”), without preference of one tranche of Notes over another tranche of Notes of the same series.

ARTICLE 1

DEFINITIONS AND INCORPORATION BY REFERENCE

SECTION 1.01. DEFINITIONS.

“**Acquired Indebtedness**” means with respect to a specified Person (a) Indebtedness of any other Person existing at the time such other Person is merged with or into or becomes a Subsidiary of such specified Person or (b) Indebtedness relating to properties or assets acquired by such specified Person. Acquired Indebtedness shall be deemed to be incurred on the date the acquired Person becomes a Restricted Subsidiary or the date of the related acquisition of properties or assets from such Person.

“**Affiliate**” of any specified Person means any other Person directly or indirectly controlling or controlled by or under direct or indirect common control with such specified Person. For purposes of this Indenture, “**control**”, as used with respect to any Person, means the possession, directly or indirectly, of the power to direct or cause the direction of the management or policies of such Person, whether through the ownership of Voting Stock, by agreement or otherwise; *provided, however*, that beneficial ownership of 10% or more of the Voting Stock of a Person shall be deemed to be control. For purposes of this Indenture, the terms “**controlling**”, “**controlled by**” and “**under common control with**” have correlative meanings.

“**Agent**” means any Registrar or Paying Agent.

“**Applicable Premium**” means, with respect to any Note on any redemption date, the greater of:

(a) 1.0% of the principal amount of the Note; and

(b) the excess of (1) the present value at such redemption date of (A) the redemption price of the Note at May 15, 2017 (such redemption price being set forth in the table appearing in Section 3.07(b) of this Indenture) plus (B) all required interest payments due on the Note during the period from such redemption date through May 15, 2017 (excluding accrued but unpaid interest), computed using a discount rate equal to the Bund Rate as of such redemption date plus 50 basis points over (2) the principal amount of the Note, if greater.

“**Applicable Procedures**” means, with respect to any transfer or exchange of beneficial interests in the Global Note, the rules and procedures of the Depository, Euroclear or Clearstream that apply to such transfer or exchange.

“**Asset Sale**” means:

(a) the sale, lease, conveyance or other disposition (a “disposition”) of any properties or assets (including, without limitation, by way of a sale-and-leaseback), excluding dispositions in the ordinary course of business (provided that the disposition of all or substantially all of the properties or assets of the Company and its Subsidiaries taken as a whole will be subject to Sections 4.15 and 6.01(f) of this Indenture and not to provisions of Section 4.10 hereof); and

(b) the issue or sale by the Company or any of its Restricted Subsidiaries of Equity Interests of any of the Company’s Subsidiaries,

whether, in the case of clause (a) or (b), in a single transaction or a series of related transactions, *provided* that such transaction or series of related transactions (i) involves properties or assets having a fair market value in excess of 10,000,000, or (ii) results in the payment of net proceeds in excess of 10,000,000.

Notwithstanding the preceding provisions of this definition, the following transactions will be deemed not to be Asset Sales:

(A) a disposition of obsolete or excess equipment or other properties or assets;

(B) a disposition of properties or assets (including Equity Interests) by the Company to a Restricted Subsidiary or by a Restricted Subsidiary to the Company or to another Restricted Subsidiary;

(C) a disposition of cash or Cash Equivalents;

(D) a disposition of properties or assets (including Equity Interests) that constitutes a Restricted Payment that is permitted by Section 4.07 of this Indenture;

(E) any trade or exchange by the Company or any Restricted Subsidiary of equipment or other properties or assets for equipment or other properties or assets owned or held by another Person, *provided* that the fair market value of the properties or assets traded or exchanged by the Company or such Restricted Subsidiary (together with any cash or Cash Equivalents) is reasonably equivalent to the fair market value of the properties or assets (together with any cash or Cash Equivalents) to be received by the Company or such Restricted Subsidiary;

(F) the creation or perfection of a Lien on any properties or assets (or any income or profits therefrom) of the Company or any of its Restricted Subsidiaries that is not prohibited by Section 4.12 hereof;

(G) a sale-and-leaseback of the Company's office facilities in Massy, France replacing the sale-and-leaseback transaction relating to such facilities that is outstanding on the Issue Date;

(H) the surrender or waiver of contract rights or the settlement, release or surrender of contractual, non-contractual or other claims of any kind;

(I) the sale or discount, in each case without recourse, of accounts receivable arising in the ordinary course of business, but only in connection with the compromise of collection thereof;

(J) the factoring of accounts receivable arising in the ordinary course of business pursuant to arrangements customary in the region; and

(K) the grant in the ordinary course of business of any non-exclusive license of patents, trademarks, registrations therefor and other similar intellectual property.

The fair market value of any non-cash proceeds of a disposition of properties or assets and of any properties or assets referred to in the foregoing clause (E) of this definition shall be determined in the manner contemplated in the definition of the term "fair market value", the results of which determination shall be set forth in an Officers Certificate delivered to the Trustee.

"Attributable Indebtedness" in respect of a sale-and-leaseback transaction means, at the time of determination, the present value (discounted at the rate of interest implicit in such transaction, determined in accordance with GAAP) of the obligation of the lessee for net rental payments during the remaining term of the lease included in such sale-and-leaseback transaction (including any period for which such lease has been extended or may, at the option of the lessor, be extended). As used in the preceding sentence, the "net rental payments" under any lease for any such period shall mean the sum of rental and other payments required to be paid with respect to such period by the lessee thereunder, excluding any amounts required to be paid by such lessee on account of maintenance and repairs, insurance, taxes, assessments, water rates or similar charges. In the case of any lease that is terminable by the lessee upon payment of penalty, such net rental payment shall also include the amount of such penalty, but no rent shall be considered as required to be paid under such lease subsequent to the first date upon which it may be so terminated.

"Board of Directors" means the Board of Directors (*Conseil d'Administration*) of the Company, or any authorized committee of the Board of Directors.

"Board Resolution" means a copy of a resolution certified by the Secretary or an Assistant Secretary of the Company to have been duly adopted by the Board of Directors of the Company and to be in full force and effect on the date of such certification.

"Bund Rate" means, with respect to any relevant date, the rate per annum equal to the equivalent yield to maturity as of such date of the Comparable German Bund Issue, assuming a price for the Comparable German Bund Issue (expressed as a percentage of its principal amount) equal to the Comparable German Bund Price for such relevant date, where:

(1) “Comparable German Bund Issue” means the German Bundesanleihe security selected by any Reference German Bund Dealer as having a fixed maturity most nearly equal to the period from such redemption date to May 15, 2017, and that would be utilized at the time of selection and in accordance with customary financial practice, in pricing new issues of euro-denominated corporate debt securities in a principal amount approximately equal to the then outstanding principal amount of the Notes and of a maturity most nearly equal to May 15, 2017; provided, however, that, if the period from such redemption date to May 15, 2017, is less than one year, a fixed maturity of one year shall be used;

(2) “Comparable German Bund Price” means, with respect to any relevant date, the average of all Reference German Bund Dealer Quotations for such date (which, in any event, must include at least two such quotations), after excluding the highest and lowest such Reference German Bund Dealer Quotations, or if the Company obtains fewer than four such Reference German Bund Dealer Quotations, the average of all such quotations;

(3) “Reference German Bund Dealer” means any dealer of German Bundesanleihe securities appointed by the Company in good faith; and

(4) “Reference German Bund Dealer Quotations” means, with respect to each Reference German Bund Dealer and any relevant date, the average as determined by the Company of the bid and offered prices for the Comparable German Bund Issue (expressed in each case as a percentage of its principal amount) quoted in writing to the Company by such Reference German Bund Dealer at 3:30 p.m. Frankfurt, Germany, time on the third business day in Frankfurt preceding the relevant date.

“**Business Day**” means any day other than a Legal Holiday.

“**Capital Lease Obligation**” means, at the time any determination thereof is to be made, the amount of the liability in respect of a capital lease that would at such time be required to be capitalized on a balance sheet in accordance with GAAP (as in effect on the Issue Date for purposes of determining whether a lease is a capital lease).

“**Capital Stock**” means (a) in the case of a corporation, corporate stock, (b) in the case of an association or business entity, any and all shares, interests, participations, rights or other equivalents (however designated) of corporate stock, including preferred stock, (c) in the case of a partnership or limited liability company, partnership or membership interests (whether general or limited) and (d) any other interest or participation that confers on a Person the right to receive a share of the profits and losses of, or distributions of assets of, the issuing Person.

“**Cash Equivalents**” means:

(a) securities issued or directly and fully guaranteed or insured by the government of the United States of America, the Republic of France or any other country whose sovereign debt has a rating of at least A3 from Moody’s and at least A- from S&P or any agency or instrumentality of any such government (*provided* that the full faith and credit of such government is pledged in support thereof), in each case having maturities of not more than 12 months from the date of acquisition;

(b) certificates of deposit, Eurodollar time deposits and French negotiable debt instruments (*titres de créances négociables*) with maturities of 12 months or less from the date of acquisition, bankers' acceptances with maturities not exceeding six months and overnight bank deposits (collectively, "**Bank Deposits**"), in each case with or issued by any commercial bank organized under the laws of any country that is a member of the Organization for Economic Co-operation and Development having capital and surplus in excess of 500,000,000 and whose long-term debt securities are rated at least A3 by Moody's and at least A- by S&P;

(c) repurchase obligations with a term of not more than seven days for underlying securities of the types described in clauses (a) and (b) above entered into with any financial institution meeting the qualifications specified in clause (b) above;

(d) commercial paper and French negotiable debt instruments (*titres de créances négociables*) having a rating of at least P-1 from Moody's or at least A-1 from S&P and in each case maturing within 12 months after the date of acquisition;

(e) deposits available for withdrawal on demand with any commercial bank not meeting the qualifications specified in clause (b) above, *provided* that all such deposits are made in the ordinary course of business, do not remain on deposit for more than 30 consecutive days and do not exceed 25,000,000 in the aggregate at any one time, with no more than 5,000,000 being deposited in commercial banks within a single country;

(f) money market mutual funds substantially all of the assets of which are of the type described in any of the foregoing clauses (a) through (d), including, without limitation, any mutual fund for which the Trustee or an Affiliate of the Trustee serves as investment manager, administrator, shareholder servicing agent, and/or custodian or subcustodian, notwithstanding that the Trustee or an Affiliate of the Trustee receives fees from such funds for services it or its Affiliate renders to such fund in respect of such investment; and

(g) in the case of Restricted Subsidiaries organized under the laws of China, Bank Deposits from the date of acquisition issued by a commercial bank organized under the laws of China (i) which has also issued Bank Deposits in which such Restricted Subsidiary is invested as of the Issue Date in the ordinary course of business and consistent with past practice; or (ii) which has capital, surplus and undivided profits aggregating in excess of 500,000,000 (or the foreign currency equivalent thereof as of the date of such investment) and whose long-term debt securities are rated at least A3 by Moody's Investors Service, Inc. and at least A- by Standard & Poors Ratings Services.

"**Change of Control**" means the occurrence of any of the following: (a) the sale, lease, transfer, conveyance or other disposition (other than by way of merger or consolidation), in one or a series of related transactions, of all or substantially all of the properties or assets of the Company and its Subsidiaries, taken as a whole, (b) the adoption, by holders of Capital Stock of the Company, of a voluntary plan relating to the liquidation or dissolution of the Company, (c) the consummation of any transaction (including, without limitation, any merger or consolidation) the result of which is that any "person" (as such term is used in Section 13(d) (3) of the Exchange Act) becomes the "beneficial owner" (as such term is defined in Rule 13d-3 and Rule 13d-5 under the Exchange Act), directly or indirectly through one or more intermediaries, of

more than 50% of the voting power of the outstanding Voting Stock of the Company or (d) the first day on which more than a majority of the members of the Board of Directors are not Continuing Directors; *provided, however*, that a transaction in which the Company becomes a Subsidiary of another Person (other than a Person that is an individual) shall not constitute a Change of Control if (i) the shareholders of the Company immediately prior to such transaction “beneficially own” (as such term is defined in Rule 13d-3 and Rule 13d-5 under the Exchange Act), directly or indirectly through one or more intermediaries, at least a majority of the voting power of the outstanding Voting Stock of such other Person immediately following the consummation of such transaction and (ii) immediately following the consummation of such transaction, no “person” (as such term is defined above), other than such other Person (but including the holders of the Equity Interests of such other Person), “beneficially owns” (as such term is defined above), directly or indirectly through one or more intermediaries, more than 50% of the voting power of the outstanding Voting Stock of the Company.

“**Clearstream**” means Clearstream Banking, *société anonyme*.

“**Company**” means the party named as such in the first paragraph of this Indenture until a successor replaces it in accordance with the applicable provisions of this Indenture and thereafter means such successor.

“**Consolidated Cash Flow**” means, with respect to any Person for any period, the Consolidated Net Income of such Person for such period plus, to the extent deducted or excluded in calculating Consolidated Net Income for such period,

(a) provision for taxes based on income or profits of such Person and its Restricted Subsidiaries,

(b) Consolidated Interest Expense of such Person and its Restricted Subsidiaries,

(c) depreciation and amortization (including amortization or impairment, if any, of goodwill and other intangibles, but excluding amortization of prepaid cash expenses that were paid in a prior period) of such Person and its Restricted Subsidiaries,

(d) other non-cash expenses (excluding any such non-cash expense to the extent that it represents an accrual of or reserve for cash expenses in any future period or amortization of a prepaid cash expense that was paid in a prior period) of such Person and its Restricted Subsidiaries less any non-cash items increasing Consolidated Net Income of such Person and its Restricted Subsidiaries (other than items that will result in cash receipt),

(e) any expenses, fees, charges or other costs related to any equity offering (other than an offering of Disqualified Stock) permitted by this Indenture (whether or not successful), and

(f) without duplication, an amount equal to any extraordinary loss plus any net loss realized by such Person or any of its Restricted Subsidiaries in connection with an Asset Sale,

in each case, on a consolidated basis and determined in accordance with GAAP.

“Consolidated Interest Coverage Ratio” means with respect to any Person for any period, the ratio of the Consolidated Cash Flow of such Person for such period to the Consolidated Interest Expense of such Person for such period; *provided, however*, that the Consolidated Interest Coverage Ratio shall be calculated giving *pro forma* effect to each of the following transactions as if each such transaction had occurred at the beginning of the applicable four-quarter reference period:

(a) any incurrence, assumption, guarantee, repayment, purchase or redemption by such Person or any of its Restricted Subsidiaries of any Indebtedness (other than revolving credit borrowings) subsequent to the commencement of the period for which the Consolidated Interest Coverage Ratio is being calculated but prior to the date on which the event for which the calculation of the Consolidated Interest Coverage Ratio is made (the **“Calculation Date”**);

(b) any acquisition that has been made by such Person or any of its Restricted Subsidiaries, or approved and expected to be consummated within 30 days of the Calculation Date, including, in each case, through a merger or consolidation, and including any related financing transactions, during the reference period or subsequent to such reference period and on or prior to the Calculation Date; and

(c) any other transaction that may be given *pro forma* effect in accordance with Article 11 of Regulation S-X under the Securities Act as in effect from time to time;

provided further, however, that (i) the Consolidated Cash Flow attributable to discontinued operations, as determined in accordance with GAAP, and operations or businesses disposed of prior to the Calculation Date, shall be excluded and (ii) the Consolidated Interest Expense attributable to discontinued operations, as determined in accordance with GAAP, and operations or businesses disposed of prior to the Calculation Date, shall be excluded, but only to the extent that the obligations giving rise to such Consolidated Interest Expense will not be obligations of the referent Person or any of its Restricted Subsidiaries following the Calculation Date.

“Consolidated Interest Expense” means, with respect to any Person for any period, the sum, without duplication, of

(a) the consolidated interest expense of such Person and its Restricted Subsidiaries for such period, whether paid or accrued (including, without limitation, amortization of original issue discount, non-cash interest payments, the interest component of any deferred payment obligations, the interest component of all payments associated with Capital Lease Obligations, commissions, discounts and other fees and charges incurred in respect of letter of credit or bankers’ acceptance financings, and net of all payments made or received (if any) pursuant to Hedging Obligations in respect of interest rates but excluding amortization of debt issuance costs and non-cash charges other than non-cash interest expenses related to convertible bonds), and

(b) the consolidated interest expense of such Person and its Restricted Subsidiaries that was capitalized during such period.

“Consolidated Net Income” means, with respect to any Person for any period, the aggregate of the Net Income of such Person and its Restricted Subsidiaries for such period, on a consolidated basis, determined in accordance with GAAP, *provided* that (a) the Net Income (but

not loss) of any Person that is not a Restricted Subsidiary or that is accounted for by the equity method of accounting shall be included only to the extent of the amount of dividends or distributions paid in cash to the referent Person or a Restricted Subsidiary thereof, (b) the Net Income of any Restricted Subsidiary shall be excluded to the extent that the declaration or payment of dividends or similar distributions by that Restricted Subsidiary of that Net Income is not at the date of determination permitted without any prior governmental approval (that has not been obtained) or, directly or indirectly, by operation of the terms of its charter or any agreement, instrument, judgment, decree, order, statute, rule or governmental regulation applicable to that Restricted Subsidiary or its stockholders and (c) the cumulative effect of a change in accounting principles shall be excluded.

“Consolidated Net Worth” means, with respect to any Person as of any date, the consolidated stockholders’ equity of such Person and its Restricted Subsidiaries as of such date less the amount of consolidated stockholders’ equity attributable to Disqualified Stock or treasury stock of such Person and its Restricted Subsidiaries as of such date, in each case determined in accordance with GAAP.

“Consolidated Tangible Net Worth” means, at any date, the Consolidated Net Worth of the Company and its Restricted Subsidiaries as shown on their most recent consolidated balance sheet less, without duplication, all goodwill, trade names, trademarks, patents, unamortized debt discount and expense and other like intangibles, as determined in accordance with GAAP.

“Consolidated Total Assets” means, with respect to any Person as of any date, the consolidated total assets of such Person and its Restricted Subsidiaries as of such date, as determined in accordance with GAAP.

“Continuing Directors” means, as of any date of determination, any member of the Board of Directors who (a) was a member of the Board of Directors on the Issue Date or (b) was nominated for election to the Board of Directors with the approval of, or whose election to the Board of Directors was ratified by, at least a majority of the members of the Board of Directors who were members of the Board of Directors on the Issue Date or who were so elected to the Board of Directors thereafter.

“Corporate Trust Office of the Trustee” shall be at the address of the Trustee specified in Section 11.02 hereof or such other address as to which the Trustee may give notice to the Company.

“Credit Facilities” means, with respect to any Person, one or more debt facilities or commercial paper facilities with banks or other institutional lenders (including with special purpose vehicles established by such banks or lenders to provide such facilities) providing for revolving credit loans, term loans, receivables financing (including through the sale of receivables to such lenders or to special purpose entities formed to borrow from such lenders against such receivables) or trade letters of credit, in each case, as amended, restated, modified, renewed, refunded, replaced or refinanced in whole or in part from time to time.

“Default” means any event that is, or with the passage of time or the giving of notice or both, would be, an Event of Default.

“Definitive Notes” means Notes that are in registered certificated form.

“Depository” means, with respect to the Notes issuable or issued in whole or in part in global form, Euroclear and Clearstream with respect to the Notes, until a successor shall have been appointed and becomes such pursuant to the applicable provision of this Indenture, and, thereafter, “Depository” shall mean or include such successor.

“Designated Non-Cash Consideration” means the fair market value of non-cash consideration received by the Company or one of its Restricted Subsidiaries in connection with an Asset Sale that is so designated as Designated Non-Cash Consideration pursuant to an Officer’s Certificate, setting forth the basis of such valuation, less the amount of cash or Cash Equivalents received in connection with a subsequent payment, redemption, retirement, sale or other disposition of such Designated Non-Cash Consideration. A particular item of Designated Non-Cash Consideration will no longer be considered to be outstanding when and to the extent it has been paid, redeemed or otherwise retired or sold or otherwise disposed of in compliance with Section 4.10 of this Indenture.

“Disqualified Stock” means any Capital Stock that, by its terms (or by the terms of any security into which it is convertible or for which it is exchangeable), or upon the happening of any event, matures (excluding any maturity as a result of an optional redemption by the issuer thereof) or is mandatorily redeemable, pursuant to a sinking fund obligation or otherwise, or redeemable at the option of the holder thereof, in whole or in part, on or prior to the date that is 91 days after the date on which the Notes mature or are redeemed or retired in full; *provided, however*, that any Capital Stock that would constitute Disqualified Stock solely because the holders thereof (or of any security into which it is convertible or for which it is exchangeable) have the right to require the issuer to repurchase such Capital Stock (or such security into which it is convertible or for which it is exchangeable) upon the occurrence of any of the events constituting an Asset Sale or a Change of Control shall not constitute Disqualified Stock if such Capital Stock (and all such securities into which it is convertible or for which it is exchangeable) provides that the issuer thereof may not repurchase or redeem any such Capital Stock (or any such security into which it is convertible or for which it is exchangeable) pursuant to such provisions prior to compliance by the Company with Section 4.10 or 4.15 of this Indenture, as the case may be.

“\$”, “dollars” and “U.S. dollars” denote the lawful currency of the United States of America.

“Equity Interests” means Capital Stock and all warrants, options or other rights to acquire Capital Stock (but excluding any debt security that is convertible into, or exchangeable for, Capital Stock).

“euro” and “ ” denote the lawful single currency of participating member states of the European Economic and Monetary Union as contemplated by the Treaty Establishing the European Union.

“Euroclear” means Euroclear SA/NV, as operator of the Euroclear system.

“European Government Obligations” means any euro-denominated security that is a direct obligation of, or obligations guaranteed by, a country that is a member of the European Monetary Union on the date of the Indenture (other than Greece, Portugal or Cyprus), and the payment for which such country pledges its full faith and credit.

“Exchange Act” means the U.S. Securities Exchange Act of 1934, as amended.

“Existing Indebtedness” means Indebtedness of the Company and its Restricted Subsidiaries (other than Indebtedness under the Credit Facilities) in existence on the date of this Indenture, until such amounts are repaid, but shall not include any Indebtedness that is repaid with the proceeds of the Notes.

The term **“fair market value”** means, with respect to any asset or Investment, the fair market value of such asset or Investment at the time of the event requiring such determination, as determined in good faith by the Company, or, with respect to any asset or Investment in excess of 50,000,000 (other than cash or Cash Equivalents), as determined by a reputable investment banking, accounting or appraisal firm that is, in the judgment of the Board of Directors, qualified to perform the task for which such firm has been engaged and independent with respect to the Company.

“GAAP” means International Financial Reporting Standards, accounting principles adopted by the International Accounting Standards Board and its predecessor and, except as otherwise specified, as in effect from time to time.

“guarantee” means a guarantee other than by endorsement of negotiable instruments for collection in the ordinary course of business, direct or indirect, in any manner including, without limitation, by way of pledge of assets or through letters of credit or reimbursement agreements in respect thereof, of all or any part of any Indebtedness.

“Guarantor” means each of:

(a) the Initial Guarantors; and

(b) any other Subsidiary of the Company (including any Restricted Subsidiary that becomes a Guarantor at its option) that executes a supplemental indenture providing for a Subsidiary Guarantee in accordance with the provisions of this Indenture,

and their respective successors and assigns, in each case, until the Subsidiary Guarantee of such Person has been released in accordance with Sections 10.04, 10.05 or 10.06 hereof.

“Hedging Obligations” means, with respect to any Person, the obligations of such Person under (a) interest rate swap agreements, interest rate cap agreements and interest rate collar agreements, (b) other agreements or arrangements designed to protect such Person against fluctuations in interest rates and (c) any foreign currency futures contract, option or similar agreement or arrangement designed to protect such Person against fluctuations in currency exchange rates or commodity prices, in each case to the extent such obligations are incurred in the ordinary course of business of such Person and not for speculative purposes.

“Holder” means a Person in whose name a Note is registered.

“Indebtedness” means, with respect to any Person, any indebtedness of such Person, without duplication, whether or not contingent, in respect of borrowed money including, without limitation, any guarantee thereof, or evidenced by bonds, debentures, notes or similar instruments or letters of credit (or reimbursement agreements in respect thereof) or bankers’ acceptances or representing Capital Lease Obligations or the balance deferred and unpaid of the purchase price of any property, except any such balance that constitutes an accrued expense or trade account payable, or representing any Hedging Obligations, if and to the extent any of the foregoing indebtedness (other than letters of credit, guarantees and Hedging Obligations) would appear as a liability upon a balance sheet of such Person prepared in accordance with GAAP. The amount of any Indebtedness outstanding as of any date shall be (a) the accreted value thereof, in the case of any Indebtedness that does not require current payments of interest, and (b) the principal amount thereof, in the case of any other Indebtedness (with letters of credit being deemed to have a principal amount equal to the maximum potential liability of the Company and its Restricted Subsidiaries thereunder).

“Indenture” means this Indenture, as amended or supplemented from time to time.

“Indirect Participant” means a Person who holds an interest through a Participant.

“Initial Guarantors” means CGG Holding B.V., CGG Marine B.V., CGG Marine Resources Norge A/ S, CGG Holding (U.S.) Inc., CGG Services (U.S.) Inc., Veritas Investments Inc., CGG Land (U.S.) Inc., Viking Maritime Inc., Veritas Geophysical (Mexico) LLC, Alitheia Resources Inc., Sercel, Inc., Sercel-GRC Corp., each a Restricted Subsidiary of the Company and a Guarantor as of the Issue Date.

“Investment Grade Status” shall occur when the Notes receive a rating of “BBB-” or higher from S&P (or its equivalent under any successor rating categories of S&P) and a rating of “Baa3” or higher from Moody’ s (or its equivalent under any successor rating categories of Moody’ s) or, if either such entity ceases to rate the Notes for reasons outside the normal control of the Company, the equivalent investment grade credit rating from any other “nationally recognized statistical rating organization”, as that term is used in Rule 15c3-1(c)(2)(vi)(F) under the Exchange Act, selected by the Company as a replacement agency.

“Investments” means, with respect to any Person, all investments by such Person in other Persons (including Affiliates) in the forms of direct or indirect loans (including guarantees by the referent Person of, and Liens on any assets of the referent Person securing, Indebtedness or other obligations of other Persons), advances or capital contributions (excluding commission, travel and similar advances to directors, officers and employees made in the ordinary course of business), purchases or other acquisitions for consideration of Indebtedness, Equity Interests or other securities, together with all items that are or would be classified as investments on a balance sheet prepared in accordance with GAAP; *provided, however*, that the following shall not constitute Investments: (i) extensions of trade credit or other advances to customers on commercially reasonable terms in accordance with normal trade practices or otherwise in the ordinary course of business, (ii) Hedging Obligations and (iii) endorsements of negotiable instruments and documents in the ordinary course of business. If the Company or any Restricted

Subsidiary of the Company sells or otherwise disposes of any Equity Interests of any direct or indirect Restricted Subsidiary of the Company such that, after giving effect to any such sale or disposition, such Person is no longer a Restricted Subsidiary of the Company, the Company shall be deemed to have made an Investment on the date of any such sale or disposition equal to the fair market value of the Equity Interests of such Restricted Subsidiary not sold or disposed of in an amount determined as provided in Section 4.07 of this Indenture.

“Issue Date” means April 23, 2014.

“Legal Holiday” means a Saturday, a Sunday or a day on which banking institutions in Paris, France, New York, New York or at a place of payment with respect to the Notes are authorized by law, regulation or executive order to remain closed. If a payment date is a Legal Holiday at a place of payment, payment may be made at that place on the next succeeding day that is not a Legal Holiday, and no interest shall accrue for the intervening period.

“Lien” means, with respect to any asset, any mortgage, lien, pledge, charge, security interest or encumbrance of any kind in respect of such asset, whether or not filed, recorded or otherwise perfected under applicable law (including any conditional sale or other title retention agreement, any lease in the nature thereof, any option or other agreement to sell or give a security interest in and any filing of or agreement to give any financing statement under the Uniform Commercial Code (or equivalent statutes) of any jurisdiction other than a precautionary financing statement respecting a lease not intended as a security agreement) or any assignment of (or agreement to assign) any right to income or profits from any assets by way of security.

“Moody’ s” means Moody’ s Investors Service, Inc. or any successor to the rating agency business thereof.

“Net Income” means, with respect to any Person, the net income (or loss) of such Person, determined in accordance with GAAP and before any reduction in respect of preferred stock dividends, excluding, however, (a) any gain (but not loss), together with any related provision for taxes on such gain (but not loss), realized in connection with (i) any Asset Sale (including, without limitation, dispositions pursuant to sale-and-leaseback transactions) or (ii) the disposition of any securities by such Person or any of its Restricted Subsidiaries or the extinguishment of any Indebtedness of such Person or any of its Restricted Subsidiaries and (b) any extraordinary or nonrecurring gain (but not loss), together with any related provision for taxes on such extraordinary or nonrecurring gain (but not loss).

“Net Proceeds” means the aggregate cash proceeds received by the Company or any of its Restricted Subsidiaries in respect of any Asset Sale (including, without limitation, any cash received upon the sale or other disposition of any non-cash consideration received in any Asset Sale), net of (without duplication) the following: (a) the direct costs relating to such Asset Sale (including, without limitation, legal, accounting and investment banking fees, sales commissions, recording fees, title transfer fees, title insurance premiums, appraiser fees, other out-of-pocket expenses and costs incurred in connection with preparing such asset for sale) and any relocation expenses incurred as a result thereof, (b) taxes paid or estimated to be payable as a result thereof (after taking into account any available tax credits or deductions and any tax sharing arrangements that will result in a reduction in consolidated tax liability), (c) amounts required to

be applied to the repayment of Indebtedness (other than under a revolving credit facility) secured by a Lien on the asset or assets that were the subject of such Asset Sale and (d) any reserve (including any reserve against any liabilities associated with such Asset Sale and retained by the Company or the relevant Restricted Subsidiary) established in accordance with GAAP or any amount placed in escrow, in either case for adjustment in respect of the sale price of such asset or assets, until such time as such reserve is reversed or such escrow arrangement is terminated, in which case Net Proceeds shall include only the amount of the reserve so reversed or the amount returned to the Company or its Restricted Subsidiaries from such escrow arrangement, as the case may be.

“Non-Recourse Debt” means Indebtedness (a) as to which neither the Company nor any of its Restricted Subsidiaries (i) provides credit support of any kind (including any undertaking, agreement or instrument that would constitute Indebtedness) or is otherwise directly or indirectly liable (as a guarantor or otherwise) or (ii) constitutes the lender, (b) no default with respect to which (including any rights the holders thereof may have to take enforcement action against an Unrestricted Subsidiary) would permit (upon notice, lapse of time or both) the holders of Indebtedness of the Company or any of its Restricted Subsidiaries (other than the Notes) to declare a default on such Indebtedness or cause the payment thereof to be accelerated or payable prior to its stated maturity and (c) as to which the lenders have been notified in writing that they will not have any recourse to the stock or assets of the Company or any of its Restricted Subsidiaries.

“Notes” has the meaning set forth in the Recital of this Indenture.

“Note Custodian” means the Trustee, as custodian with respect to the Notes in global form, or any successor entity thereto.

“Obligations” means any principal, interest, penalties, fees, indemnifications, reimbursements, damages and other liabilities payable under the documentation governing any Indebtedness.

“Officer” means, with respect to any Person, the Chairman of the Board, the Chief Executive Officer, the President, the Chief Operating Officer, the Chief Financial Officer, the Chief Administrative Officer, the Treasurer, any Assistant Treasurer, the Controller, the Secretary or any Vice-President of such Person.

“Officers’ Certificate” means a certificate signed on behalf of the Company by two Officers of the Company, one of whom must be the principal executive officer, the principal financial officer, the treasurer or the principal accounting officer of the Company, that meets the requirements of Section 11.05 hereof.

“Opinion of Counsel” means an opinion from legal counsel who is reasonably acceptable to the Trustee, that meets the requirements of Section 11.05 hereof. Unless otherwise provided in this Indenture, the counsel may be an employee of or counsel to the Company, any Subsidiary of the Company or the Trustee.

“Pari Passu Indebtedness” means, with respect to any Net Proceeds from Asset Sales, Indebtedness of the Company and its Restricted Subsidiaries the terms of which require the Company or such Restricted Subsidiary to apply such Net Proceeds to offer to purchase such Indebtedness.

“Participant” means with respect to Euroclear or Clearstream, a Person who has an account with Euroclear or Clearstream, respectively.

“Permitted Guarantees” means any guarantee:

- (a) guaranteeing or securing the Notes or the guarantee of any Guarantor,
- (b) in favor of the Company or a Guarantor,
- (c) guaranteeing Indebtedness incurred pursuant to clause (a) of the second paragraph of Section 4.09 of this Indenture, or
- (d) in existence on the date of this Indenture to the extent guaranteeing Existing Indebtedness and Permitted Refinancing Indebtedness in respect thereof incurred in compliance with clause (j) of the second paragraph of Section 4.09 of this Indenture.

“Permitted Investments” means:

- (a) any Investment in the Company (including, without limitation, any acquisition of the Notes) or in a Restricted Subsidiary of the Company, other than any Investment described in clause (a) of the definition of “Restricted Payments”,
- (b) any Investment in cash or Cash Equivalents,
- (c) any Investment by the Company or any Restricted Subsidiary of the Company in a Person if as a result of such Investment (i) such Person becomes a Restricted Subsidiary of the Company or (ii) such Person is merged or consolidated with or into, or transfers or conveys all or substantially all of its properties or assets to, or is liquidated into, the Company or a Restricted Subsidiary of the Company,
- (d) any Investment made as a result of the receipt of non-cash consideration from (i) an Asset Sale that was made pursuant to and in compliance with Section 4.10 hereof or (ii) a disposition of assets that does not constitute an Asset Sale,
- (e) Investments in stock, obligations or securities received in settlement of any claim or debts owing to the Company or any Restricted Subsidiary as a result of bankruptcy or insolvency proceedings or received in satisfaction of any judgment or in settlement of any claim in circumstances where the Company does not expect it would receive cash payment in a timely manner, or upon the foreclosure, perfection or enforcement of any Lien in favor of the Company or any Restricted Subsidiary, in each case as to any claim or debts owing to the Company or any Restricted Subsidiary that arose in the ordinary course of business of the Company or any such Restricted Subsidiary, *provided* that any stocks, obligations or securities received in settlement of any claim or debts that arose in the ordinary course of business (and received other than as a result of bankruptcy or insolvency proceedings or received in satisfaction of any judgment or in settlement of any claim in circumstances where the Company does not expect it would receive cash payment in a timely manner, or upon foreclosure, perfection or enforcement of any Lien) that are, within 180 days of receipt, converted into cash or Cash Equivalents shall be treated as having been cash or Cash Equivalents at the time received,

(f) Investments in Argas Ltd. consisting of guarantees of its obligations incurred in the ordinary course of its business, *provided* that such Investments, when taken together with all other Investments made pursuant to this clause (f) that are at the time outstanding, do not exceed 50,000,000,

(g) Investments in Argas Ltd. (other than those described in clause (f) above) and any other Affiliate organized in a foreign jurisdiction that is required by the applicable laws and regulations of such foreign jurisdiction or its governmental agencies, authorities or state-owned businesses to be majority owned by the government of such foreign jurisdiction or individual or corporate citizens of such foreign jurisdiction or another foreign jurisdiction in order for such Affiliate to transact business in such foreign jurisdiction, *provided* that such Investments, when taken together with all other Investments made pursuant to this clause (g) that are at the time outstanding, do not exceed 20% of Consolidated Tangible Net Worth,

(h) Investments in any Person in exchange for, or out of the net cash proceeds of, an issue or sale by the Company of Equity Interests (other than Disqualified Stock), and

(i) other Investments in any Person having an aggregate fair market value (measured on the date each such Investment was made and without giving effect to subsequent changes in value), when taken together with all other Investments made pursuant to this clause (i) that are at the time outstanding, do not exceed 25,000,000.

“Permitted Liens” means:

(a) Liens securing Indebtedness incurred pursuant to clause (a) of the second paragraph of Section 4.09 hereof, and Liens securing any other Indebtedness under Credit Facilities incurred pursuant to the first paragraph of such Section 4.09,

(b) Liens in favor of the Company and its Restricted Subsidiaries,

(c) Liens on any property or asset of a Person existing at the time such Person is merged into or consolidated with the Company or any Restricted Subsidiary of the Company, *provided* that such Liens were in existence prior to such merger or consolidation, were not created in contemplation of it and do not extend to any property or asset of the Company or any of its Restricted Subsidiaries other than those of the Person merged into or consolidated with the Company or any of its Restricted Subsidiaries,

(d) Liens on any property or asset existing at the time of acquisition thereof by the Company or any Restricted Subsidiary of the Company, *provided* that such Liens were in existence prior to such acquisition, were not created in contemplation of it and do not extend to any other property or asset of the Company or any of its Restricted Subsidiaries,

(e) Liens securing the performance of statutory obligations, surety or appeal bonds, bid or performance bonds, insurance obligations or other obligations of a like nature incurred in the ordinary course of business,

(f) Liens securing Hedging Obligations,

(g) Liens existing on the date hereof,

(h) Liens securing Indebtedness (including Capital Lease Obligations) permitted by clause (g) of the second paragraph of Section 4.09 hereof, *provided* that such Liens extend only to the property, plant or equipment financed by such Indebtedness,

(i) any interest or title of a lessor under an operating lease,

(j) Liens arising by reason of deposits necessary to obtain standby letters of credit in the ordinary course of business,

(k) Liens on real or personal property or assets of the Company or a Restricted Subsidiary thereof to secure Indebtedness incurred for the purpose of (i) financing all or any part of the purchase price of such property or assets incurred prior to, at the time of, or within 90 days after, the acquisition of such property or assets or (ii) financing all or any part of the cost of construction or improvement of any such property or assets, *provided* that the amount of any such financing shall not exceed the amount expended in the acquisition of, or the construction of, such property or assets and such Liens shall not extend to any other property or assets of the Company or a Restricted Subsidiary (other than any associated accounts, contracts and insurance proceeds),

(l) judgment Liens not giving rise to an Event of Default so long as any appropriate legal proceeding which may have been duly initiated for the review of such judgment shall not have been finally terminated or the period within which such proceeding may be initiated shall not have expired,

(m) Liens securing Indebtedness of the Company or any Restricted Subsidiary of the Company that does not exceed 10,000,000 at any one time outstanding,

(n) Liens securing Acquired Indebtedness incurred pursuant to the first paragraph of Section 4.09 hereof, *provided* that such Liens (1) secured such Acquired Indebtedness at the time of and prior to the incurrence of such Acquired Indebtedness by the Company or a Restricted Subsidiary of the Company and were not granted in connection with, or in anticipation of, such incurrence, and (2) do not extend to any property or asset of the Company or any of its Restricted Subsidiaries other than the property or asset that secured the Acquired Indebtedness prior to the time that it became Acquired Indebtedness of the Company or a Restricted Subsidiary of the Company,

(o) Liens securing Permitted Refinancing Indebtedness with respect to any Indebtedness secured by Liens referred to in clauses (c), (d), (g), (h), (k) and (n) above and in this clause (o), and

(p) Liens for taxes, assessments or governmental charges or claims that are not yet delinquent or that are being contested in good faith by appropriate proceedings promptly instituted and diligently concluded provided that any reserve or other appropriate provision as is required in conformity with GAAP has been made therefor.

“Permitted Refinancing Indebtedness” means any Indebtedness of the Company or any of its Restricted Subsidiaries issued in exchange for, or the net proceeds of which are used to extend, refinance, renew, replace, defease or refund other Indebtedness of the Company or any of its Restricted Subsidiaries; *provided, however*, that

(a) the principal amount (or accreted value, if applicable) of such Permitted Refinancing Indebtedness does not exceed the principal amount of (or accreted value, if applicable), plus premium, if any, and accrued interest on, the Indebtedness so extended, refinanced, renewed, replaced, defeased or refunded (plus the amount of expenses incurred in connection therewith),

(b) such Permitted Refinancing Indebtedness has a final maturity date no earlier than the final maturity date of, and has a Weighted Average Life to Maturity equal to or greater than the Weighted Average Life to Maturity of, the Indebtedness being extended, refinanced, renewed, replaced, defeased or refunded,

(c) if the Indebtedness being extended, refinanced, renewed, replaced, defeased or refunded is subordinated in right of payment to the Notes, such Permitted Refinancing Indebtedness is subordinated in right of payment to the Notes on terms at least as favorable, taken as a whole, to the Holders of Notes as those contained in the documentation governing the Indebtedness being extended, refinanced, renewed, replaced, defeased or refunded, and

(d) if the Company is the obligor on the Indebtedness being extended, refinanced, renewed, replaced, defeased or refunded, then such Permitted Refinancing Indebtedness is solely Indebtedness of the Company;

provided, however, that a Restricted Subsidiary that is also a Guarantor may guarantee Permitted Refinancing Indebtedness incurred by the Company, whether or not such Restricted Subsidiary was an obligor or guarantor of the Indebtedness being extended, refinanced, renewed, replaced, defeased or refunded; *provided further, however*, that if such Permitted Refinancing Indebtedness is subordinated to the Notes, such guarantee shall be subordinated to such Restricted Subsidiary’s Subsidiary Guarantee to at least the same extent.

“Person” means any individual, corporation, partnership, limited liability company, joint venture, association, joint-stock company, trust, unincorporated organization or government or other entity.

“Qualified Equity Offering” means (a) any issuance and sale of Equity Interests (other than Disqualified Stock) of the Company pursuant to an underwritten offering registered under the Securities Act or (b) any other issuance and sale of Equity Interests (other than Disqualified Stock) of the Company so long as, at the time of consummation of such sale, the Company has a class of common equity securities (including American depository shares) registered pursuant to Section 12(b) or Section 12(g) under the Exchange Act.

“Reference Date” means April 28, 2005.

“Regulation S” means Regulation S under the Securities Act.

“Regulation S Global Note” means a permanent global note that contains the applicable restricted legends referred to in the form of the Note attached hereto as Exhibit A, and that is deposited with the Note Custodian and registered in the name of the Depository, representing Notes originally issued or transferred in reliance on Regulation S.

“Responsible Officer”, when used with respect to the Trustee, means any officer within the Corporate Trust Office of the Trustee (or any successor corporate trust office of the Trustee) or any other officer of the Trustee customarily performing functions similar to those performed by any of the above designated officers and also means, with respect to a particular corporate trust matter, any other officer to whom such matter is referred because of his knowledge of and familiarity with the particular subject and, in each case, having direct responsibility for the administration of this Indenture.

“Restricted Global Notes” means the Rule 144A Global Note and the Regulation S Global Note, and each of which is required to bear the legend set forth in Section 2.06(f) hereof.

“Restricted Investment” means an Investment other than a Permitted Investment.

“Restricted Subsidiary” of a Person means any Subsidiary of such Person that is not an Unrestricted Subsidiary.

“Rule 144A” means Rule 144A promulgated under the Securities Act.

“S&P” means Standard & Poor’s Financial Services LLC, a subsidiary of The McGraw Hill Companies, Inc. or any successor to the rating agency business thereof.

“SEC” means the Securities and Exchange Commission.

“Securities Act” means the U.S. Securities Act of 1933, as amended.

“Sercel-GRC Corp.” means Sercel-GRC Corp., an Oklahoma corporation with its head office in Tulsa, Oklahoma, and a Restricted Subsidiary of the Company and a Guarantor as of the Issue Date.

“Sercel Guarantors” means Sercel, Inc. and Sercel-GRC. Corp.

“Sercel, Inc.” means Sercel, Inc., an Oklahoma corporation with its head office in Houston, Texas, and a Restricted Subsidiary of the Company and a Guarantor as of the Issue Date.

“Sercel S.A.” means:

(a) Sercel S.A., a French limited liability corporation with its head office in Carquefou, France, and a Restricted Subsidiary of the Company as of the Issue Date; and/or

(b) any holding company (including Sercel Holding S.A.) that holds all of the outstanding Capital Stock of either or both of Sercel S.A. and Sercel, Inc. (other than directors' qualifying shares and Capital Stock held by other statutorily required minority shareholders) and that does not hold any Capital Stock in any other Subsidiary of the Company.

"Significant Subsidiary" means any Restricted Subsidiary of the Company that would be a "significant subsidiary" as defined in Article 1, Rule 1-02 of Regulation S-X, promulgated pursuant to the Securities Act, as such Regulation is in effect on the date of this Indenture.

"Stated Maturity" means, with respect to any mandatory sinking fund or other installment of interest or principal on any series of Indebtedness, the date on which such payment of interest or principal was scheduled to be paid in the original documentation governing such Indebtedness, and shall not include any contingent obligations to repay, redeem or repurchase any such interest or principal prior to the date originally scheduled for the payment thereof.

"Strategic Assets" means assets or rights (other than assets that would be classified as current assets in accordance with GAAP) of the kind used or usable by the Company or its Restricted Subsidiaries in the business of providing services or software products to the oil and gas industry or manufacturing equipment for use by the oil and gas industry (or any business that is reasonably complementary or related thereto as determined in good faith by the Board of Directors).

"Subsidiary" means, with respect to any Person, (a) any corporation, association or other business entity of which more than 50% of the total voting power of shares of Capital Stock entitled (without regard to the occurrence of any contingency) to vote in the election of directors, managers or trustees thereof is at the time owned or controlled, directly or indirectly, by such Person or one or more of the other Subsidiaries of that Person (or a combination thereof), (b) any partnership (i) the sole general partner or the managing general partner of which is such Person or a Subsidiary of such Person or (ii) the only general partners of which are such Person or of one or more Subsidiaries of such Person (or any combination thereof) and (c) any other Person whose results for financial reporting purposes are consolidated with those of such Person in accordance with GAAP.

"Subsidiary Guarantee" means the guarantee by each Guarantor of the Company's obligations under this Indenture and the Notes, executed pursuant to Article 10 hereof.

"Transfer Restricted Securities" means securities that bear or are required to bear the legend set forth in Section 2.06(f) hereof.

"Trustee" means the party named as such in the first paragraph of this Indenture until a successor replaces it in accordance with the applicable provisions of this Indenture and thereafter means the successor serving hereunder.

"Unrestricted Subsidiary" means any Subsidiary of the Company that is designated by the Board of Directors as an Unrestricted Subsidiary pursuant to a Board Resolution and any Subsidiary of an Unrestricted Subsidiary. The Board of Directors may designate a Subsidiary as an Unrestricted Subsidiary only to the extent that such Subsidiary at the time of such designation (a) has no Indebtedness other than Non-Recourse Debt, (b) is not party to any agreement,

contract, arrangement or understanding with the Company or any Restricted Subsidiary of the Company unless such agreement, contract, arrangement or understanding does not violate Section 4.11 hereof, and (c) is a Person with respect to which neither the Company nor any of its Restricted Subsidiaries has any direct or indirect obligation (i) to subscribe for additional Equity Interests or (ii) to maintain or preserve such Person's financial condition or to cause such Person to achieve any specified levels of operating results. Any such designation by the Board of Directors shall be evidenced to the Trustee by filing with the Trustee the Board Resolution giving effect to such designation and an Officers' Certificate certifying that such designation complied with the foregoing conditions and was permitted by Section 4.07 hereof. If, at any time, any Unrestricted Subsidiary would fail to meet the foregoing requirements as an Unrestricted Subsidiary, it shall thereafter cease to be an Unrestricted Subsidiary for purposes of this Indenture and any Indebtedness of such Subsidiary shall be deemed to be incurred by a Restricted Subsidiary of the Company as of such date (and, if such Indebtedness is not permitted to be incurred as of such date pursuant to Section 4.09 hereof, the Company shall be in default of such covenant). The Board of Directors may at any time designate any Unrestricted Subsidiary to be a Restricted Subsidiary, *provided* that such designation shall be deemed to be an incurrence of Indebtedness by a Restricted Subsidiary of the Company of any outstanding Indebtedness of such Unrestricted Subsidiary and such designation shall only be permitted if: (1) such Indebtedness is permitted under Section 4.09 hereof, calculated on a *pro forma* basis as if such designation had occurred at the beginning of the four-quarter reference period, and (2) no Default or Event of Default would be in existence following such designation.

"Voting Stock" of any Person as of any date means the Capital Stock of such Person that is at the time entitled to vote in the election of the board of directors, managers or trustees of such Person.

"Weighted Average Life to Maturity" means, when applied to any Indebtedness at any date, the number of years obtained by dividing (a) the sum of the products obtained by multiplying (i) the amount of each then remaining installment, sinking fund, serial maturity or other required payments of principal, including payment at final maturity, in respect thereof, by (ii) the number of years (calculated to the nearest one-twelfth) that will elapse between such date and the making of such payment, by (b) the then outstanding principal amount of such Indebtedness.

"Wholly Owned Restricted Subsidiary" of any Person means a Restricted Subsidiary of such Person to the extent that all of the outstanding Capital Stock or other ownership interests of which (other than directors' qualifying shares and Capital Stock held by other statutorily required minority shareholders) shall at the time be owned directly or indirectly by such Person.

SECTION 1.02. OTHER DEFINITIONS.

	<u>Term</u>	<u>Defined in Section</u>
"Additional Amounts"		4.19
"Affiliate Transaction"		4.11
"Agreement Currency"		4.20
"Asset Sale Offer"		3.09

<i>"Change of Control Offer"</i>	4.15
<i>"Change of Control Payment"</i>	4.15
<i>"Change of Control Payment Date"</i>	4.15
<i>"Covenant Defeasance"</i>	8.03
<i>"Definitive Notes Legend"</i>	2.06
<i>"Distribution Compliance Period"</i>	2.01
<i>"Event of Default"</i>	6.01
<i>"Excess Proceeds"</i>	4.10
<i>"Global Notes"</i>	2.01
<i>"incur" or "incurrence"</i>	4.09
<i>"Judgment Currency"</i>	4.20
<i>"Legal Defeasance"</i>	8.02
<i>"merger"</i>	1.04
<i>"Offer Amount"</i>	3.09
<i>"Offer Period"</i>	3.09
<i>"Other Company Indebtedness"</i>	4.13
<i>"Paying Agent"</i>	2.03
<i>"Payment Default"</i>	6.01
<i>"Purchase Date"</i>	3.09
<i>"QIB"</i>	2.06
<i>"Registrar"</i>	2.03
<i>"Regulation S Global Notes"</i>	2.01
<i>"Restricted Payments"</i>	4.07
<i>"Rule 144A Global Notes"</i>	2.01
<i>"Taxes"</i>	4.19
<i>"Relevant Taxing Jurisdiction"</i>	4.19
<i>"Suspended Provisions"</i>	4.23

SECTION 1.03. [INTENTIONALLY OMITTED]

SECTION 1.04. RULES OF CONSTRUCTION.

Unless the context otherwise requires:

- (1) a term has the meaning assigned to it;
- (2) an accounting term not otherwise defined has the meaning assigned to it in accordance with GAAP;
- (3) "or" is not exclusive;
- (4) words in the singular include the plural, and in the plural include the singular;
- (5) provisions apply to successive events and transactions;

(6) the term “**merger**” includes a *fusion*, an amalgamation, a compulsory share exchange, a conversion of a corporation into another business entity and any other transaction having effects substantially similar to a merger under the General Corporation Law of the State of Delaware;

(7) references to “France” are to the French Republic; and

(8) references to sections of or rules under the Securities Act or the Exchange Act shall be deemed to include substitute, replacement or successor sections or rules adopted by the SEC from time to time.

ARTICLE 2

THE NOTES

SECTION 2.01. FORM AND DATING.

The Notes shall be issued only in registered form. The Notes and the Trustee’s certificates of authentication shall be substantially in the form of Exhibit A hereto. The Notes may have notations, legends or endorsements required by law, stock exchange rule or usage. Each Note shall be dated the date of its authentication. Notes shall be issued in registered, global form in minimum denominations of 100,000 and integral multiples of 1,000 in excess thereof.

The terms and provisions contained in the Notes shall constitute, and are hereby expressly made, a part of this Indenture, and the Company, the Guarantors and the Trustee, by their execution and delivery of this Indenture, expressly agree to such terms and provisions and to be bound thereby. Notwithstanding the foregoing, to the extent any provision of any Note conflicts with the express provisions of this Indenture, the provisions of this Indenture shall govern and be controlling.

(a) *Global Notes.* The Original Notes will be offered and sold by the Company pursuant to a purchase agreement. The Original Notes will be resold initially only to (i) QIBs in reliance on Rule 144A and (ii) Persons other than U.S. Persons (as defined in Regulation S) in reliance on Regulation S. The Original Notes may thereafter be transferred to, among others, QIBs and purchasers in reliance on Regulation S, subject to the restrictions on transfer set forth herein. Notes initially resold pursuant to Rule 144A shall be issued initially in the form of one or more permanent global notes in definitive, fully registered form (collectively, the “**Rule 144A Global Note**”); and Notes initially resold pursuant to Regulation S shall be issued initially in the form of one or more permanent global notes in definitive, fully registered form (collectively, the “**Regulation S Global Note**”), in each case without interest coupons and with the global securities legend and the applicable restricted securities legend set forth in Exhibit A hereto. The Rule 144A Global Notes and the Regulation S Global Notes are collectively referred to herein as the “**Global Notes**”.

The Global Notes shall be deposited upon issuance with the Depositary and registered in the name of the nominee of the Depositary for the accounts of Euroclear or Clearstream.

Beneficial interests in the Rule 144A Global Notes may not be exchanged for beneficial interests in the Regulation S Global Notes at any time except in the limited circumstances as provided in Section 2.06. Beneficial interests in a Regulation S Global Note will be exchangeable for beneficial interests in a Rule 144A Global Note or a Definitive Note only after the expiration of the period through and including the 40th day after the later of the commencement and the closing of this offering (the “**Distribution Compliance Period**”) and then only in compliance with the requirements provided for in Section 2.06. Beneficial interests in the Global Notes may not be exchanged for Definitive Notes except in the limited circumstances provided in Section 2.06.

Each Global Note shall represent such of the outstanding Notes as shall be specified therein, and each shall provide that it shall represent the aggregate amount of outstanding Notes from time to time endorsed thereon and that the aggregate amount of outstanding Notes represented thereby may from time to time be reduced or increased, as appropriate, to reflect exchanges, redemptions, repurchases and transfers of interests. Any endorsement of a Global Note to reflect the amount of any increase or decrease in the amount of outstanding Notes represented thereby shall be made by the Trustee or the Note Custodian, at the direction of the Trustee, in accordance with instructions given by the Holder thereof as required by Section 2.06 hereof.

(b) *Book-Entry Provisions.* Participants shall have no rights either under this Indenture with respect to any Global Note held on their behalf by the Depository or by the Note Custodian as custodian for the Depository or under such Global Note, and the Depository (or its nominee, if the Depository is not the Holder) may be treated by the Company, the Trustee and any Agent of the Company or the Trustee as the absolute owner of such Global Note for all purposes whatsoever (except for the determination of Additional Amounts payable pursuant to Section 4.19 hereof). Notwithstanding the foregoing, nothing herein shall prevent the Company, the Trustee or any Agent of the Company or the Trustee from giving effect to any written certification, proxy or other authorization furnished by the Depository or impair, as between the Depository and its Participants, the operation of customary practices of such Depository governing the exercise of the rights of an owner of a beneficial interest in any Global Note.

SECTION 2.02. EXECUTION AND AUTHENTICATION.

One Officer shall sign the Notes for the Company by manual or facsimile signature. If the Company has a corporate seal, it may be reproduced on the Notes and, if so, it may be in facsimile form.

If an Officer whose signature is on a Note no longer holds that office at the time a Note is authenticated, the Note shall nevertheless be valid.

A Note shall not be valid until authenticated by the manual signature of an authorized signatory of the Trustee. Such signature shall be conclusive evidence that the Note has been authenticated under this Indenture. The form of Trustee’s certificate of authentication to be borne by the Notes shall be substantially as set forth in Exhibit A hereto.

The Trustee shall authenticate (i) the Original Notes for original issue on the Issue Date in the aggregate principal amount of 400,000,000 and (ii) additional Notes for original issue from time to time after the Issue Date subject to compliance with the terms of this Indenture in such principal amounts as may be set forth in a written order of the Company described in this sentence, in each case upon a written order of the Company signed by one Officer, which written order shall specify (a) the amount of Notes to be authenticated and the date of original issue thereof and (b) the amount of Notes to be issued in global form or definitive form. The aggregate principal amount of the Notes outstanding at any time may not exceed 400,000,000 plus such additional principal amounts as may be issued and authenticated pursuant to clause (ii) of this paragraph, except as provided in Section 2.07 hereof.

The Trustee may appoint an authenticating agent acceptable to the Company to authenticate Notes. An authenticating agent may authenticate Notes whenever the Trustee may do so. Each reference in this Indenture to authentication by the Trustee includes authentication by such agent. An authenticating agent has the same rights as an Agent to deal with the Company, any Guarantor or an Affiliate of the Company.

SECTION 2.03. REGISTRAR AND PAYING AGENT.

The Company shall maintain one or more paying agents (each, a “**Paying Agent**”) for the Notes in (i) London and (ii) for so long as the Notes are listed on the Official List of the Luxembourg Stock Exchange and admitted for trading on the Euro MTF and the rules of the Luxembourg Stock Exchange so require, Luxembourg. The Company shall undertake to maintain a Paying Agent in a member state of the European Union that will not be obliged to withhold or deduct tax pursuant to the European Union Directive 2003/48/EC or any other directive implementing the conclusions of the ECOFIN Council meeting of 26 and 27 November 2000 on the taxation of savings income, or any law implementing, or complying with or introduced in order to conform to, such directive. The initial Paying Agents will be The Bank of New York Mellon, London Branch in London and The Bank of New York Mellon (Luxembourg) S.A. in Luxembourg.

The Company shall maintain one or more registrars (each, a “**Registrar**”) with offices in Luxembourg, for so long as the Notes are listed on the Official List of the Luxembourg Stock Exchange and admitted for trading on the Euro MTF and the rules of the Luxembourg Stock Exchange so require. The Company shall also maintain a transfer agent in each of London and Luxembourg. The initial Registrar will be The Bank of New York Mellon (Luxembourg) S.A. in Luxembourg. The Registrar and the transfer agent in Luxembourg and the transfer agent in London shall maintain a register reflecting ownership of Definitive Registered Notes (as defined herein) outstanding from time to time and will make payments on and facilitate transfer of Definitive Registered Notes on behalf of the Company.

The Company may at any time designate one or more additional Paying Agents, Registrars or transfer agents or rescind the designation of any Paying Agent, Registrar or transfer agent or approve a change in the office through which any Paying Agent, Registrar or transfer agent acts, except that the Company will be required to maintain a paying agent as specified in the first paragraph of this Section 2.03. The Company shall give notice to each holder of Notes pursuant to Section 11.01 of any change in Paying Agents, Registrars or transfer agents.

SECTION 2.04. PAYING AGENT TO HOLD MONEY IN TRUST.

The Company shall require each Paying Agent other than the Trustee to agree in writing that the Paying Agent will hold in trust for the benefit of Holders or the Trustee all money held by the Paying Agent for the payment of principal of or premium, if any, or interest on the Notes, and will notify the Trustee of any default by the Company in making any such payment. While any such default continues, the Trustee may require a Paying Agent to pay all money held by it to the Trustee. The Company at any time may require a Paying Agent to pay all money held by it to the Trustee. Upon payment over to the Trustee, the Paying Agent (if other than the Company or a Subsidiary) shall have no further liability for the money. If the Company or a Subsidiary acts as Paying Agent, it shall segregate and hold in a separate trust fund for the benefit of the Holders all money held by it as Paying Agent. Upon the occurrence and during the continuance of any Event of Default described in clause (j), (k) or (l) of Section 6.01 hereof, the Trustee shall serve as Paying Agent for the Notes.

SECTION 2.05. HOLDER LISTS.

The Registrar shall preserve in as current a form as is reasonably practicable the most recent list available to it of the names and addresses of all Holders. If the Trustee or a Paying Agent is not the Registrar, the Company shall furnish or cause the Registrar to furnish, to the Trustee and each Paying Agent at least seven Business Days before each interest payment date and at such other times as the Trustee or the Paying Agent may request in writing, a list of the names and addresses of the Holders of Notes in such form and as of such date as the Trustee or the Paying Agent may reasonably require.

SECTION 2.06. TRANSFER AND EXCHANGE.

(a) *Transfer and Exchange of Global Notes.* The transfer and exchange of the Global Notes or beneficial interests therein shall be effected through the Depository, in accordance with this Indenture and the Applicable Procedures. Beneficial interests in a Global Note may be transferred to Persons who take delivery thereof in the form of a beneficial interest in the same Global Note in accordance with the Applicable Procedures and, in the case of a Transfer Restricted Security, the transfer restrictions set forth in the legend in subsection (f) of this Section 2.06. Transfers of beneficial interests in the Restricted Global Notes to Persons required to take delivery thereof in the form of an interest in another Restricted Global Note shall be permitted as follows:

(i) Rule 144A Global Note to Regulation S Global Note. If an owner of a beneficial interest in a Rule 144A Global Note wishes to transfer its beneficial interest in such Rule 144A Global Note to a Person who is required or permitted to take delivery thereof in the form of an interest in a Regulation S Global Note, whether or not before or after the Distribution Compliance Period, such owner shall, subject to the Applicable Procedures, exchange or cause the exchange of such interest for an equivalent beneficial interest in a Regulation S Global Note as provided in this Section 2.06(a)(ii). Upon receipt by the Trustee of (A) instructions given in accordance with the Applicable Procedures directing the Trustee, as Registrar, to credit a beneficial interest in the Regulation S Global Note in an amount equal to the beneficial interest in the Rule 144A

Global Note to be transferred and (B) in the case of Global Notes that are Transfer Restricted Securities, a certificate substantially in the form of Exhibit B-1 hereto given by the owner of such beneficial interest stating that the transfer of such interest has been made in compliance with the transfer restrictions applicable to the Global Notes and pursuant to and in accordance with Rule 903 or Rule 904 of Regulation S, then the Trustee, as Registrar, shall reduce the aggregate principal amount of the applicable Rule 144A Global Note and increase the aggregate principal amount of the Regulation S Global Note by the principal amount of the beneficial interest in the Rule 144A Global Note to be transferred.

(ii) Regulation S Global Note to Rule 144A Global Note. If an owner of a beneficial interest in a Regulation S Global Note wishes to transfer its beneficial interest in such Regulation S Global Note to a Person who is required or permitted to take delivery thereof in the form of an interest in a separate Rule 144A Global Note, such owner shall, subject to the Applicable Procedures, exchange or cause the exchange of such interest for an equivalent beneficial interest in such separate Regulation S Global Note as provided in this Section 2.06(a)(ii). Upon receipt by the Trustee of (A) instructions given in accordance with the Applicable Procedures directing the Trustee, as Registrar and Note Custodian, to credit a beneficial interest in the separate Rule 144A Global Note equal to the beneficial interest in the Regulation S Global Note to be transferred, and (B) in the case of Global Notes that are Transfer Restricted Securities, a certificate substantially in the form of Exhibit B-2 attached hereto given by the owner of such beneficial interest stating that the Person transferring such interest reasonably believes that the Person acquiring such interest is a qualified institutional buyer (as defined in Rule 144A under the Securities Act) (a “**QIB**”) and is obtaining such beneficial interest in a transaction meeting the requirements of Rule 144A, then the Trustee, as Registrar and Note Custodian, shall reduce the aggregate principal amount of the appropriate Regulation S Global Note and increase the aggregate principal amount of the other Rule 144A Global Note by the principal amount of the beneficial interest in the Regulation S Global Note to be transferred.

Any beneficial interest in one of the Global Notes that is transferred to a Person who takes delivery in the form of an interest in the other Global Note will, upon transfer, cease to be an interest in such Global Note and will become an interest in the other Global Note and, accordingly, will thereafter be subject to all transfer restrictions and other procedures applicable to beneficial interest in such other Global Note for so long as it remains such an interest.

(b) *Transfer and Exchange of Definitive Notes*. If issued, Definitive Notes may not be exchanged or transferred for beneficial interests in a Global Note. When Definitive Notes are presented by a Holder to the Registrar with a request to register the transfer of the Definitive Notes or to exchange such Definitive Notes for an equal principal amount of Definitive Notes of other authorized denominations, the Registrar shall register the transfer or make the exchange as requested only if the Definitive Notes are presented or surrendered for registration of transfer or exchange, are endorsed or accompanied by a written instrument of transfer in form satisfactory to the Registrar duly executed by such Holder or by its attorney, duly authorized in writing, and the Registrar receives the following (all of which may be submitted by facsimile):

(i) in the case of Definitive Notes that are Transfer Restricted Securities, such request shall be accompanied by the following additional information and documents, as applicable:

(A) if such Transfer Restricted Security is being delivered to the Registrar by a Holder for registration in the name of such Holder, without transfer, or such Transfer Restricted Security is being transferred (1) to the Company or any of its Subsidiaries or (2) pursuant to an effective registration statement under the Securities Act, a certification to that effect from such Holder (substantially in the form of Exhibit B-3 hereto);

(B) if such Transfer Restricted Security is being transferred to a Person the transferor reasonably believes is a QIB in accordance with Rule 144A under the Securities Act or pursuant to an exemption from registration in accordance with Rule 144 under the Securities Act, a certification to that effect from such Holder (in substantially the form of Exhibit B-3 hereto); or

(C) if such Transfer Restricted Security is being transferred to a Non-U.S. Person in an offshore transaction in accordance with Rule 903 or 904 under Regulation S of the Securities Act, a certification to that effect from such Holder (substantially in the form of Exhibit B-3 hereto but containing the certification called for by clauses (1) through (4) of Exhibit B-1 hereto).

(c) [Intentionally omitted.]

(d) *Restrictions on Transfer and Exchange of Global Notes.* Notwithstanding any other provision of this Indenture, a Global Note may not be transferred as a whole except by the Depository to a nominee of the Depository or by a nominee of the Depository to the Depository or another nominee of the Depository or by the Depository or any such nominee to a successor Depository or a nominee of such successor Depository.

(e) *Authentication of Definitive Notes in Absence of Depository or at Company's Election.* If at any time (i) the Depository for the Notes notifies the Company that the Depository is unwilling or unable to continue as Depository for the Global Notes and a successor Depository for the Global Notes is not appointed by the Company within 90 days after delivery of such notice, (ii) the Company, at its option, notifies the Trustee in writing that it elects to cause the issuance of Definitive Notes or (iii) there has occurred and is continuing an Event of Default with respect to the Notes and the Depository so requests, then the Company shall execute, and the Trustee shall, upon receipt of an authentication order in accordance with Section 2.02 hereof, authenticate and deliver Definitive Notes in an aggregate principal amount equal to the principal amount of the Global Notes in exchange for such Global Notes. Definitive Notes issued in exchange for beneficial interests in the Global Notes pursuant to this Section 2.06(e) shall be registered in such names and in such authorized denominations as the Depository, pursuant to instructions from its direct or Indirect Participants or otherwise (in accordance with its customary procedures), shall instruct the Trustee. The Trustee shall deliver such Definitive Notes to the Persons in whose names such Notes are so registered.

(f) *Legends.*

(i) Except as permitted by the following paragraphs (ii), (iii) and (iv), each Note certificate evidencing a Global Note or a Definitive Note (and all Notes issued in exchange therefor or substitution thereof) offered otherwise than in reliance on Regulation S will, until the expiration of the applicable holding period with respect to the notes set forth in Rule 144(k) of the Securities Act, unless otherwise agreed by the Company and the holder thereof, bear a legend substantially to the following effect (the “**Restricted Notes Legend**”):

“THIS NOTE (OR ITS PREDECESSOR) WAS ORIGINALLY ISSUED IN A TRANSACTION EXEMPT FROM REGISTRATION UNDER THE UNITED STATES SECURITIES ACT OF 1933 (THE “SECURITIES ACT”), AND THIS NOTE MAY NOT BE OFFERED, SOLD OR OTHERWISE TRANSFERRED IN THE ABSENCE OF SUCH REGISTRATION OR AN APPLICABLE EXEMPTION THEREFROM. EACH PURCHASER OF THIS NOTE IS HEREBY NOTIFIED THAT THE SELLER OF THIS NOTE MAY BE RELYING ON THE EXEMPTION FROM THE PROVISIONS OF SECTION 5 OF THE SECURITIES ACT PROVIDED BY RULE 144A THEREUNDER.

THE HOLDER OF THIS NOTE AGREES FOR THE BENEFIT OF THE ISSUER THAT, PRIOR TO THE DATE WHICH IS SIX MONTHS AFTER THE LATER OF THE ORIGINAL ISSUE DATE HEREOF AND THE LAST DATE ON WHICH THE COMPANY OR ANY AFFILIATE OF THE COMPANY WAS THE OWNER OF THIS NOTE (OR ANY PREDECESSOR OF THIS NOTE) (A) THIS NOTE MAY BE OFFERED, RESOLD, PLEDGED OR OTHERWISE TRANSFERRED, ONLY (I) TO THE COMPANY, (II) IN THE UNITED STATES TO A PERSON WHOM THE SELLER REASONABLY BELIEVES IS A QUALIFIED INSTITUTIONAL BUYER (AS DEFINED IN RULE 144A UNDER THE SECURITIES ACT) IN A TRANSACTION MEETING THE REQUIREMENTS OF RULE 144A, (III) OUTSIDE THE UNITED STATES IN AN OFFSHORE TRANSACTION IN ACCORDANCE WITH RULE 904 UNDER THE SECURITIES ACT TO A PERSON WHO IS NOT A U.S. PERSON, (IV) PURSUANT TO AN EXEMPTION FROM REGISTRATION UNDER THE SECURITIES ACT PROVIDED BY RULE 144 THEREUNDER (IF AVAILABLE) (V) PURSUANT TO ANOTHER AVAILABLE EXEMPTION FROM REGISTRATION UNDER THE SECURITIES ACT OR (VI) PURSUANT TO AN EFFECTIVE REGISTRATION STATEMENT UNDER THE SECURITIES ACT, IN EACH OF CASES (I) THROUGH (VI) IN ACCORDANCE WITH ANY

APPLICABLE SECURITIES LAWS OF ANY STATE OF THE UNITED STATES, AND (B) THE HOLDER WILL, AND EACH SUBSEQUENT HOLDER IS REQUIRED TO, NOTIFY ANY PURCHASER OF THIS NOTE FROM IT OF THE RESALE RESTRICTIONS REFERRED TO IN (A) ABOVE.”

The Notes offered in reliance on Regulation S will, unless otherwise agreed by the Company and the holder thereof, bear a legend substantially to the following effect (the “**Regulation S Legend**”):

“THIS NOTE (OR ITS PREDECESSOR) WAS ORIGINALLY ISSUED IN A TRANSACTION EXEMPT FROM REGISTRATION UNDER THE U.S. SECURITIES ACT OF 1933, AS AMENDED (THE “**SECURITIES ACT**”), AND MAY NOT BE TRANSFERRED IN THE UNITED STATES OR TO, OR FOR THE ACCOUNT OR BENEFIT OF, ANY U.S. PERSON EXCEPT PURSUANT TO AN AVAILABLE EXEMPTION FROM THE REGISTRATION REQUIREMENTS OF THE SECURITIES ACT AND ALL APPLICABLE STATE SECURITIES LAWS. TERMS USED ABOVE HAVE THE MEANINGS GIVEN TO THEM IN REGULATION S UNDER THE SECURITIES ACT.”

Each Definitive Note shall bear the following additional legend (the “**Definitive Notes Legend**”):

“IN CONNECTION WITH ANY TRANSFER, THE HOLDER SHALL DELIVER TO THE REGISTRAR AND TRANSFER AGENT SUCH CERTIFICATES AND OTHER INFORMATION AS SUCH TRANSFER AGENT MAY REASONABLY REQUIRE TO CONFIRM THAT THE TRANSFER COMPLIES WITH THE FOREGOING RESTRICTIONS.”

(ii) Upon any sale or transfer of a Transfer Restricted Security (including any Transfer Restricted Security represented by a Global Note) pursuant to Rule 144 under the Securities Act or pursuant to an effective registration statement under the Securities Act:

(A) in the case of any Transfer Restricted Security that is a Definitive Note, the Registrar shall permit the Holder thereof to exchange such Transfer Restricted Security for a Definitive Note that does not bear the legend set forth in (i) above and rescind any restriction on the transfer of such Transfer Restricted Security upon certification from the transferring holder substantially in the form of Exhibit B-3 hereto and receipt of an Opinion of Counsel reasonably acceptable to the Registrar that such transfer is in compliance with the Securities Act; and

(B) in the case of any Transfer Restricted Security represented by a Global Note, such Transfer Restricted Security shall not be required to bear the legend set forth in (i) above, but shall continue to be subject to the provisions of Section 2.06(a) hereof.

(iii) Upon any sale or transfer of a Transfer Restricted Security (including any Transfer Restricted Security represented by a Global Note) in reliance on any exemption from the registration requirements of the Securities Act (other than an exemption pursuant to Rule 144 under the Securities Act) in which the Holder or the transferee provides an Opinion of Counsel to the Company and the Registrar in form and substance reasonably acceptable to the Company and the Registrar (which Opinion of Counsel shall also state that the transfer restrictions contained in the legend are no longer applicable):

(A) in the case of any Transfer Restricted Security that is a Definitive Note, the Registrar shall permit the Holder thereof to exchange such Transfer Restricted Security for a Definitive Note that does not bear the legend set forth in (i) above and rescind any restriction on the transfer of such Transfer Restricted Security; and

(B) in the case of any Transfer Restricted Security represented by a Global Note, such Transfer Restricted Security shall not be required to bear the legend set forth in (i) above, but shall continue to be subject to the provisions of Section 2.06(a) hereof.

(g) *Cancellation or Adjustment of Global Notes.* At such time as all beneficial interests in Global Notes have been exchanged for Definitive Notes, redeemed, repurchased or cancelled, all Global Notes shall be returned to or retained and cancelled by the Trustee in accordance with Section 2.11 hereof. At any time prior to such cancellation, if any beneficial interest in a Global Note is exchanged for Definitive Notes or a beneficial interest in another Global Note, redeemed, repurchased or cancelled, the principal amount of Notes represented by such Global Note shall be reduced accordingly and an endorsement shall be made on such Global Note by the Trustee, as Registrar, to reflect such reduction; and if the beneficial interest is being exchanged or transferred to a Person who will take delivery thereof in the form of a beneficial interest in another Global Note, such other Global Note shall be increased accordingly and an endorsement shall be made on such Global Note by the Trustee, as Registrar, to reflect such increase.

(h) *General Provisions Relating to Transfers and Exchanges.*

(i) To permit registrations of transfers and exchanges, subject to this Section 2.06, the Company shall execute and, upon the written order of the Company signed by an Officer of the Company, the Trustee shall authenticate Definitive Notes and Global Notes at the Registrar's request.

(ii) No service charge shall be made to a Holder for any registration of transfer or exchange, but the Company may require payment of a sum sufficient to cover any transfer tax or similar governmental charge payable in connection therewith (other than any such transfer taxes or similar governmental charge payable upon exchange or transfer pursuant to Sections 3.07, 4.10, 4.15 and 9.05 hereof).

(iii) Notwithstanding any other provision of this Section 2.06, prior to the expiration of the Distribution Compliance Period, beneficial interests in Regulation S Global Notes may be held only through Euroclear or Clearstream, unless transferred to a Person that takes delivery through a Rule 144A Global Note in accordance with Section 2.06(a)(ii) hereof.

(iv) All Definitive Notes and Global Notes issued upon any registration of transfer or exchange of Definitive Notes or Global Notes shall be the valid obligations of the Company, evidencing the same debt, and entitled to the same benefits under this Indenture, as the Definitive Notes or Global Notes surrendered upon such registration of transfer or exchange.

(v) The Company and the Registrar shall not be required:

(A) to issue, to register the transfer of or to exchange Notes during a period beginning at the opening of business 15 days before the day of any selection of Notes for redemption under Section 3.02 hereof and ending at the close of business on the day of selection;

(B) to register the transfer of or to exchange any Note so selected for redemption in whole or in part, except the unredeemed portion of any Note being redeemed in part; or

(C) to register the transfer of a Note other than in amounts of 100,000 or multiple integrals of 1,000 in excess thereof.

(vi) Prior to due presentment for the registration of a transfer of any Note, the Trustee, any Agent and the Company may deem and treat the Person in whose name any Note is registered as the absolute owner of such Note for the purpose of receiving payment of principal of, premium, if any, and interest, on such Notes, and neither the Trustee, any Agent nor the Company shall be affected by notice to the contrary.

(vii) The Trustee shall authenticate Definitive Notes and Global Notes in accordance with the provisions of Section 2.02 hereof.

SECTION 2.07. REPLACEMENT NOTES.

If any mutilated Note is surrendered to the Trustee or the Registrar in Luxembourg, or the Trustee or the Registrar in Luxembourg receives evidence to its satisfaction of the destruction, loss or theft of any Note, the Company shall issue and the Trustee, upon the written order of the Company signed by one Officer of the Company, shall authenticate a replacement Note if the Trustee's requirements are met. If required by the Trustee or the Registrar in Luxembourg, as applicable, and the Company, an indemnity bond must be supplied by the Holder that is sufficient in the judgment of the Trustee or the Registrar in Luxembourg, as applicable, and the Company to protect the Company, the Trustee, any Agent and any authenticating agent from any

loss that any of them may suffer if a Note is replaced. The Company may charge for its expenses in replacing a Note. If, after the delivery of such replacement Note, a bona fide purchaser of the original Note in lieu of which such replacement Note was issued presents for payment or registration such original Note, the Trustee shall be entitled to recover such replacement Note from the Person to whom it was delivered or any Person taking therefrom, except a bona fide purchaser, and shall be entitled to recover upon the security or indemnity provided therefor to the extent of any loss, damage, cost or expense incurred by the Company, the Trustee, any Agent and any authenticating agent in connection therewith.

Subject to the provisions of the final sentence of the preceding paragraph of this Section 2.07, every replacement Note is an additional obligation of the Company and shall be entitled to all of the benefits of this Indenture equally and proportionately with all other Notes duly issued hereunder.

SECTION 2.08. OUTSTANDING NOTES.

The Notes outstanding at any time are all the Notes authenticated by the Trustee except for those cancelled by it, those delivered to it for cancellation, those reductions in the interest in a Global Note effected by the Trustee in accordance with the provisions hereof, and those described in this Section as not outstanding. Except as set forth in Section 2.09 hereof, a Note does not cease to be outstanding because the Company, any Subsidiary of the Company or an Affiliate of the Company or any Subsidiary of the Company holds the Note.

If a Note is replaced pursuant to Section 2.07 hereof, it ceases to be outstanding unless the Trustee receives proof satisfactory to it that the replaced Note is held by a bona fide purchaser.

If the entire principal of and premium, if any, and interest on any Note are considered paid under Section 4.01 hereof, it ceases to be outstanding and interest on it ceases to accrue as of the date of such payment.

SECTION 2.09. TREASURY NOTES.

In determining whether the Holders of the required principal amount of Notes have concurred in any direction, waiver or consent, Notes owned by the Company, a Subsidiary of the Company or an Affiliate, shall be considered as though not outstanding, except that for the purposes of determining whether the Trustee shall be protected in relying on any such direction, waiver or consent, only Notes that a Trustee knows are so owned shall be so disregarded. Notwithstanding the foregoing, Notes that the Company, a Subsidiary of the Company or an Affiliate offers to purchase or acquires pursuant to an offer, exchange offer, tender offer or otherwise shall not be deemed to be owned by the Company, a Subsidiary of the Company or an Affiliate until legal title to such Notes passes to the Company, such Subsidiary or such Affiliate, as the case may be.

SECTION 2.10. TEMPORARY NOTES.

Until definitive Notes are ready for delivery, the Company may prepare and the Trustee shall authenticate temporary Notes upon a written order of the Company signed by one Officer of the Company. Temporary Notes shall be substantially in the form of definitive Notes but may have variations that the Company considers appropriate for temporary Notes and as shall be reasonably acceptable to the Trustee. Without unreasonable delay, the Company shall prepare and the Trustee shall authenticate definitive Notes in exchange for temporary Notes. Until such exchange, Holders of temporary Notes shall be entitled to all of the benefits of this Indenture.

SECTION 2.11. CANCELLATION.

The Company at any time may deliver Notes to the Trustee for cancellation. The Registrar and Paying Agent shall forward to the Trustee any Notes surrendered to them for registration of transfer, exchange or payment. The Trustee and no one else shall cancel all Notes surrendered for registration of transfer, exchange, payment, replacement or cancellation and, at the written request of the Company, shall destroy cancelled Notes. Certification of the destruction of all cancelled Notes shall be delivered to the Company upon its written request. The Company may not issue new Notes to replace Notes that it has paid or that have been delivered to the Trustee for cancellation.

SECTION 2.12. DEFAULTED INTEREST; SPECIAL INTEREST.

If the Company defaults in a payment of interest on the Notes, it shall pay the defaulted interest in any lawful manner plus, to the extent lawful, interest payable on the defaulted interest, to the Persons who are Holders on a subsequent special record date, in each case at the rate provided in the Notes and in Section 4.01 hereof. The Company shall notify the Trustee in writing of the amount of defaulted interest proposed to be paid on each Note and the date of the proposed payment. The Company shall fix or cause to be fixed each such special record date and payment date, *provided, however*, that no such special record date shall be less than 10 days prior to the related payment date for such defaulted interest. At least 15 days before the special record date, the Company (or, upon the written request of the Company, the Trustee in the name and at the expense of the Company) shall mail or cause to be mailed to Holders a notice that states the special record date, the related payment date and the amount of such interest to be paid.

ARTICLE 3

REDEMPTION AND REPURCHASE

SECTION 3.01. NOTICES TO TRUSTEE.

If the Company elects to redeem Notes pursuant to the optional redemption provisions of Section 3.07 hereof, it shall furnish to the Trustee, at least 30 days but not more than 60 days before a redemption date, subject to Section 3.03, an Officers' Certificate setting forth (i) the clause of this Indenture pursuant to which the redemption shall occur, (ii) the redemption date, (iii) the principal amount of Notes to be redeemed and (iv) the redemption price.

SECTION 3.02. SELECTION OF NOTES TO BE REDEEMED.

If less than all of the Notes are to be redeemed at any time, the Trustee shall select the Notes to be redeemed among the Holders of the Notes as follows: (i) if the Notes are listed, in compliance with the requirements of the principal securities exchange on which the Notes are

listed; or (ii) if the Notes are not so listed, on a *pro rata* basis, in accordance with the procedures of the applicable depository, if any. In the event of partial redemption by lot, the particular Notes to be redeemed shall be selected, unless otherwise provided herein, not less than 30 days nor more than 60 days prior to the redemption date by the Trustee from the outstanding Notes not previously called for redemption.

The Trustee shall promptly notify the Company in writing of the Notes selected for redemption and, in the case of any Note selected for partial redemption, the principal amount thereof to be redeemed. Notes selected shall be in amounts of 100,000 or whole multiples of 1,000 in excess thereof. Provisions of this Indenture that apply to Notes called for redemption also apply to portions of Notes called for redemption.

The provisions of the two preceding paragraphs of this Section 3.02 shall not apply with respect to any redemption affecting only a Global Note, whether a Global Note is to be redeemed in whole or in part. In case of any such redemption in part, the unredeemed portion of the principal amount of the Global Note shall be in an authorized denomination.

SECTION 3.03. NOTICE OF REDEMPTION.

At least 30 days but not more than 60 days before a redemption date, the Company shall mail or cause to be mailed, by first class mail a notice of redemption to each Holder whose Notes are to be redeemed at its registered address. For so long as the Notes are listed on the Luxembourg Stock Exchange and for so long as the rules of such exchange require, notices of redemption shall be published once by the Trustee, not less than five Business Days prior to the redemption date, in a newspaper having general circulation in Luxembourg, which newspaper may be the *Luxemburger Wort*, or if such newspaper ceases to be published or timely publication in it will not be practicable, in such other newspaper as the Trustee deems necessary to give fair and reasonable notice to the Holders of the Notes. Notices may also be published on the internet site of the Luxembourg Stock Exchange at <http://www.bourse.lu>.

The notice shall identify the Notes to be redeemed and shall state:

- (a) the redemption date;
- (b) the redemption price and any Applicable Premium;
- (c) if any Note is being redeemed in part, the portion of the principal amount of such Note to be redeemed and that, after the redemption date upon surrender of such Note, a new Note or Notes in a principal amount equal to the unredeemed portion shall be issued in the name of the Holder thereof upon surrender and cancellation of the original Note;
- (d) the name and address of the Paying Agent;
- (e) that Notes called for redemption must be surrendered to the Paying Agent to collect the redemption price;

(f) that, unless the Company defaults in making such redemption payment, interest on Notes called for redemption ceases to accrue on and after the redemption date; and

(g) the clause of this Indenture pursuant to which the Notes called for redemption are being redeemed.

If any of the Notes to be redeemed is in the form of a Global Note, then the Company shall modify such notice to the extent necessary to accord with the procedures of the Depository applicable to redemption, and such notice will be given electronically.

At the Company's request, the Trustee shall give the notice of redemption in the Company's name and at its expense; *provided, however*, that the Company shall have delivered to the Trustee, at least 45 days (unless the Company and the Trustee agree to a shorter period) prior to the redemption date, an Officers' Certificate requesting that the Trustee give such notice and setting forth the information to be stated in such notice as provided in the second preceding paragraph.

SECTION 3.04. EFFECT OF NOTICE OF REDEMPTION.

Once notice of redemption is mailed in accordance with Section 3.03 hereof, or all conditions to a conditional redemption have been satisfied, Notes called for redemption become irrevocably due and payable on the redemption date at the redemption price. Other than with respect to a redemption pursuant to Section 3.07(d), any notice of redemption may, in the Company's discretion, be subject to the satisfaction of one of more conditions precedent.

SECTION 3.05. DEPOSIT OF REDEMPTION PRICE.

No later than 10:00 a.m., New York City time, on the Business Day immediately preceding the redemption date, the Company shall deposit with the Paying Agent (or, if the Company is acting as its own Paying Agent, segregate and hold in trust as provided in Section 2.04 hereof) money sufficient to pay the redemption price of and accrued interest on all Notes to be redeemed on the redemption date. The Paying Agent shall promptly return to the Company any money deposited with the Paying Agent by the Company in excess of the amounts necessary to pay the redemption price of and accrued interest on all Notes to be redeemed.

If the Company complies with the provisions of the preceding paragraph, on and after the redemption date, interest shall cease to accrue on the Notes or the portions of Notes called for redemption. If a Note is redeemed on or after an interest record date but on or prior to the related interest payment date, then any accrued and unpaid interest shall be paid to the Person in whose name such Note was registered at the close of business on such record date. If any Note called for redemption shall not be so paid upon surrender for redemption because of the failure of the Company to comply with the preceding paragraph, interest shall be paid on the unpaid principal, from the redemption date until such principal is paid, and to the extent lawful on any interest not paid on such unpaid principal, in each case at the rate provided in the Notes and in Section 4.01 hereof.

SECTION 3.06. NOTES REDEEMED IN PART.

Upon surrender of a Note that is redeemed in part, the Company shall issue and the Trustee shall authenticate for the Holder at the expense of the Company a new Note equal in principal amount to the unredeemed portion of the Note surrendered.

SECTION 3.07. OPTIONAL REDEMPTION.

(a) At any time prior to May 15, 2017, the Company may redeem the Notes at its option, in whole or in part, at a redemption price equal to 100% of the principal amount thereof plus the Applicable Premium as of, and accrued and unpaid interest to, the date of redemption.

(b) At any time on or after May 15, 2017, the Company shall have the option to redeem the Notes, in whole or in part, at the redemption prices (expressed as percentages of principal amount) set forth below plus accrued and unpaid interest thereon, to the applicable redemption date, if redeemed during the twelve-month period beginning on May 15 of the years indicated below:

<u>Year</u>	<u>Note Redemption Price</u>
2017	102.938 %
2018	101.469 %
2019 and thereafter	100.000 %

(c) At any time prior to May 15, 2017, the Company may redeem on any one or more occasions Notes representing up to 35% of the aggregate principal amount of Notes originally issued from time to time under this Indenture (including any Notes originally issued after the Issue Date) at a redemption price of 105.875% of the principal amount thereof, plus accrued and unpaid interest thereon to the redemption date, with the net cash proceeds of one or more Qualified Equity Offerings, *provided* that (i) Notes representing at least 65% of the aggregate principal amount of Notes originally issued from time to time under this Indenture (including any Notes originally issued after the Issue Date) remain outstanding immediately after the occurrence of each such redemption and (ii) such redemption shall occur within 90 days of the date of the closing of each such Qualified Equity Offering.

(d) The Company may at any time unconditionally redeem, in whole but not in part, the Notes at a redemption price of 100% of the principal amount thereof plus accrued and unpaid interest thereon to the date of redemption if it or any Guarantor has become or would become obligated to pay any Additional Amounts in respect of the Notes as a result of (i)(1) any change in or amendment to the laws or treaties (or regulations or rulings promulgated thereunder) of a Relevant Taxing Jurisdiction to tax or (2) any change in or amendment to any official position regarding the application or interpretation of such laws, treaties, regulations or rulings, which change or amendment is announced and becomes effective on or after the date of this Indenture (or, if the applicable Relevant Taxing Jurisdiction became a Relevant Taxing Jurisdiction on a date after the date of the Indenture, such later date); and (ii) such obligation cannot be avoided by the Company or any such Guarantor taking reasonable measures available to it. Notwithstanding

the preceding sentence of this Section 3.07(d), no notice of redemption of the Notes pursuant to this Section 3.07(d) may be given earlier than 60 days prior to the earliest date on which the Company could be obligated to pay such Additional Amounts if a payment in respect of the Notes was then due. Prior to giving notice of any such redemption, the Company shall deliver to the Trustee (y) an Officers' Certificate stating that the obligation to pay Additional Amounts cannot be avoided by the Company or any such Guarantor taking reasonable measures available to it and (z) an Opinion of Counsel of an independent legal counsel to the Company to the effect that the circumstances referred to in clause (i) above exist.

(e) Any redemption pursuant to this Section 3.07 shall be made pursuant to the provisions of Section 3.01 through Section 3.06 hereof.

SECTION 3.08. MANDATORY REDEMPTION.

Except as set forth under Sections 4.10 and 4.15 hereof, the Company shall not be required to make mandatory redemption or sinking fund payments with respect to the Notes.

SECTION 3.09. OFFER TO PURCHASE BY APPLICATION OF EXCESS PROCEEDS.

In the event that, pursuant to Section 4.10 hereof, the Holders shall have the right to require the Company to purchase Notes pursuant to an offer (an "**Asset Sale Offer**"), the Company shall follow the procedures specified below.

The Asset Sale Offer shall remain open for a period of 20 Business Days following its commencement and no longer, except to the extent that a longer period is required by applicable law (the "**Offer Period**"). No later than five Business Days after the termination of the Offer Period (the "**Purchase Date**"), the Company shall purchase the principal amount of Notes required to be purchased pursuant to Section 4.10 hereof (the "**Offer Amount**") or, if less than the Offer Amount has been tendered, all Notes validly tendered in response to the Asset Sale Offer. Payment for any Notes so purchased shall be made in the same manner as principal payments are made at Stated Maturity. The Company shall not permit any Restricted Subsidiary to enter into or suffer to exist any agreement (other than any agreement governing the Company's or any of its Restricted Subsidiaries' Credit Facilities) that would place any restriction of any kind (other than pursuant to law or regulation) on the ability of the Company to make an Asset Sale Offer. Further, the Company shall comply with the requirements of Rule 14e-1 under the Exchange Act and any other securities laws and regulations thereunder to the extent such laws and regulations are applicable in connection with the purchase of Notes as a result of an Asset Sale Offer. To the extent that the provisions of any securities laws or regulations conflict with the provisions relating to an Asset Sale Offer, the Company shall comply with the applicable securities laws and regulations and shall not be deemed to have breached its obligations described above by virtue thereof.

If the Purchase Date is on or after an interest record date and on or before the related interest payment date, any accrued and unpaid interest shall be paid to the Person in whose name a Note is registered at the close of business on such record date, and no additional interest shall be payable to Holders who tender Notes pursuant to the Asset Sale Offer.

Upon the commencement of an Asset Sale Offer, the Company shall send, by first class mail, a notice to each of the Holders, with a copy to the Trustee. The notice shall contain all instructions and materials necessary to enable such Holders to tender Notes pursuant to the Asset Sale Offer. The Asset Sale Offer shall be made to all Holders. The notice, which shall govern the terms of the Asset Sale Offer, shall state:

(a) that the Asset Sale Offer is being made pursuant to this Section 3.09 and Section 4.10 hereof and the length of time the Asset Sale Offer shall remain open;

(b) the Offer Amount, the purchase price and the Purchase Date;

(c) that any Note not tendered or accepted for payment shall continue to accrue interest;

(d) that, unless the Company defaults in making such payment, any Note accepted for payment pursuant to the Asset Sale Offer shall cease to accrue interest after the Purchase Date;

(e) that Holders electing to have a Note purchased pursuant to an Asset Sale Offer may only elect to have all of such Note purchased and may not elect to have only a portion of such Note purchased;

(f) that Holders electing to have a Note purchased pursuant to any Asset Sale Offer shall be required to surrender the Note, with the form entitled “**Option of Holder to Elect Purchase**” on the reverse of the Note completed, to the Company or a Paying Agent at the address specified in the notice at least three days before the Purchase Date;

(g) that Holders shall be entitled to withdraw their election if the Company or the Paying Agent, as the case may be, receives, no later than the expiration of the Offer Period, a telegram, facsimile transmission or letter setting forth the name of the Holder, the principal amount of the Note the Holder delivered for purchase and a statement that such Holder is withdrawing his election to have such Note purchased;

(h) that, if the aggregate principal amount of Notes surrendered by Holders exceeds the Offer Amount, the Trustee shall select the Notes to be purchased on a *pro rata* basis (with such adjustments as may be deemed appropriate by the Trustee so that only Notes in denominations of 100,000, or integral multiples of 1,000 in excess thereof, shall be purchased); and

(i) that Holders whose Notes were purchased only in part shall be issued new Notes equal in principal amount to the unpurchased portion of the Notes surrendered (or transferred by book-entry transfer).

If any of the Notes subject to an Asset Sale Offer is in the form of a Global Note, then the Company shall modify such notice to the extent necessary to accord with the procedures of the Depository applicable to repurchases.

On or before the Purchase Date, the Company shall, to the extent lawful, accept for payment, on a *pro rata* basis to the extent necessary, the Offer Amount of Notes or portions thereof tendered pursuant to the Asset Sale Offer, or if less than the Offer Amount has been tendered, all Notes tendered, and shall deliver to the Trustee an Officers' Certificate stating that such Notes or portions thereof were accepted for payment by the Company in accordance with the terms of this Section 3.09. The Company or the Paying Agent, as the case may be, shall promptly (but in any case not later than five days after the Purchase Date) mail or deliver to each tendering Holder an amount equal to the purchase price of the Notes tendered by such Holder and accepted by the Company for purchase, and the Company shall promptly issue a new Note, and the Trustee shall authenticate and mail or deliver such new Note to such Holder, in a principal amount equal to any unpurchased portion of the Note surrendered. Any Note not so accepted shall be promptly mailed or delivered by the Company to the Holder thereof. The Company shall publicly announce the results of the Asset Sale Offer on the Purchase Date.

Other than as specifically provided in this Section 3.09, any purchase pursuant to this Section 3.09 shall be made pursuant to the provisions of Section 3.01 through Section 3.06 hereof.

ARTICLE 4

COVENANTS

SECTION 4.01. PAYMENT OF NOTES.

The Company shall pay or cause to be paid the principal of and premium, if any, and interest on the Notes on the dates and in the manner provided in the Notes. Principal, premium, if any, and interest shall be considered paid on the date due if a Paying Agent, if other than the Company or a Subsidiary thereof, holds as of 10:00 a.m., New York City time, on the Business Day immediately preceding the due date money deposited by the Company in immediately available funds and designated for and sufficient to pay all principal, premium, if any, and interest then due.

The Company shall pay interest (including post-petition interest in any proceeding under any applicable bankruptcy law) on overdue principal and premium, if any, at the rate equal to the interest rate on the Notes to the extent lawful; it shall pay interest (including post-petition interest in any proceeding under any applicable bankruptcy law) on overdue installments of interest (without regard to any applicable grace period) at the same rate to the extent lawful.

SECTION 4.02. MAINTENANCE OF OFFICE OR AGENCY.

The Company shall maintain an office or agency in London, England and, subject to the provisions of Section 2.03 hereof, in the Grand Duchy of Luxembourg where Notes may be presented or surrendered for payment, where Notes may be surrendered for registration of transfer or for exchange and where notices and demands to or upon the Company in respect of the Notes and this Indenture may be served. If at any time the Company shall fail to maintain any such required office or agency in the continental United States or shall fail to furnish the Trustee with the address thereof, such presentations, surrenders, notices and demands may be made or served at the Corporate Trust Office of the Trustee.

The Company may also from time to time designate one or more other offices or agencies where the Notes may be presented or surrendered for any or all such purposes and may from time to time rescind such designations. Further, if at any time there shall be no such office or agency in London, England where the Notes may be presented or surrendered for payment, the Company shall forthwith designate and maintain such an office or agency in London, England, in order that the Notes shall at all times be payable in London, England. The Company shall give prompt written notice to the Trustee of any such designation or rescission and of any change in the location of any such other office or agency.

The Company hereby designates the Corporate Trust Office of the Trustee as one such office or agency of the Company in accordance with Section 2.03.

SECTION 4.03. REPORTS.

(a) Whether or not the Company is required to do so by the rules and regulations of the SEC, so long as any Notes are outstanding, the Company will file with the SEC (unless the SEC will not accept such a filing):

(i) within the time periods specified in the SEC's rules and regulations, all annual financial and other information with respect to the Company and its Subsidiaries that would be required to be contained in a filing with the SEC on Form 20-F, including a "Management's Discussion and Analysis of Financial Condition and Results of Operations" and a report thereon by the Company's certified independent accountants, and

(ii) within 60 days after the end of each of the first and third quarters of each fiscal year (and within 75 days after the end of the second quarter of each fiscal year), reports on Form 6-K, or any successor form, attaching (a) unaudited consolidated financial statements for the Company for the period then ended (and the comparable period in the prior year), in each case prepared in accordance with GAAP (as in effect on the date of such report or financial information) and (b) the information relating to the Company described in Item 5 of Form 20-F (i.e., Operating and Financial Review and Prospects).

Within 15 days of filing, or attempting to file, such information with the SEC, the Company shall furnish such information to the Holders of the Notes.

(b) For so long as any Notes remain outstanding and during any period during which the Company is not subject to Section 13 or 15(d) of the Exchange Act nor exempt therefrom pursuant to Rule 12g3-2(b) under the Exchange Act, the Company and the Guarantors shall furnish to the holders of the Notes and prospective purchasers of the Notes, upon their request, the information required to be delivered pursuant to Rule 144A(d)(4) under the Securities Act.

(c) For so long as the Notes are listed on the Luxembourg Stock Exchange and the rules of such stock exchange so require, the information referred to in Section 4.03(a) hereof shall also be made available, free of charge in Luxembourg through the offices of the Paying Agent in Luxembourg.

(d) Delivery of reports to the SEC or receipt by the Trustee of the documents specified in this Section 4.03 shall not constitute actual or constructive notice to the Trustee, or actual or constructive knowledge by the Trustee, of the contents of such documents.

SECTION 4.04. COMPLIANCE CERTIFICATE.

(a) The Company shall deliver to the Trustee, within 90 days after the end of each fiscal year, an Officers' Certificate stating that a review of the activities of the Company and its Restricted Subsidiaries during the preceding fiscal year has been made under the supervision of the signing Officers with a view to determining whether the Company has kept, observed, performed and fulfilled its obligations under this Indenture, and further stating, as to each such Officer signing such certificate, that to the best of his or her knowledge the Company has kept, observed, performed and fulfilled each and every covenant contained in this Indenture and is not in default in the performance or observance of any of the terms, provisions and conditions of this Indenture (or, if a Default or Event of Default shall have occurred, describing all such Defaults or Events of Default of which he or she may have knowledge and what action the Company is taking or proposes to take with respect thereto) and that to the best of his or her knowledge no event has occurred and remains in existence by reason of which payments on account of the principal of or interest, if any, on the Notes is prohibited or if such event has occurred, a description of the event and what action the Company is taking or proposes to take with respect thereto.

(b) So long as not contrary to the then current recommendations of the American Institute of Certified Public Accountants or its equivalent body in France, as the case may be, the year-end financial statements delivered pursuant to Section 4.03(a) above shall be accompanied by a written statement of the Company's independent public accountants (who shall be a firm of established international reputation) that in making the examination necessary for certification of such financial statements, nothing has come to their attention that would lead them to believe that the Company has violated any provisions of Article 4 or Article 5 hereof or, if any such violation has occurred, specifying the nature and period of existence thereof, it being understood that such accountants shall not be liable directly or indirectly to any Person for any failure to obtain knowledge of any such violation.

(c) The Company shall, so long as any of the Notes are outstanding, deliver to the Trustee, forthwith upon any Officer becoming aware of any Default or Event of Default, an Officers' Certificate specifying such Default or Event of Default and what action the Company is taking or proposes to take with respect thereto.

SECTION 4.05. TAXES.

The Company shall pay, and shall cause each of its Subsidiaries to pay, prior to delinquency, all material taxes, assessments, and governmental levies except such as are contested in good faith and by appropriate proceedings or where the failure to effect such payment is not adverse in any material respect to the Holders of the Notes.

SECTION 4.06. STAY, EXTENSION AND USURY LAWS.

The Company covenants (to the extent that it may lawfully do so) that it shall not at any time insist upon, plead, or in any manner whatsoever claim or take the benefit or advantage of, any stay, extension or usury law wherever enacted, now or at any time hereafter in force, that may affect the covenants or the performance of this Indenture; and the Company (to the extent that it may lawfully do so) hereby expressly waives all benefit or advantage of any such law, and covenants that it shall not, by resort to any such law, hinder, delay or impede the execution of any power herein granted to the Trustee, but shall suffer and permit the execution of every such power as though no such law has been enacted.

SECTION 4.07. RESTRICTED PAYMENTS.

The Company shall not, and shall not permit any of its Restricted Subsidiaries to, directly or indirectly, (i) purchase, redeem or otherwise acquire or retire for value (including, without limitation, in connection with any merger or consolidation involving the Company) any Equity Interests of the Company or any of its Restricted Subsidiaries (other than any such Equity Interests owned by the Company or any of its Restricted Subsidiaries); (ii) make any payment on or with respect to, or purchase, redeem, defease or otherwise acquire or retire for value, any Indebtedness that is subordinated in right of payment to the Notes or the Subsidiary Guarantees, as the case may be, except a payment of interest or principal at Stated Maturity; or (iii) make any Restricted Investment (all such payments and other actions set forth in clauses (i) through (iii) above being collectively referred to as “**Restricted Payments**”), unless, at the time of and after giving effect to such Restricted Payment:

(a) no Default or Event of Default shall have occurred and be continuing or would occur as a consequence thereof;

(b) the Company would, at the time of such Restricted Payment and after giving *pro forma* effect thereto as if such Restricted Payment had been made at the beginning of the applicable four-quarter period, have been permitted to incur at least 1.00 of additional Indebtedness pursuant to the Consolidated Interest Coverage Ratio test set forth in Section 4.09 hereof; and

(c) such Restricted Payment, together with (x) the aggregate amount of all other Restricted Payments made by the Company and its Restricted Subsidiaries after the Reference Date (excluding Restricted Payments permitted by clauses (b) through (e) and, to the extent deducted in computing Consolidated Net Income, (f) and (g) of the next succeeding paragraph), and (y) the aggregate amount of all dividends and other payments or distributions paid subsequent to the Reference Date on account of the Company’s or any of its Restricted Subsidiaries’ Equity Interests (including, without limitation, any such payment in connection with any merger or consolidation involving the Company) or to the direct or indirect holders of the Company’s Equity Interests in their capacity as such (other than (i) dividends or distributions payable in Equity Interests (other than Disqualified Stock) of the Company, (ii) dividends or distributions payable to the Company or any of its Restricted Subsidiaries or (iii) if the Restricted Subsidiary making such dividend is not a Wholly Owned Restricted Subsidiary, dividends to its shareholders

on a *pro rata* basis), is less than the sum (without duplication) of the following: (A) 50% of the cumulative Consolidated Net Income of the Company for the period (taken as one accounting period) from January 1, 2005 to the end of the Company's most recently ended fiscal quarter for which internal financial statements are available at the time of such Restricted Payment (or, if such Consolidated Net Income for such period is a deficit, less 100% of such deficit), plus (B) 100% of the aggregate of (1) the net cash proceeds and (2) the fair market value of Strategic Assets transferred or conveyed to the Company (as valued at the time of transfer or conveyance to the Company, and as determined in the manner contemplated by the definition of the term "fair market value"), in each case received by the Company since the Reference Date as a contribution to its common equity capital or from the issue or sale of Equity Interests of the Company (other than Disqualified Stock) or from the issuance or sale of Disqualified Stock or debt securities of the Company that have been converted into, or exchanged or redeemed for, such Equity Interests (other than any such Equity Interests, Disqualified Stock or convertible debt securities sold to a Restricted Subsidiary of the Company and other than Disqualified Stock or convertible debt securities that have been converted into, or exchanged or redeemed for, Disqualified Stock), plus (C) to the extent that any Restricted Investment that was made after the Reference Date is sold for cash or otherwise liquidated or repaid for cash, the cash return of capital with respect to such Restricted Investment (less the cost of disposition, if any) plus (D) if any Unrestricted Subsidiary is redesignated as a Restricted Subsidiary, the lesser of (1) an amount equal to the fair market value of the Investments previously made by the Company and its Restricted Subsidiaries in such Subsidiary as of the date of redesignation and (2) the amount of such Investments.

The foregoing provisions will not prohibit any of the following:

- (a) the payment of any dividend within 60 days after the date of declaration thereof if at said date of declaration such payment would have complied with the provisions of this Indenture;
- (b) the redemption, repurchase, retirement, defeasance or other acquisition of any subordinated Indebtedness of the Company or any Guarantor or any Equity Interests of the Company or any of its Restricted Subsidiaries in exchange for, or out of the net cash proceeds of the substantially concurrent sale (other than to a Restricted Subsidiary of the Company) of, other Equity Interests of the Company (other than any Disqualified Stock); *provided* that the amount of any such net cash proceeds that are utilized for any such redemption, purchase, retirement, defeasance or other acquisition shall be excluded from clause (c)(B) of the preceding paragraph;
- (c) the defeasance, redemption, purchase, retirement or other acquisition of subordinated Indebtedness of the Company or any Guarantor with the net cash proceeds from an incurrence of, or in exchange for, Permitted Refinancing Indebtedness;
- (d) the payment of any dividend or distribution by a Restricted Subsidiary of the Company to the Company or any of its Restricted Subsidiaries;

(e) repurchases of Equity Interests deemed to occur upon exercise of stock options, if such Equity Interests represent a portion of the exercise price of such stock options;

(f) so long as no Default has occurred and is continuing, the repurchase or other acquisition for value of any Equity Interests of the Company or any Restricted Subsidiary of the Company for allocation (as a free allocation or otherwise) to directors, officers and employees of the Company and its Restricted Subsidiaries not in excess of 2,500,000 in any twelve-month period;

(g) so long as no Default has occurred and is continuing, the repurchase, redemption or other acquisition or retirement for value of any Equity Interests of the Company or any Restricted Subsidiary of the Company held by any member of the Company's (or any of its Restricted Subsidiaries') management pursuant to any management equity subscription agreement or stock option agreement in effect as of the Issue Date; *provided* that the aggregate price paid for all such repurchased, redeemed, acquired or retired Equity Interests shall not exceed 1,000,000 in any twelve-month period;

(h) loans or advances in the ordinary course of business to Affiliates or Persons with which the Company or a Subsidiary may have contractual arrangements in any jurisdiction reasonably necessary to be made in connection with conducting the business of the Company or a Subsidiary in such jurisdiction in a form that is customary to address foreign investment regulation or practice in such jurisdiction, in an aggregate amount not to exceed 2,000,000 outstanding at any one time;

(i) so long as no Default has occurred and is continuing, advances constituting Investments or loans to directors, officers and employees of the Company and its Restricted Subsidiaries in the ordinary course of business for bona fide business purposes not in excess of 1,000,000 at any one time outstanding; and

(j) other Restricted Payments not to exceed 15,000,000 in the aggregate.

The Board of Directors may designate any Restricted Subsidiary to be an Unrestricted Subsidiary if such designation would not cause a Default (except at any time during which the Company maintains Investment Grade Status). For purposes of making such designation, all outstanding Investments by the Company and its Restricted Subsidiaries in the Subsidiary so designated shall be deemed to be Restricted Payments at the time of such designation, in an amount equal to the fair market value of such Investments at the time of such designation. Such designation shall only be permitted if such Restricted Payments would be permitted at such time and if such Restricted Subsidiary otherwise meets the definition of "Unrestricted Subsidiary."

The Board of Directors may also redesignate any Unrestricted Subsidiary to be a Restricted Subsidiary if such redesignation complies with the requirements described in the definition of "Unrestricted Subsidiary." If the aggregate amount of all Restricted Payments calculated for purposes of the first paragraph of this Section 4.07 includes an Investment in an Unrestricted Subsidiary that subsequently becomes a Restricted Subsidiary pursuant to the terms

of this paragraph, then the aggregate amount of such Restricted Payments shall be reduced by the lesser of (a) an amount equal to the fair market value of the Investments previously made by the Company and its Restricted Subsidiaries in such Unrestricted Subsidiary at the time it becomes a Restricted Subsidiary and (b) the amount of such Investments.

Any designation or redesignation of a Subsidiary shall be evidenced to the Trustee by filing with the Trustee a Board Resolution giving effect to such action and evidencing the valuation of any Investment relating thereto (as determined in good faith by the Board of Directors) and an Officers' Certificate certifying that such action complied with the terms of the definition of "Unrestricted Subsidiary" set forth in this Indenture and with this Section 4.07.

The amount of all Restricted Payments (other than cash) shall be the fair market value on the date of the Restricted Payment of the asset(s) or securities proposed to be transferred or issued by the Company or such Restricted Subsidiary, as the case may be, pursuant to the Restricted Payment. The fair market value of any non-cash Restricted Payment shall be determined in the manner contemplated by the definition of the term "fair market value," and the results of such determination shall be evidenced by an Officers' Certificate delivered to the Trustee.

SECTION 4.08. DIVIDEND AND OTHER PAYMENT RESTRICTIONS AFFECTING RESTRICTED SUBSIDIARIES.

The Company shall not, and shall not permit any of its Restricted Subsidiaries to, directly or indirectly, create or otherwise cause or suffer to exist or become effective any consensual encumbrance or restriction on the ability of any Restricted Subsidiary to do any of the following: (a)(i) pay dividends or make any other distributions to the Company or any of its Restricted Subsidiaries on its Capital Stock or (ii) pay any Indebtedness owed to the Company or any of its Restricted Subsidiaries; (b) make loans or advances to the Company or any of its Restricted Subsidiaries or (c) transfer any of its properties or assets to the Company or any of its Restricted Subsidiaries, except for such encumbrances or restrictions existing under or by reason of (1) agreements governing Credit Facilities or Existing Indebtedness, and any amendments, modifications, restatements, renewals, increases, supplements, refundings, replacements or refinancings thereof, provided that such agreements and amendments, modifications, restatements, renewals, increases, supplements, refundings, replacements or refinancings are not materially less favorable to the holders of the Notes, taken as a whole, with respect to such dividend and other payment restrictions than those contained, in the case of Credit Facilities, in agreements governing Credit Facilities or, in the case of Existing Indebtedness, in agreements governing such Existing Indebtedness, in either case as in effect on the date of this Indenture, (2) this Indenture, the Notes and the Subsidiary Guarantees, (3) any agreement for the sale or other disposition of Equity Interests in a Restricted Subsidiary that restricts distributions by that Restricted Subsidiary pending the sale or other disposition, (4) any instrument governing Indebtedness or Capital Stock of a Person acquired by the Company or any of its Restricted Subsidiaries as in effect at the time of such acquisition (except to the extent such Indebtedness was incurred in connection with or in contemplation of such acquisition), which encumbrance or restriction is not applicable to any Person, or the properties or assets of any Person, other than the Person, or the property or assets of the Person, so acquired, *provided* that, in the case of Indebtedness, such Indebtedness was permitted by the terms of this Indenture to be incurred, (5)

by reason of customary provisions restricting the subletting or assignment of any lease or the transfer of copyrighted or patented materials, (6) purchase money obligations for property acquired in the ordinary course of business that impose restrictions of the nature described in clause (c) above on the property so acquired, (7) customary provisions in agreements for the sale of property or assets, (8) customary provisions in agreements that restrict the assignment of such agreements or rights thereunder, (9) provisions with respect to the disposition or distribution of assets or property in any joint venture agreement, assets sale agreement, stock sale agreement or other similar agreement in each case entered into in the ordinary course of business, but in each case only to the extent such encumbrance or restriction relates to the transfer of the property, or encumbers or restricts the assets, subject to such agreement, (10) restrictions on cash or other deposits or net worth imposed by customers under contracts entered into in the ordinary course of business, (11) Permitted Refinancing Indebtedness, *provided* that the encumbrances and restrictions contained in the agreements governing such Permitted Refinancing Indebtedness are not materially less favorable to the Holders, taken as a whole, than those contained in the agreements governing the Indebtedness being refinanced, (12) any Liens not prohibited by Section 4.12 that limit the right of the debtor to dispose of the assets subject to such Liens, or (13) applicable law.

SECTION 4.09. INCURRENCE OF INDEBTEDNESS AND ISSUANCE OF DISQUALIFIED STOCK.

The Company shall not, and shall not permit any of its Restricted Subsidiaries to, directly or indirectly, create, incur, issue, assume, guarantee or otherwise become directly or indirectly liable, contingently or otherwise, with respect to (collectively, “**incur**” or an “**incurrence**”) any Indebtedness (including, without limitation, any Acquired Indebtedness) and that the Company will not issue any Disqualified Stock and will not permit any of its Restricted Subsidiaries to issue any shares of preferred stock or Disqualified Stock; *provided, however*, that the Company or any Guarantor may incur Indebtedness or issue Disqualified Stock, and any Restricted Subsidiary may incur Acquired Indebtedness, in each case if the Consolidated Interest Coverage Ratio for the Company’s most recently ended four full fiscal quarters for which internal financial statements are available immediately preceding the date on which such additional Indebtedness is incurred or such Disqualified Stock is issued would have been at least 3.0 to 1.0, determined on a *pro forma* basis (including a *pro forma* application of the net proceeds therefrom), as if the additional Indebtedness or Disqualified Stock had been issued or incurred, as the case may be, at the beginning of such four-quarter period.

The foregoing provisions shall not apply to the incurrence by the Company or any of its Restricted Subsidiaries of any of the following Indebtedness:

- (a) Indebtedness under Credit Facilities in an aggregate principal amount at any one time outstanding not to exceed the greater of (x) 500,000,000, plus any fees, premiums, expenses (including costs of collection), indemnities and similar amounts payable in connection with such Indebtedness, and less any amounts derived from Asset Sales and applied to the permanent reduction of Indebtedness under Credit Facilities in accordance with Section 4.10 hereof and (y) 10% of the Company’s Consolidated Total Assets;
- (b) Existing Indebtedness;

(c) Hedging Obligations;

(d) Indebtedness represented by the Original Notes or the Subsidiary Guarantees with respect to the Original Notes;

(e) intercompany Indebtedness between or among the Company and any of its Restricted Subsidiaries, *provided* that (1) if the Company or any Guarantor is the obligor on such Indebtedness, then the Indebtedness must be unsecured and expressly subordinated in right of payment to all of the Company's obligations with respect to the Notes or such Guarantor's obligations under its Subsidiary Guarantee, as the case may be, and (2) any subsequent issuance or transfer of Equity Interests that results in any such Indebtedness being held by a Person other than the Company or a Restricted Subsidiary of the Company, or any sale or other transfer of any such Indebtedness to a Person that is neither the Company nor a Restricted Subsidiary of the Company, shall be deemed, in each case, to constitute an incurrence of such Indebtedness by the Company or such Restricted Subsidiary, as the case may be, as of the date of such issuance, sale or other transfer that is not permitted by this clause (e);

(f) Indebtedness in respect of bid, performance or surety bonds issued for the account of the Company or any Restricted Subsidiary thereof in the ordinary course of business, including guarantees or obligations of the Company or any Restricted Subsidiary thereof with respect to letters of credit supporting such bid, performance or surety obligations (in each case other than for an obligation for money borrowed);

(g) Indebtedness represented by Capital Lease Obligations, mortgage financings or purchase money obligations (or any guarantee thereof or indemnity with respect thereto), in each case, incurred for the purpose of financing all or any part of the purchase price or cost of construction or improvement of property, plant or equipment used in the business of the Company or any of its Restricted Subsidiaries, in an aggregate principal amount, including all Permitted Refinancing Indebtedness incurred to refund, refinance or replace any Indebtedness incurred pursuant to this clause (g), not to exceed 50,000,000 at any time outstanding;

(h) the guarantee by the Company of Indebtedness of any of its Restricted Subsidiaries or by any Restricted Subsidiary of Indebtedness of the Company or another Restricted Subsidiary, in each case, that was permitted to be incurred by another provision of this Section 4.09; *provided* that if the Indebtedness being guaranteed is subordinated in right of payment to the Notes or a Subsidiary Guarantee then the guarantee shall be subordinated to the same extent as the Indebtedness guaranteed;

(i) intercompany Indebtedness between or among the Company and any of its Restricted Subsidiaries incurred in the ordinary course of business in connection with cash pooling or other cash management arrangements;

(j) Permitted Refinancing Indebtedness incurred in exchange for, or the net proceeds of which are used to extend, refinance, renew, replace, defease or refund Indebtedness incurred pursuant to the first paragraph and clauses (b), (d) and (j) of the second paragraph of this Section 4.09;

(k) Indebtedness of Restricted Subsidiaries of the Company (other than Guarantors) in an aggregate principal amount not to exceed 5% of the Company's Consolidated Total Assets minus the sum of all Indebtedness of Restricted Subsidiaries of the Company (other than Guarantors) then outstanding; and

(l) any additional Indebtedness of the Company or any Guarantor in an aggregate principal amount not in excess of 50,000,000 at any one time outstanding and any guarantee thereof.

The Company shall not, and shall not permit any Guarantor to, directly or indirectly, incur any Indebtedness which by its terms (or by the terms of any agreement governing such Indebtedness) is subordinated to any other Indebtedness of the Company or of such Guarantor, as the case may be, unless such Indebtedness is also by its terms (or by the terms of any agreement governing such Indebtedness) made expressly subordinate to the Notes or the Subsidiary Guarantees of such Guarantor, as the case may be, to the same extent and in the same manner as such Indebtedness is subordinated pursuant to subordination provisions that are most favorable to the holders of any other Indebtedness of the Company or of such Guarantor, as the case may be; *provided, however*, that no Indebtedness shall be deemed to be contractually subordinated in right of payment to any other Indebtedness solely by virtue of being unsecured.

For purposes of determining compliance with this Section 4.09, in the event that an item of proposed Indebtedness meets the criteria of more than one of the categories of Indebtedness described in clauses (a) through (l) of the second paragraph, or is entitled to be incurred pursuant to the first paragraph, of this Section 4.09, the Company shall be permitted to classify such item of Indebtedness on the date of its incurrence, or later reclassify all or a portion of such item of Indebtedness, in any manner that complies with this Section 4.09.

The reclassification as Indebtedness of operating leases due to a change in accounting principles will not be deemed to be an incurrence of Indebtedness for the purposes of this Section 4.09.

SECTION 4.10. ASSET SALES.

The Company shall not, and shall not permit any of its Restricted Subsidiaries to, consummate an Asset Sale unless (a) the Company or such Restricted Subsidiary, as the case may be, receives consideration at the time of such Asset Sale at least equal to the fair market value (as determined in accordance with the definition of such term, the results of which determination shall be set forth in an Officers' Certificate delivered to the Trustee) of the assets or Equity Interests issued or sold or otherwise disposed of and (b) at least 75% of the consideration therefor received by the Company or such Restricted Subsidiary is in the form of cash or Cash Equivalents, *provided, however*, that the amount of (i) any liabilities (as shown on the Company's or such Restricted Subsidiary's most recent balance sheet) of the Company or such Restricted Subsidiary (other than contingent liabilities and liabilities that are by their terms subordinated to the Notes or any guarantee thereof) that are assumed by the transferee of any

such assets pursuant to a customary novation agreement that releases the Company or such Restricted Subsidiary from further liability, (ii) any securities, notes or other obligations received by the Company or such Restricted Subsidiary from such transferee that are converted within 180 days by the Company or such Restricted Subsidiary into cash (to the extent of the cash received in that conversion) and (iii) any Designated Non-Cash Consideration received by the Company or any Restricted Subsidiary in such Asset Sale having an aggregate fair market value (determined in accordance with the definition of such term under Section 1.01, the results of which determination shall be set forth in an Officers' Certificate delivered to the Trustee) taken together with all other Designated Non-Cash Consideration received pursuant to this covenant that is at that time outstanding, not to exceed the greater of 100,000,000 and 2% of the Company's Consolidated Total Assets (with the fair market value of each item of Designated Non-Cash Consideration being measured at the time received and without giving effect to subsequent changes in value) shall be deemed to be cash for purposes of this Section 4.10.

Within 365 days after the receipt of any Net Proceeds from an Asset Sale, the Company or any such Restricted Subsidiary may apply such Net Proceeds to (a) permanently repay the principal of any Indebtedness of the Company ranking in right of payment at least *pari passu* with the Notes or any Indebtedness of such Restricted Subsidiary (provided that if such Restricted Subsidiary is a Guarantor then such Indebtedness shall rank in right of payment at least *pari passu* with its Subsidiary Guarantee), (b) make capital expenditures in respect of Strategic Assets, or (c) acquire (including by way of a purchase of assets or a majority of the Voting Stock of a Person, by merger, by consolidation or otherwise) Strategic Assets, *provided* that if the Company or such Restricted Subsidiary enters into a binding agreement to acquire such Strategic Assets within such 365-day period, but the consummation of the transactions under such agreement has not occurred within such 365-day period and such agreement has not been terminated, then such 365-day period shall be extended by 90 days to permit such consummation. If such consummation shall not occur, or such agreement shall be terminated within such 90-day extension period, then the Company may apply, or cause such Restricted Subsidiary to apply, within 90 days after the end of such initial 90-day extension period or the effective date of such termination, whichever is earlier, such Net Proceeds as provided in clauses (a) through (c) of this paragraph. Pending the final application of any such Net Proceeds, the Company or any such Restricted Subsidiary may temporarily reduce outstanding revolving credit borrowings, including borrowings under the Credit Facilities, or otherwise invest such Net Proceeds in any manner that is not prohibited by this Indenture. Any Net Proceeds from Asset Sales that are not applied or invested as provided in clauses (a) through (c) of this paragraph shall be deemed to constitute "**Excess Proceeds.**"

Within 30 days of each date on which the aggregate amount of Excess Proceeds exceeds 20,000,000, the Company shall commence an Asset Sale Offer pursuant to Section 3.09 hereof to purchase the maximum principal amount of Notes that may be purchased out of Excess Proceeds at an offer price in cash in an amount equal to 100% of the principal amount thereof, plus accrued and unpaid interest thereon, to the date of purchase, in accordance with the procedures set forth in Section 3.09 hereof; *provided, however*, that, if the Company is required to apply such Excess Proceeds to purchase, or to offer to purchase, any *Pari Passu* Indebtedness, the Company shall only be required to offer to purchase the maximum principal amount of Notes that may be purchased out of the amount of such Excess Proceeds multiplied by a fraction, the numerator of which is the aggregate principal amount of Notes outstanding and the denominator

of which is the aggregate principal amount of Notes outstanding plus the aggregate principal amount of Pari Passu Indebtedness outstanding. To the extent that the aggregate principal amount of Notes tendered pursuant to an Asset Sale Offer is less than the amount that the Company is required to purchase, the Company may use any remaining Excess Proceeds for general corporate purposes in any manner not prohibited by this Indenture. If the aggregate principal amount of Notes surrendered by holders thereof exceeds the amount that the Company is required to purchase, the Trustee shall select the Notes to be purchased on a *pro rata* basis (with such adjustments as may be deemed appropriate by the Trustee so that only Notes in denominations of 100,000, or integral multiples of 1,000 in excess thereof, shall be purchased). Upon completion of such offer to purchase, the amount of Excess Proceeds shall be reset at zero.

The Company shall not, and shall not permit any Restricted Subsidiary to, enter into or suffer to exist any agreement (other than any agreement governing the Company's or any Restricted Subsidiary's Credit Facilities) that would place any restriction of any kind (other than pursuant to law or regulation) on the ability of the Company to make an Asset Sale Offer.

The Company shall comply with the requirements of Rule 14e-1 under the Exchange Act and any other securities laws and regulations thereunder to the extent such laws and regulations are applicable in connection with the purchase of Notes as a result of an Asset Sale Offer. To the extent that the provisions of any securities laws or regulations conflict with the provisions relating to the Asset Sale Offer, the Company shall comply with the applicable securities laws and regulations and shall not be deemed to have breached its obligations described above by virtue thereof.

SECTION 4.11. TRANSACTIONS WITH AFFILIATES.

The Company shall not, and shall not permit any of its Restricted Subsidiaries to, make any payment to, or sell, lease, transfer or otherwise dispose of any of its properties or assets to, or purchase any property or assets from, or enter into or make or amend any transaction, contract, agreement, understanding, loan, advance or guarantee with, or for the benefit of, any Affiliate (each of the foregoing, an "**Affiliate Transaction**"), unless (a) such Affiliate Transaction is in writing and on terms that, when taken as a whole, are no less favorable to the Company or the relevant Restricted Subsidiary than those that would have been obtained in a comparable transaction by the Company or such Restricted Subsidiary with an unrelated Person or, if there is no such comparable transaction, on terms that are fair and reasonable to the Company or such Restricted Subsidiary, and (b) the Company delivers to the Trustee (i) with respect to any Affiliate Transaction or series of related Affiliate Transactions involving aggregate consideration in excess of 2,000,000, an Officers' Certificate certifying that such Affiliate Transaction complies with clause (a) above and (ii) with respect to any Affiliate Transaction or series of related Affiliate Transactions involving aggregate consideration in excess of 5,000,000, a resolution of the Board of Directors set forth in an Officers' Certificate certifying that such Affiliate Transaction complies with clause (a) above and that such Affiliate Transaction has been approved by a majority of the disinterested members of the Board of Directors and (iii) with respect to any Affiliate Transaction or series of related Affiliate Transactions involving aggregate consideration in excess of 15,000,000, an opinion as to the fairness to the Company or the relevant Subsidiary of such Affiliate Transaction from a financial point of view issued by

an accounting, appraisal or investment banking firm that is, in the judgment of the Board of Directors, qualified to render such opinion and is independent with respect to the Company; *provided, however*, that the following shall be deemed not to be Affiliate Transactions: (A) any employment agreement or other employee compensation plan or arrangement (including stock option plans) entered into by the Company or any of its Restricted Subsidiaries in the ordinary course of business of the Company or such Restricted Subsidiary; (B) transactions between or among the Company and its Restricted Subsidiaries (including any Person that becomes a Restricted Subsidiary as a result of any such transaction); (C) loans or advances to officers, directors and employees of the Company or any of its Restricted Subsidiaries made in the ordinary course of business and consistent with past practices of the Company and its Restricted Subsidiaries in an aggregate amount not to exceed 10,000,000 outstanding at any one time; (D) indemnities of officers, directors and employees of the Company or any of its Restricted Subsidiaries permitted by provisions of the organizational documents of the Company or such Restricted Subsidiary or applicable law; (E) the payment of reasonable and customary regular fees to directors of the Company or any of its Restricted Subsidiaries who are not employees of the Company or any Subsidiary; (F) any agreement or arrangement in effect as of the Issue Date or any amendment thereto or replacement thereof or any transaction contemplated thereby (including pursuant to any amendment or replacement agreement) so long as any such amendment or replacement agreement, taken as a whole, is no more disadvantageous to the Holders in any material respect than the original agreement as in effect on the Issue Date; (G) Restricted Payments and Permitted Investments that are permitted by the provisions of Section 4.07 hereof or the declaration or payment of any dividend or the making of any other payment or distribution described in Section 4.07(c)(y) which does not constitute an Event of Default pursuant to Section 6.01(e); and (H) transactions with a Person (other than an Unrestricted Subsidiary of the Company) that is an Affiliate of the Company solely because the Company owns, directly or through a Restricted Subsidiary, an Equity Interest in, or controls, such Person.

SECTION 4.12. LIENS.

The Company shall not, and shall not permit any of its Restricted Subsidiaries to, directly or indirectly, create, incur, assume or suffer to exist any Lien on any property or asset now owned or hereafter acquired, or any income or profits therefrom, except Permitted Liens, to secure (a) any Indebtedness of the Company or such Restricted Subsidiary (if it is not also a Guarantor), unless prior to, or contemporaneously therewith, the Notes are equally and ratably secured, or (b) any Indebtedness of any Guarantor, unless prior to, or contemporaneously therewith, the Subsidiary Guarantee of such Guarantor is equally and ratably secured; *provided, however*, that if such Indebtedness is expressly subordinated to the Notes or any Subsidiary Guarantee, the Lien securing such Indebtedness will be subordinated and junior to the Lien securing the Notes or the Subsidiary Guarantee, as the case may be, with the same relative priority as such Indebtedness has with respect to the Notes or the Subsidiary Guarantee.

SECTION 4.13. GUARANTEES OF CERTAIN INDEBTEDNESS BY RESTRICTED SUBSIDIARIES.

The Company shall not permit any Restricted Subsidiary, directly or indirectly, to guarantee any Indebtedness of the Company or any Guarantor (the “**Other Company Indebtedness**”) other than Permitted Guarantees, unless such Restricted Subsidiary (if it is not already a Guarantor) contemporaneously executes and delivers a Subsidiary Guarantee and a

supplemental indenture to this Indenture in accordance with the terms of Section 10.02 hereof, which Subsidiary Guarantee will be senior to such Restricted Subsidiary's guarantee of such Other Company Indebtedness if such Other Company Indebtedness so guaranteed is subordinated Indebtedness.

SECTION 4.14. CORPORATE EXISTENCE.

Subject to Article 5 hereof, the Company shall do or cause to be done all things necessary to preserve and keep in full force and effect its corporate existence, and, subject to Article 10 hereof, the corporate, partnership or other existence of each of its Restricted Subsidiaries, in accordance with the respective organizational documents (as the same may be amended from time to time) of the Company or any such Restricted Subsidiary; *provided, however*, that the Company shall not be required to preserve the existence of any of its Restricted Subsidiaries, if the Company shall determine that the preservation thereof is no longer desirable in the conduct of the business of the Company and its Restricted Subsidiaries, taken as a whole.

SECTION 4.15. OFFER TO PURCHASE UPON CHANGE OF CONTROL.

(a) Upon the occurrence of a Change of Control, each Holder shall have the right to require the Company to purchase all or any portion (equal to 100,000 or an integral multiple of 1,000 in excess thereof) of such Holder's Notes, pursuant to an offer described in this Section 4.15 (a "**Change of Control Offer**"), at a purchase price in cash equal to 101% of the aggregate principal amount thereof, plus accrued and unpaid interest thereon to the date of purchase (the "**Change of Control Payment**"). Within 30 days following a Change of Control, the Company shall give notice to each Holder and the Trustee stating: (1) that the Change of Control Offer is being made pursuant to this Section 4.15 and that all Notes validly tendered and not withdrawn will be accepted for payment; (2) the purchase price and the purchase date, which shall be no earlier than 30 days but no later than 60 days from the date such notice is given (the "**Change of Control Payment Date**"); (3) that any Note not tendered will continue to accrue interest; (4) that, unless the Company defaults in the payment of the Change of Control Payment, all Notes accepted for payment pursuant to the Change of Control Offer shall cease to accrue interest after the Change of Control Payment Date; (5) that Holders electing to have any Notes purchased pursuant to a Change of Control Offer will be required to surrender the Notes, properly endorsed for transfer, together with the form entitled "Option of Holder to Elect Purchase" on the reverse of the Notes completed and such customary documents as the Company may reasonably request, to the Paying Agent at the address specified in the notice prior to the close of business on the third Business Day preceding the Change of Control Payment Date; (6) that Holders will be entitled to withdraw their election if the Paying Agent receives, no later than the close of business on the second Business Day preceding the Change of Control Payment Date, a telegram, facsimile transmission or letter setting forth the name of the Holder, the principal amount of Notes delivered for purchase, and a statement that such Holder is withdrawing his election to have the Notes purchased; and (7) that Holders whose Notes are being purchased only in part will be issued new Notes equal in principal amount to the unpurchased portion of the Notes surrendered, which unpurchased portion must be equal to 100,000 in principal amount or an integral multiple of 1,000 in excess thereof. If any of the Notes subject to a Change of Control Offer is in the form of a Global Note, then the Company shall modify such notice to the extent necessary to accord with the procedures of the Depository applicable to repurchases.

Further, the Company shall comply with the requirements of Rule 14e-1 under the Exchange Act and any other securities laws and regulations thereunder to the extent such laws and regulations are applicable in connection with the purchase of Notes as a result of a Change of Control. To the extent that the provisions of any securities laws or regulations conflict with the provisions relating to the Change of Control Offer, the Company shall comply with the applicable securities laws and regulations and shall not be deemed to have breached its obligations described above by virtue thereof.

(b) On or before 10:00 a.m. New York time on the Business Day immediately preceding the Change of Control Payment Date, the Company shall, to the extent lawful, (a) accept for payment all Notes or portions thereof properly tendered pursuant to the Change of Control Offer, (b) deposit with the Paying Agent an amount equal to the Change of Control Payment in respect of all Notes or portions thereof so tendered and (c) deliver or cause to be delivered to the Trustee the Notes so accepted together with an Officers' Certificate stating the aggregate principal amount of Notes or portions thereof being purchased by the Company. The Paying Agent shall promptly deliver to each Holder of Notes so tendered the Change of Control Payment for such Notes, and the Trustee shall promptly authenticate and mail (or cause to be transferred by book entry) to each Holder a new Note equal in principal amount to any unpurchased portion of the Notes surrendered, if any; *provided, however*, that each such new Note will be in a principal amount of 100,000 or an integral multiple of 1,000 in excess thereof. The Company shall publicly announce the results of the Change of Control Offer on or as soon as practicable after the Change of Control Payment Date.

(c) The Change of Control provisions described above shall be applicable whether or not any other provisions of this Indenture are applicable.

(d) The foregoing provisions of this Section 4.15 that require the Company to make a Change of Control Offer following a Change of Control shall be applicable regardless of whether any other provisions of this Indenture are applicable. The Company shall not be required to make a Change of Control Offer following a Change of Control if a third party makes the Change of Control Offer in the manner, at the time and otherwise in compliance with the requirements set forth in this Indenture applicable to a Change of Control Offer made by the Company and purchases all Notes validly tendered and not withdrawn under such Change of Control Offer.

(e) The provisions of this Section 4.15 relating to the Company's obligation to make a Change of Control Offer may be waived or modified, prior to the occurrence of a Change of Control, with the written consent of the holders of a majority in aggregate principal amount of the then outstanding Notes.

SECTION 4.16. ISSUANCES AND SALES OF CAPITAL STOCK OF RESTRICTED SUBSIDIARIES.

The Company (i) shall not, and shall not permit any Restricted Subsidiary of the Company to, transfer, convey, sell or otherwise dispose of any Capital Stock of any Restricted Subsidiary of the Company to any Person (other than the Company or a Restricted Subsidiary of the Company) and (ii) shall not permit any Restricted Subsidiary of the Company to issue any of its Equity Interests to any Person other than to the Company or a Restricted Subsidiary of the Company (except, in the case of both clauses (i) and (ii) above, as required in the manner described in clause (b) under the definition of "Wholly Owned Restricted Subsidiary", *provided* that the business and management of the Restricted Subsidiary is, by contract or otherwise, controlled by the Company), unless:

(1) the Net Proceeds from such issuance, transfer, conveyance, sale or other disposition are applied in accordance with Section 4.10 hereof and

(2) immediately after giving effect to such transfer, conveyance, sale or other disposition, such Restricted Subsidiary either continues to be a Restricted Subsidiary or, if such Restricted Subsidiary would no longer constitute a Restricted Subsidiary, any remaining Investment in such Restricted Subsidiary would have been permitted to be made under Section 4.07 hereof if made on the date of such transfer, conveyance, sale or other disposition.

For purposes of this Section 4.16, the creation or perfection of a Lien on any Capital Stock of a Restricted Subsidiary of the Company to secure any Indebtedness of the Company or any of its Restricted Subsidiaries shall not be deemed to be a disposition of such Capital Stock; *provided, however*, any sale by the secured party of such Capital Stock following foreclosure of its Lien shall be subject to this Section 4.16.

SECTION 4.17. SALE-AND-LEASEBACK TRANSACTIONS.

The Company shall not, and shall not permit any of its Restricted Subsidiaries to, enter into any sale-and-leaseback transaction; *provided, however*, that the Company or any Restricted Subsidiary, as applicable, may enter into a sale-and-leaseback transaction if (i) the Company or such Restricted Subsidiary could have (a) incurred Indebtedness in an amount equal to the Attributable Indebtedness relating to such sale-and-leaseback transaction pursuant to the Consolidated Interest Coverage Ratio test set forth in the first paragraph of Section 4.09 hereof and (b) incurred a Lien to secure such Indebtedness pursuant to Section 4.12 hereof, (ii) the gross cash proceeds of such sale-and-leaseback transaction are at least equal to the fair market value (as determined in accordance with the definition of such term, the results of which determination shall be set forth in an Officers' Certificate delivered to the Trustee) of the property that is the subject of such sale-and-leaseback transaction and (iii) the transfer of assets in such sale-and-leaseback transaction is permitted by, and the Company applies the proceeds of such transaction in compliance with, Section 4.10 hereof, if applicable.

SECTION 4.18. NO INDUCEMENTS.

The Company shall not, and the Company shall not permit any of its Subsidiaries, either directly or indirectly, to pay (or cause to be paid) any consideration, whether by way of interest, fee or otherwise, to any Holder for or as an inducement to any consent, waiver, amendment or supplement of any terms or provisions of this Indenture or the Notes, unless such consideration is offered to be paid (or agreed to be paid) to all Holders which so consent, waive or agree to amend or supplement in the time frame set forth on solicitation documents relating to such consent, waiver or agreement.

SECTION 4.19. ADDITIONAL AMOUNTS.

All payments made by or on behalf of the Company or any Guarantor under or with respect to the Notes or the Subsidiary Guarantees will be made free and clear of and without withholding or deduction for or on account of any present or future tax, duty, levy, impost, assessment or other governmental charge (including without limitation, penalties, interest and any other liability with respect thereto) (“**Taxes**”) imposed or levied by or on behalf of any jurisdiction in which the Company or any Guarantor (including any successor entities) is then organized or resident for tax purposes or any political subdivision thereof or therein or any jurisdiction by or through which payment is made (each, a “**Relevant Taxing Jurisdiction**”), unless the Company or any Guarantor (or any Paying Agent) is required to withhold or deduct Taxes under the laws of the Relevant Taxing Jurisdiction or by the interpretation or administration thereof by the relevant taxing authority. If the Company or any Guarantor (or any Paying Agent) is so required to withhold or deduct any amount for or on account of Taxes from any payment made under or with respect to the Notes or the Subsidiary Guarantees, the Company or any such Guarantor (and each Paying Agent) will pay to each Holder of the Notes that are outstanding on the date of the required payment, such additional amounts (“**Additional Amounts**”) as may be necessary so that the net amount received by such Holder (including the Additional Amounts) after such withholding or deduction will not be less than the amount such Holder would have received if such Taxes had not been withheld or deducted, *provided* that no Additional Amounts will be payable with respect to any Note:

(a) surrendered by the Holder thereof for payment of principal more than 30 days after the later of (1) the date on which such payment first became due and (2) if the full amount payable has not been received by or on behalf of the relevant Holder on or prior to such due date, the date on which, the full amount having been so received, notice to that effect shall have been given to the Holders by the Trustee, except to the extent that the Holder would have been entitled to such Additional Amounts on surrendering such Note for payment on any day during the applicable 30-day period;

(b) if any tax, assessment or other governmental charge is imposed or withheld by reason of the failure to comply by the Holder or, if different, the beneficial owner (*ayant-droit*) of the Note with a request addressed to such Holder or beneficial owner to provide information, documents or other evidence concerning the nationality, residence, identity or connection with the Relevant Taxing Jurisdiction of such Holder or beneficial owner which is required or imposed by a statute, treaty, regulation or administrative practice of the Relevant Taxing Jurisdiction as a precondition to exemption from all or part of such tax, assessment or governmental charge;

(c) held by or on behalf of a Holder who is liable for Taxes in respect of such Note by reason of having some connection with the Relevant Taxing Jurisdiction other than the mere purchase, holding or disposition of any Note, or the receipt of payments made by or on behalf of the Company or any Guarantor in respect thereof or any Subsidiary Guarantee, including, without limitation, such Holder being or having been a citizen or resident thereof or being or having been present or engaged in a trade or business therein or having had a permanent establishment therein;

(d) on account of any estate, inheritance, gift, sale, transfer, personal property or other similar tax, assessment or other governmental charge;

(e) except in the case of the winding up of the Company or any Guarantor, any Note surrendered for payment in the Republic of France;

(f) any withholding or deduction imposed on a payment to an individual which is required to be made pursuant to any law implementing or complying with, or introduced in order to conform to European Council Directive 2003/48/EC or any other Directive implementing the conclusions of the ECOFIN Council meeting of 26- 27 November 2000 on the taxation of savings income or any agreement between the European Community and any jurisdiction providing for equivalent measures;

(g) as a result of any combination of (a), (b), (c), (d), (e) or (f) or with respect to any payment made by or on behalf of the Company or any Guarantor in respect of any Note or Subsidiary Guarantee to any Holder who is a fiduciary or partnership or other than the sole beneficial owner of such payment to the extent that a beneficiary or settlor or beneficial owner would not have been entitled to any Additional Amounts had such beneficiary or settlor or beneficial owner been the Holder; or

(h) such withholding or deduction is imposed or levied on a payment to a Luxembourg resident individual and is required to be made pursuant to the Luxembourg law of 23 December 2005.

The Company or any Guarantor will also make such withholding or deduction and remit the full amount deducted or withheld to the relevant authority in accordance with applicable law. The Company will furnish, within 60 days after the date the payment of any Taxes is due pursuant to applicable law, to the Trustee, copies of tax receipts (to the extent received from the relevant tax authorities in the usual course or as generally provided) evidencing that such payment has been made by the Company or any Guarantor. The Trustee will make such evidence available to the Holders upon request.

At least 30 days prior to each date on which any payment under or with respect to the Notes or the Subsidiary Guarantees is due and payable, if the Company or any Guarantor becomes obligated to pay Additional Amounts with respect to such payment (unless such obligation to pay Additional Amounts arises after the 30th day prior to the date on which payment under or with respect to the Notes or the Subsidiary Guarantees is due and payable, in which case it will be paid promptly thereafter and in any case before the relevant payment date), the Company will deliver to each Paying Agent an Officers' Certificate stating the fact that such Additional Amounts will be payable, and the amount so payable and will set forth such other information as necessary to enable such Paying Agent to pay such Additional Amounts to the Holders of the Notes on the payment date. Whenever in this Indenture there is mentioned, in any context, (a) the payment of principal (and premium, if any), (b) purchase prices in connection with a purchase of the Notes, (c) interest or (d) any other amount payable on or with respect to any of the Notes or the Subsidiary Guarantees, such mention is deemed to include mention of the payment of Additional Amounts provided for in this section to the extent, that, in such context, Additional Amounts are, were or would be payable in respect thereof.

The Company or a Guarantor, as the case may be, will pay any present or future stamp, court or documentary taxes or any other excise or property taxes, charges or similar levies that arise in the United States, the Republic of France or in any jurisdiction in which a Paying Agent is located from the initial issue or registration of the Notes or on the enforcement of any payments with respect to the Notes or any Subsidiary Guarantee.

The obligations of the Company or any Guarantor described in this Section 4.19 will survive any termination, defeasance or satisfaction and discharge of this Indenture or any transfer by a holder or beneficial owner of its notes, and will apply, mutatis mutandis, to any jurisdiction in which any successor Person to the Issuer or any Guarantor is incorporated, engaged in business for tax purposes or resident for tax purposes or any jurisdiction from or through which such Person makes any payment on the Notes and any department or any political subdivision thereof or therein.

SECTION 4.20. ENFORCEABILITY OF JUDGMENTS; INDEMNIFICATION FOR FOREIGN CURRENCY JUDGMENTS.

The obligations of the Company to any Holder or the Trustee shall, notwithstanding any judgment in a currency (the “**Judgment Currency**”) other than euros (the “**Agreement Currency**”), be discharged only to the extent that on the day following receipt by such Holder or the Trustee, as the case may be, of any amount in the Judgment Currency, such Holder or the Trustee may in accordance with normal banking procedures purchase the Agreement Currency with the Judgment Currency. If the amount of the Agreement Currency so purchased is less than the amount originally to be paid to such Holder or the Trustee, as the case may be, in the Agreement Currency, the Company agrees, as a separate obligation and notwithstanding such judgment, to pay to such Holder or the Trustee, as the case may be, the difference, and if the amount of the Agreement Currency so purchased exceeds the amount originally to be paid to such Holder or the Trustee, as the case may be, such Holder or the Trustee, as the case may be, shall pay to or for the account of the Company such excess; *provided* that such Holder or the Trustee, as the case may be, shall not have any obligation to pay any such excess as long as a Default has occurred and is continuing, in which case such excess may be applied by such Holder or the Trustee, as the case may be, to such obligations.

SECTION 4.21. CONDUCT OF BUSINESS.

The Company shall not, and shall not permit any of its Restricted Subsidiaries to, engage in the conduct of any business other than the business being conducted on the Issue Date and such other businesses as are reasonably necessary or desirable to facilitate the conduct and operation of, or ancillary or reasonably related to, such businesses, except to the extent as would not be material to the Company and its Restricted Subsidiaries, taken as a whole.

SECTION 4.22. ANTI-LAYERING.

The Company shall not and shall not permit any Guarantor to incur, directly or indirectly, any Indebtedness that is subordinated in right of payment to any Indebtedness of the Company or the Guarantor, as the case may be, unless the Indebtedness so incurred is either *pari passu* with, or subordinated in right of payment to, the Notes or the relevant Subsidiary Guarantee, as the case may be.

Unsecured Indebtedness will not be deemed to be subordinated in right of payment to secured Indebtedness solely because it is unsecured, and Indebtedness that is not guaranteed by a particular Person is not deemed to be subordinated in right of payment to Indebtedness that is so guaranteed solely because it is not so guaranteed.

SECTION 4.23. EFFECTIVENESS OF COVENANTS AND EVENTS OF DEFAULT.

The covenants described under clauses (b)(iii) and (b)(iv) in Section 10.03 (“Guarantors may Consolidate, etc., on Certain Terms”), Section 4.07 (“Restricted Payments”), Section 4.09 (“Incurrence of Indebtedness and Issuance of Disqualified Stock”), Section 4.08 (“Dividend and Other Payment Restrictions Affecting Restricted Subsidiaries”), Section 4.11 (“Transactions with Affiliates”), Section 4.21 (“Conduct of Business”), Section 4.10 (“Asset Sales”), clauses (i)(a), (ii) and (iii) in Section 4.17 (“Sale-and-Leaseback Transactions”) and Section 4.16 (“Issuances and Sales of Capital Stock of Restricted Subsidiaries”) and the Events of Default described in clauses (e) and (f) in Section 6.01 (“Events of Default”) (collectively, the “**Suspended Provisions**”) will no longer be in effect upon the Company attaining Investment Grade Status. If at any time the Company’s credit rating is downgraded from Investment Grade Status, then the Suspended Provisions will thereafter be reinstated as if such covenants had never been suspended and be applicable pursuant to the terms of this Indenture (including in connection with performing any calculation or assessment to determine compliance with the terms of this Indenture), unless and until the Company subsequently attains Investment Grade Status (in which event the Suspended Provisions shall again no longer be in effect for such time that the Company maintains Investment Grade Status); *provided, however*, that no Default, Event of Default or breach of any kind shall be deemed to exist under the Indenture with respect to the Suspended Provisions based on, and none of the Company or any of its Subsidiaries shall bear any liability for, any actions taken or events occurring after the Company attains Investment Grade Status and before any reinstatement of such Suspended Provisions as provided above, or any actions taken at any time pursuant to any contractual obligation arising prior to such reinstatement, regardless of whether such actions or events would have been permitted if the applicable Suspended Provisions remained in effect during such period.

SECTION 4.24. WITHHOLDING.

In order to comply with applicable tax laws (inclusive of rules, regulations and interpretations promulgated by competent authorities) related to the Indenture in effect from time to time (“Applicable Law”) that a foreign financial institution, issuer, trustee, paying agent or other party is or has agreed to be subject to, the Company agrees (i) to provide to the Trustee and the paying agents sufficient information about the parties and/or transactions (including any modification to the terms of such transactions) so that the Trustee and the paying agents can determine if they have tax-related obligations under Applicable Law, (ii) that the Trustee and the paying agents shall be entitled to make any withholding or deduction from payments to the extent necessary to comply with Applicable Law for which the Trustee and the paying agents should not have any liability and (iii) to hold the Trustee and the paying agents harmless for any losses that they may suffer due to the actions required to comply with Applicable Law. The terms of this Section 4.24 shall survive the termination and discharge of this Indenture.

ARTICLE 5

SUCCESSORS

SECTION 5.01. SUCCESSOR CORPORATION SUBSTITUTED.

Upon any consolidation or merger, or any sale, assignment, transfer, lease, conveyance or other disposition of all or substantially all of the properties or assets of the Company not constituting an Event of Default pursuant to with Section 6.01(f) hereof, the successor corporation formed by such consolidation or into or with which the Company is merged or to which such sale, assignment, transfer, lease, conveyance or other disposition is made shall succeed to, and be substituted for (so that from and after the date of such consolidation, merger, sale, assignment, transfer, lease, conveyance or other disposition, the provisions of this Indenture referring to the “Company” shall refer instead to the successor corporation and not to the Company), and may exercise every right and power of the Company under this Indenture with the same effect as if such successor corporation had been named as the Company herein; *provided, however*, that the predecessor Company shall not be relieved from its obligations under this Indenture or the Notes in the case of any such lease.

ARTICLE 6

DEFAULTS AND REMEDIES

SECTION 6.01. EVENTS OF DEFAULT.

An “Event of Default” occurs if:

- (a) the Company defaults in the payment when due of interest on the Notes, and such default continues for a period of 30 days;
- (b) the Company defaults in the payment when due of principal or of premium, if any, on the Notes;
- (c) the Company fails to comply with any of the provisions of Sections 4.10 or 4.15 hereof;
- (d) the Company fails to observe or perform any other covenant or other agreement in this Indenture or the Notes for 30 days after it receives written notice from the Trustee or the Holders of at least 25% in principal amount of the Notes then outstanding of such failure;
- (e) the declaration or payment of any dividend or the making of any other payment or distribution described in subclause (y) of Section 4.07(c) hereof, which declaration, payment or distribution would not be permitted by Section 4.07 hereof if it were treated as a Restricted Payment;

(f) the Company consolidates or merges (*fusion*) with or into (whether or not the Company is the surviving corporation), or sells, assigns, transfers, leases, conveys, demerges (*scission*) or otherwise disposes of all or substantially all of its properties or assets in one or more related transactions, to, another Person unless: (1) the Company is the surviving corporation or the Person formed by or surviving any such consolidation or merger (if other than the Company) or to which such sale, assignment, transfer, lease, conveyance, demerger or other disposition shall have been made is a corporation organized or existing under the laws of the United States (or any state thereof or the District of Columbia), France or any other member state of the European Union (as constituted on the Issue Date); (2) the Person formed by or surviving any such consolidation or merger (if other than the Company) or the Person to which such sale, assignment, transfer, lease, conveyance, demerger or other disposition shall have been made assumes all the obligations of the Company under the Notes and this Indenture pursuant to a supplemental indenture in a form reasonably satisfactory to the Trustee; (3) immediately after such transaction no Default or Event of Default exists; (4) except in the case of a merger of the Company with or into a Wholly Owned Restricted Subsidiary of the Company, the Company or the Person formed by or surviving any such consolidation or merger (if other than the Company), or to which such sale, assignment, transfer, lease, conveyance, demerger or other disposition shall have been made, (i) shall have Consolidated Net Worth immediately after the transaction equal to or greater than the Consolidated Net Worth of the Company immediately preceding the transaction and (ii) shall, at the time of such transaction and after giving *pro forma* effect thereto as if such transaction had occurred at the beginning of the applicable four-quarter period, be permitted to incur at least 1.00 of additional Indebtedness pursuant to the Consolidated Interest Coverage Ratio test set forth in the first paragraph of Section 4.09 hereof; and (5) the Company shall deliver, or cause to be delivered, to the Trustee, in form and substance reasonably satisfactory to the Trustee, (i) an Officers' Certificate stating that such consolidation, merger or disposition and any supplemental indenture in respect thereto comply with this provision and that all conditions precedent in this Indenture relating to such transaction or transactions have been complied with and (ii) an Opinion of Counsel stating that the requirements of clauses (1) and (2) of this Section 6.01(f) have been satisfied;

(g) a default occurs under any mortgage, indenture or instrument under which there may be issued or by which there may be secured or evidenced any Indebtedness for money borrowed by the Company or any of its Restricted Subsidiaries (or the payment of which is guaranteed by the Company or any of its Restricted Subsidiaries), whether such Indebtedness or guarantee now exists, or is created after the date of this Indenture, which default (i) is caused by a failure to pay principal of or premium or interest on such Indebtedness prior to the expiration of any grace period provided in such Indebtedness, including any extension thereof (a "**Payment Default**") or (ii) results in the acceleration of such Indebtedness prior to its express maturity and, in each case, the principal amount of any such Indebtedness, together with the principal amount of any other such Indebtedness under which there has been a Payment Default or the maturity of which has been so accelerated, aggregates in excess of 50,000,000; and *provided, further*, that if such default is cured or waived or any such acceleration rescinded, or such Indebtedness is repaid, within a period of 10 days from the continuation of such default beyond the applicable grace period or the occurrence of such acceleration, as the case may be, an Event of Default and any consequential acceleration of the Notes shall be automatically rescinded, so long as such rescission does not conflict with any judgment or decree;

(h) a final judgment or final judgments for the payment of money are entered by a court or courts of competent jurisdiction against the Company or any of its Restricted Subsidiaries and such judgment or judgments are not paid or discharged for a period (during which execution shall not be effectively stayed) of 60 days; *provided* that the aggregate of all such undischarged judgments (not covered by insurance) exceeds 50,000,000;

(i) the failure of any Guarantor to perform any covenant set forth in its Subsidiary Guarantee or the repudiation by any Guarantor of its obligations under its Subsidiary Guarantee or the unenforceability of any Subsidiary Guarantee for any reason other than as provided in this Indenture;

(j) the Company or any Significant Subsidiary is unable to pay its debts as they fall due and commences negotiations with any one or more of its creditors with a view to the general readjustment or rescheduling of its indebtedness or makes a general assignment for the benefit of or a composition with its creditors;

(k) the Company or any Significant Subsidiary takes any corporate action or other steps are taken or legal proceedings are started under applicable bankruptcy laws for its *sauvegarde judiciaire*, *redressement judiciaire*, *liquidation judiciaire* or other winding-up, dissolution, administration or reorganization (whether by way of voluntary arrangement, scheme of arrangement or otherwise) or for the appointment of a *mandataire ad hoc*, *conciliateur* or *administrateur provisoire*, or other liquidator, receiver, administrator, administrative receiver, conservator, custodian, trustee or similar officer of it or of any or all of its revenues and assets, other than an action, legal proceeding or other step on vexatious or frivolous grounds or which is withdrawn or discharged within 40 days; or

(l) any execution or distress is levied against, or an encumbrancer takes possession of, the whole or any part of, the property, undertaking or assets of the Company or any Significant Subsidiary or any event occurs which under the laws of any jurisdiction has a similar or analogous effect in relation to property, undertaking or assets the value of which is superior to 50,000,000, other than an action, legal proceeding or other step on vexatious or frivolous grounds or which is withdrawn or discharged within 40 days.

SECTION 6.02. ACCELERATION.

If any Event of Default occurs and is continuing, the Trustee may, by notice to the Company, or the Holders of at least 25% in principal amount of the then outstanding Notes may, by notice to the Company and the Trustee, and the Trustee shall, upon the request of such Holders, declare all the Notes to be due and payable immediately. Upon any such declaration, the Notes shall become due and payable immediately. Notwithstanding the foregoing, if an Event of

Default specified in clause (j), (k) or (l) of Section 6.01 hereof occurs with respect to the Company or any Significant Subsidiary, all outstanding Notes shall be due and payable immediately without further action or notice. The Holders of a majority in principal amount of the then outstanding Notes by written notice to the Trustee may on behalf of all of the Holders rescind an acceleration and its consequences if the rescission would not conflict with any judgment or decree and if all existing Events of Default (except nonpayment of principal, interest or premium, if any, that have become due solely because of such acceleration) have been cured or waived.

If an Event of Default occurs by reason of any willful action (or inaction) taken (or not taken) by or on behalf of the Company with the intention of avoiding payment of the premium that the Company would have had to pay if the Company then had elected to redeem the Notes pursuant to Section 3.07 hereof, then, upon acceleration of the Notes, an equivalent premium shall also become and be immediately due and payable, to the extent permitted by law, anything in this Indenture or in the Notes to the contrary notwithstanding.

SECTION 6.03. OTHER REMEDIES.

If an Event of Default occurs and is continuing, the Trustee may pursue any available remedy to collect the payment of principal of and premium, if any, and interest on the Notes or to enforce the performance of any provision of the Notes or this Indenture.

The Trustee may maintain a proceeding even if it does not possess any of the Notes or does not produce any of them in the proceeding. A delay or omission by the Trustee or any Holder of a Note in exercising any right or remedy accruing upon an Event of Default shall not impair the right or remedy or constitute a waiver of or acquiescence in the Event of Default. All remedies are cumulative to the extent permitted by law.

SECTION 6.04. WAIVER OF PAST DEFAULTS.

Holders of a majority in principal amount of the then outstanding Notes by notice to the Trustee may on behalf of the Holders of all of the Notes waive any existing Default or Event of Default and its consequences hereunder, except a continuing Default or Event of Default in the payment of the principal of or premium, if any, or interest on the Notes (including in connection with an offer to purchase). Upon any such waiver, such Default shall cease to exist, and any Event of Default arising therefrom shall be deemed to have been cured for every purpose of this Indenture; but no such waiver shall extend to any subsequent or other Default or impair any right consequent thereon.

SECTION 6.05. CONTROL BY MAJORITY.

Holders of a majority in principal amount of the then outstanding Notes may direct the time, method and place of conducting any proceeding for exercising any remedy available to the Trustee or exercising any trust or power conferred on it. However, the Trustee may refuse to follow any direction that conflicts with law or this Indenture or that the Trustee determines may be unduly prejudicial to the rights of other Holders of Notes or that may involve the Trustee in personal liability.

SECTION 6.06. LIMITATION ON SUITS.

A Holder of a Note may pursue a remedy with respect to this Indenture or the Notes only if:

- (a) the Holder of a Note gives to the Trustee written notice of a continuing Event of Default;
- (b) the Holders of at least 25% in principal amount of the then outstanding Notes make a written request to the Trustee to pursue the remedy;
- (c) such Holder of a Note or Holders of Notes offer and, if requested, provide to the Trustee indemnity satisfactory to the Trustee against any loss, liability or expense;
- (d) the Trustee does not comply with the request within 60 days after receipt of the request and the offer and, if requested, the provision of indemnity; and
- (e) during such 60-day period the Holders of a majority in principal amount of the then outstanding Notes do not give the Trustee a direction inconsistent with the request.

A Holder of a Note may not use this Indenture to prejudice the rights of another Holder of a Note or to obtain a preference or priority over another Holder of a Note.

SECTION 6.07. RIGHTS OF HOLDERS OF NOTES TO RECEIVE PAYMENT.

Notwithstanding any other provision of this Indenture, the right of any Holder of a Note to receive payment of principal of and premium, if any, and interest on the Note, on or after the respective due dates expressed in the Note (including in connection with an offer to purchase), or to bring suit for the enforcement of any such payment on or after such respective dates, shall not be impaired or affected without the consent of such Holder.

SECTION 6.08. COLLECTION SUIT BY TRUSTEE.

If an Event of Default specified in Section 6.01(a) or (b) occurs and is continuing, the Trustee is authorized to recover judgment in its own name and as trustee of an express trust against the Company for the whole amount of principal of, premium, if any, and interest remaining unpaid on the Notes and interest on overdue principal and, to the extent lawful, interest and such further amount as shall be sufficient to cover the costs and expenses of collection, including the reasonable compensation, expenses, disbursements and advances of the Trustee, its agents and counsel.

SECTION 6.09. TRUSTEE MAY FILE PROOFS OF CLAIM.

The Trustee is authorized to file such proofs of claim and other papers or documents as may be necessary or advisable in order to have the claims of the Trustee (including any claim for the reasonable compensation, expenses, disbursements and advances of the Trustee, its agents and counsel) and the Holders of the Notes allowed in any judicial proceedings relative to the

Company (or any other obligor upon the Notes), its creditors or its property and shall be entitled and empowered to collect, receive and distribute any money or other property payable or deliverable on any such claims and any custodian in any such judicial proceeding is hereby authorized by each Holder to make such payments to the Trustee, and in the event that the Trustee shall consent to the making of such payments directly to the Holders, to pay to the Trustee any amount due to it for the reasonable compensation, expenses, disbursements and advances of the Trustee, its agents and counsel, and any other amounts due the Trustee under Section 7.07 hereof. To the extent that the payment of any such compensation, expenses, disbursements and advances of the Trustee, its agents and counsel, and any other amounts due the Trustee under Section 7.07 hereof out of the estate in any such proceeding, shall be denied for any reason, payment of the same shall be secured by a Lien on, and shall be paid out of, any and all distributions, dividends, money, securities and other properties that the Holders may be entitled to receive in such proceeding whether in liquidation or under any plan of reorganization or arrangement or otherwise. Nothing herein contained shall be deemed to authorize the Trustee to authorize or consent to or accept or adopt on behalf of any Holder any plan of reorganization, arrangement, adjustment or composition affecting the Notes or the rights of any Holder, or to authorize the Trustee to vote in respect of the claim of any Holder in any such proceeding.

SECTION 6.10. PRIORITIES.

If the Trustee collects any money pursuant to this Article, it shall pay out the money in the following order:

First: to the Trustee, its agents and attorneys for amounts due under Section 7.07 hereof, including payment of all compensation, expense and liabilities incurred, and all advances made, by the Trustee and the Trustee's reasonable costs and expenses of collection;

Second: to Holders of Notes for amounts due and unpaid on the Notes for principal, premium, if any, and interest ratably, without preference or priority of any kind, according to the amounts due and payable on the Notes for principal, premium, if any, and interest respectively; and

Third: to the Company or to such party as a court of competent jurisdiction shall direct.

The Trustee may fix a record date and payment date for any payment to Holders of Notes pursuant to this Section 6.10.

SECTION 6.11. UNDERTAKING FOR COSTS.

In any suit for the enforcement of any right or remedy under this Indenture or in any suit against the Trustee for any action taken or omitted by it as a Trustee, a court in its discretion may require the filing by any party litigant in the suit of an undertaking to pay the costs of the suit, and the court in its discretion may assess reasonable costs, including reasonable attorneys' fees, against any party litigant in the suit, having due regard to the merits and good faith of the claims or defenses made by the party litigant. This Section does not apply to a suit by the Trustee, a suit by a Holder of a Note pursuant to Section 6.07 hereof, or a suit by Holders of more than 10% in principal amount of the then outstanding Notes.

ARTICLE 7

TRUSTEE

SECTION 7.01. DUTIES OF TRUSTEE.

(a) If an Event of Default has occurred and is continuing, the Trustee shall exercise such of the rights and powers vested in it by this Indenture, and use the same degree of care and skill in its exercise, as a prudent man would exercise or use under the circumstances in the conduct of his own affairs.

(b) Except during the continuance of an Event of Default:

(i) the duties of the Trustee shall be determined solely by the express provisions of this Indenture and the Trustee need perform only those duties that are specifically set forth in this Indenture and no others, and no implied covenants or obligations shall be read into this Indenture against the Trustee; and

(ii) in the absence of bad faith on its part, the Trustee may conclusively rely, as to the truth of the statements and the correctness of the opinions expressed therein, upon certificates or opinions furnished to the Trustee and conforming to the requirements of this Indenture. However, the Trustee shall examine the certificates and opinions to determine whether or not they conform to the requirements of this Indenture.

(c) The Trustee may not be relieved from liabilities for its own negligent action, its own negligent failure to act, or its own willful misconduct, except that:

(i) this paragraph does not limit the effect of paragraph (b) of this Section 7.01;

(ii) the Trustee shall not be liable for any error of judgment made in good faith by a Responsible Officer, unless it is proved that the Trustee was negligent in ascertaining the pertinent facts; and

(iii) the Trustee shall not be liable with respect to any action it takes or omits to take in good faith in accordance with a direction received by it pursuant to Section 6.05 hereof.

(d) Whether or not therein expressly so provided, every provision of this Indenture that in any way relates to the Trustee is subject to paragraphs (a), (b) and (c) of this Section 7.01.

(e) No provision of this Indenture shall require the Trustee to expend or risk its own funds or incur any liability; *provided, however*, if the Trustee elects to take any such action (including, but not limited to, the institution of defense of legal proceedings) it shall be entitled to security or indemnity for the payment of costs, expenses (including, but not limited to,

attorney' s fees and expenses) and liabilities which may be incurred thereby, satisfactory to the Trustee. The Trustee shall be under no obligation to exercise any of its rights and powers under this Indenture at the request of any Holders, unless such Holder shall have offered to the Trustee security and indemnity satisfactory to it against any loss, liability or expense.

(f) The Trustee shall not be liable for interest on any money received by it except as the Trustee may agree in writing with the Company. Money held in trust by the Trustee need not be segregated from other funds except to the extent required by law.

SECTION 7.02. RIGHTS OF TRUSTEE.

(a) The Trustee may conclusively rely upon any document believed by it to be genuine and to have been signed or presented by the proper Person. The Trustee need not investigate any fact or matter stated in the document.

(b) Before the Trustee acts or refrains from acting, it may require an Officers' Certificate or an Opinion of Counsel or both. The Trustee shall not be liable for any action it takes or omits to take in good faith in reliance on such Officers' Certificate or Opinion of Counsel. The Trustee may consult with counsel, and the written advice of such counsel or any Opinion of Counsel shall be full and complete authorization and protection from liability in respect of any action taken, suffered or omitted by it hereunder in good faith and in reliance thereon.

(c) The Trustee may act through its attorneys and agents and shall not be responsible for the misconduct or negligence of any agent appointed with due care.

(d) The Trustee shall not be liable for any action it takes or omits to take in good faith that it believes to be authorized or within the rights or powers conferred upon it by this Indenture.

(e) Unless otherwise specifically provided in this Indenture, any demand, request, direction or notice from the Company shall be sufficient if signed by an Officer of the Company.

(f) The Trustee shall be under no obligation to exercise any of the rights or powers vested in it by this Indenture at the request or direction of any of the Holders unless such Holders shall have offered to the Trustee reasonable security or indemnity against the costs, expenses and liabilities that might be incurred by it in compliance with such request or direction.

(g) The Trustee shall have no duty to inquire as to the performance of the Company' s covenants in Article 4 hereof or under any other agreement to which the Company is a party. In addition, the Trustee shall not be deemed to have knowledge of any Default or Event of Default except: (1) any Event of Default occurring pursuant to Section 6.01(a) or 6.01(b) hereof; or (2) any Default or Event of Default of which its Responsible Officer shall have received written notification at its Corporate Trust Office or obtained actual knowledge.

(h) The Trustee is not required to give any bond or surety with respect to the performance of its duties or the exercise of its powers under this Indenture.

(i) In the event the Trustee receives inconsistent or conflicting requests and indemnity from two or more groups of Holders of Notes, each representing less than a majority in aggregate principal amount of the Notes then outstanding, pursuant to the provisions of this Indenture, the Trustee, in its sole discretion, may determine what action, if any, shall be taken.

(j) The permissive right of the Trustee to take the actions permitted by this Indenture shall not be construed as an obligation or duty to do so.

(k) Except for information provided by the Trustee concerning the Trustee, the Trustee shall have no responsibility for any information in any offering memorandum or other disclosure material distributed with respect to the Notes, and the Trustee shall have no responsibility for compliance with any state or Federal securities laws in connection with the Notes.

SECTION 7.03. INDIVIDUAL RIGHTS OF TRUSTEE.

The Trustee in its individual or any other capacity may become the owner or pledgee of Notes and may otherwise deal with the Company, any Guarantor or any Affiliate of the Company with the same rights it would have if it were not Trustee. Any Agent may do the same with like rights and duties. The Trustee is also subject to Sections 7.10 and 7.11 hereof.

SECTION 7.04. TRUSTEE'S DISCLAIMER.

The Trustee shall not be responsible for and makes no representation as to the validity, enforceability or adequacy of this Indenture or the Notes; it shall not be accountable for the Company's use of the proceeds from the Notes or any money paid to the Company or upon the Company's direction under any provision of this Indenture; it shall not be responsible for the use or application of any money received by any Paying Agent other than the Trustee; it shall not be responsible for any statement or recital herein or any statement in the Notes or any other document in connection with the sale of the Notes or pursuant to this Indenture other than its certificate of authentication; and it shall not be responsible for any loss suffered in connection with any investment of funds made by it in accordance with this Indenture.

SECTION 7.05. NOTICE OF DEFAULTS.

If a Default or Event of Default occurs and is continuing and if it is known to a Responsible Officer of the Trustee, the Trustee shall mail to Holders of Notes a notice of the Default or Event of Default within 90 days after it occurs. Except in the case of a Default or Event of Default in payment of principal of or premium, if any, or interest on any Note, the Trustee may withhold the notice if and so long as a committee of its Responsible Officers in good faith determines that withholding the notice is in the interests of the Holders of the Notes.

SECTION 7.06. [INTENTIONALLY OMITTED]

SECTION 7.07. COMPENSATION AND INDEMNITY.

The Company shall pay to the Trustee from time to time reasonable compensation for its acceptance of this Indenture and services hereunder. The Trustee's compensation shall not be limited by any law on compensation of a trustee of an express trust. The Company shall reimburse the Trustee promptly upon request for all reasonable disbursements, advances and expenses incurred or made by it in addition to the compensation for its services. Such expenses shall include the reasonable compensation, disbursements and expenses of the Trustee's agents and counsel.

The Company and the Guarantors, on a joint and several basis, shall indemnify the Trustee, its directors, employees, agents and affiliates against any and all losses, liabilities or expenses incurred by it arising out of or in connection with the acceptance or administration of the Trustee's duties under this Indenture, including the costs and expenses of enforcing this Indenture against the Company (including this Section 7.07) and defending itself against any claim (whether asserted by the Company, any Guarantor or any Holder or any other person) or liability in connection with the exercise or performance of any of its powers or duties hereunder, except to the extent any such loss, liability or expense may be attributable to its negligence, bad faith or willful misconduct. The Trustee shall notify the Company promptly of any claim for which it may seek indemnity. Failure by the Trustee to so notify the Company shall not relieve the Company or the Guarantors of their obligations hereunder. The Company shall defend the claim and the Trustee shall cooperate in the defense. The Trustee may have separate counsel and the Company shall pay the reasonable fees and expenses of such counsel. The Company need not pay for any settlement made without its consent, which consent shall not be unreasonably withheld.

The obligations of the Company and the Guarantors under this Section 7.07 shall survive the satisfaction and discharge of this Indenture.

To secure the Company's payment obligations in this Section 7.07, the Trustee shall have a Lien prior to the Notes on all money or property held or collected by the Trustee, except that held in trust to pay principal and interest on particular Notes. Such Lien shall survive the satisfaction and discharge of this Indenture.

When the Trustee incurs expenses or renders services after an Event of Default specified in Section 6.01(j), (k) or (l) hereof occurs, the expenses and the compensation for the services (including the fees and expenses of its agents and counsel) are intended to constitute expenses of administration under any applicable bankruptcy law.

SECTION 7.08. REPLACEMENT OF TRUSTEE.

A resignation or removal of the Trustee and appointment of a successor Trustee shall become effective only upon the successor Trustee's acceptance of appointment as provided in this Section.

The Trustee may resign in writing at any time and be discharged from the trust hereby created by so notifying the Company. The Holders of Notes of a majority in principal amount of the then outstanding Notes may remove the Trustee by so notifying the Trustee and the Company in writing. The Company may remove the Trustee if:

- (a) the Trustee fails to comply with Section 7.10 hereof;

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- (b) the Trustee is adjudged a bankrupt or an insolvent or an order for relief is entered with respect to the Trustee under any applicable bankruptcy law;
 - (c) a custodian or public officer takes charge of the Trustee or its property; or
 - (d) the Trustee becomes incapable of acting.

If the Trustee resigns or is removed or if a vacancy exists in the office of Trustee for any reason, the Company shall promptly appoint a successor Trustee. Within one year after the successor Trustee takes office, the Holders of a majority in principal amount of the then outstanding Notes may appoint a successor Trustee to replace the successor Trustee appointed by the Company.

If a successor Trustee does not take office within 60 days after the retiring Trustee resigns or is removed, the retiring Trustee, the Company, or the Holders of Notes of at least 10% in principal amount of the then outstanding Notes may petition any court of competent jurisdiction for the appointment of a successor Trustee.

If the Trustee, after written request by any Holder of a Note who has been a Holder of a Note for at least six months, fails to comply with Section 7.10 hereof, such Holder of a Note may petition any court of competent jurisdiction for the removal of the Trustee and the appointment of a successor Trustee.

A successor Trustee shall deliver a written acceptance of its appointment to the retiring Trustee and to the Company. Thereupon, the resignation or removal of the retiring Trustee shall become effective, and the successor Trustee shall have all the rights, powers and duties of the Trustee under this Indenture. The successor Trustee shall mail a notice of its succession to Holders of the Notes. The retiring Trustee shall promptly transfer all property held by it as Trustee to the successor Trustee; provided that all sums owing to the Trustee hereunder have been paid and subject to the Lien provided for in Section 7.07 hereof. Notwithstanding replacement of the Trustee pursuant to this Section 7.08, the Company's obligations under Section 7.07 hereof shall continue for the benefit of the retiring Trustee.

SECTION 7.09. SUCCESSOR TRUSTEE BY MERGER, ETC.

If the Trustee consolidates, merges or converts into, or transfers all or substantially all of its corporate trust business to, another corporation, by sale or otherwise, the successor corporation without any further act shall be the successor Trustee. As soon as practicable, the successor Trustee shall mail a notice of its succession to the Company and the Holders of the Notes. Any such successor must nevertheless be eligible and qualified under the provisions of Section 7.10 hereof.

SECTION 7.10. ELIGIBILITY; DISQUALIFICATION.

There shall at all times be a Trustee hereunder that is a corporation organized and doing business under the laws of the United States of America or of any state thereof that is authorized under such laws to exercise corporate trustee power, that is subject to supervision or examination by Federal or state authorities and that has a combined capital and surplus of at least \$100,000,000 as set forth in its most recent published annual report of condition.

SECTION 7.11. [INTENTIONALLY OMITTED]

SECTION 7.12. FORCE MAJEURE; CONSEQUENTIAL DAMAGES.

(a) Without prejudice to the generality of the foregoing, the Trustee shall be without liability to the Company, the Guarantors, the Holders or any other Person for any damage or loss resulting from or caused by events or circumstances beyond the Trustee's reasonable control including nationalization, expropriation, currency restrictions, the interruption, disruption or suspension of the normal procedures and practices of any securities market, power, mechanical, communications or other technological failures or interruptions, computer viruses or the like, fires, floods, earthquakes or other natural disasters, civil and military disturbance, acts of war or terrorism, riots, revolution, acts of God, work stoppages, strikes, national disasters of any kind, or other similar events or acts; errors by the Company in its instructions to the Custodian; or changes in applicable law, regulation or orders.

(b) In no event shall the Trustee or its directors, officers, agents and employees be liable for special, punitive, exemplary, incidental or consequential damages, including, without limitation, and damages from loss of data, revenue or profit, even if the Trustee had been advised of the possibility of such damages.

ARTICLE 8

LEGAL DEFEASANCE AND COVENANT DEFEASANCE; SATISFACTION AND DISCHARGE

SECTION 8.01. OPTION TO EFFECT LEGAL DEFEASANCE OR COVENANT DEFEASANCE.

The Company may, at the option of its Board of Directors evidenced by a resolution set forth in an Officers' Certificate, at any time, exercise its rights under either Section 8.02 or 8.03 hereof with respect to all outstanding Notes upon compliance with the conditions set forth below in this Article 8.

SECTION 8.02. LEGAL DEFEASANCE AND DISCHARGE.

Upon the Company's exercise under Section 8.01 hereof of the option applicable to this Section 8.02, the Company shall, subject to the satisfaction of the conditions set forth in Section 8.04 hereof, be deemed to have discharged its obligations with respect to all outstanding Notes, and each Guarantor shall be deemed to have discharged its obligations with respect to its Subsidiary Guarantee, on the date the conditions set forth in Section 8.04 below are satisfied (hereinafter, "**Legal Defeasance**"). For this purpose, Legal Defeasance means that the Company shall be deemed to have paid and discharged the entire Indebtedness represented by the outstanding Notes, and each Guarantor shall be deemed to have paid and discharged its Subsidiary Guarantee (which in each case shall thereafter be deemed to be "outstanding" only for the purposes of Section 8.06 hereof and the other Sections of this Indenture referred to in (a) and (b) below) and to have satisfied all its other obligations under such Notes or Subsidiary

Guarantee and this Indenture (and the Trustee, on demand of and at the expense of the Company, shall execute proper instruments acknowledging the same), except for the following provisions which shall survive until otherwise terminated or discharged hereunder: (a) the rights of Holders of outstanding Notes to receive solely from the trust fund described in Section 8.04 hereof, and as more fully set forth in such Section, payments in respect of the principal of and premium, if any, and interest on such Notes when such payments are due, (b) the Company's obligations with respect to such Notes under Sections 2.03, 2.04, 2.07, 2.10 and 4.02 hereof and the second paragraph of Section 4.19 hereof, (c) the rights, powers, trusts, duties and immunities of the Trustee hereunder and the Company's and any Guarantor's obligations in connection therewith and (d) this Article 8. Subject to compliance with this Article 8, the Company may exercise its option under this Section 8.02 notwithstanding the prior exercise of its option under Section 8.03 hereof.

SECTION 8.03. COVENANT DEFEASANCE.

Upon the Company's exercise under Section 8.01 hereof of the option applicable to this Section 8.03, the Company and each Guarantor shall, subject to the satisfaction of the conditions set forth in Section 8.04 hereof, be released from their respective obligations under the covenants contained in Article 4 (other than those in Sections 4.01, 4.02, 4.06, 4.14 and 4.19) on and after the date the conditions set forth below are satisfied (hereinafter, "**Covenant Defeasance**"), and the Notes shall thereafter be deemed not "outstanding" for the purposes of any direction, waiver, consent or declaration or act of Holders (and the consequences of any thereof) in connection with such covenants, but shall continue to be deemed "outstanding" for all other purposes hereunder (it being understood that such Notes shall not be deemed outstanding for accounting purposes). For this purpose, Covenant Defeasance means that, with respect to the outstanding Notes, the Company and any Guarantor may omit to comply with and shall have no liability in respect of any term, condition or limitation set forth in any such covenant, whether directly or indirectly, by reason of any reference elsewhere herein to any such covenant or by reason of any reference in any such covenant to any other provision herein or in any other document and such omission to comply shall not constitute a Default or an Event of Default under Section 6.01 hereof, but, except as specified above, the remainder of this Indenture and such Notes shall be unaffected thereby. In addition, upon the Company's exercise under Section 8.01 hereof of the option applicable to this Section 8.03 hereof, subject to the satisfaction of the conditions set forth in Section 8.04 hereof, Sections 6.01(d) through 6.01(i) hereof shall not constitute Events of Default.

SECTION 8.04. CONDITIONS TO LEGAL OR COVENANT DEFEASANCE.

In order to exercise either Legal Defeasance or Covenant Defeasance:

(a) the Company must irrevocably deposit with the Trustee, in trust, for the benefit of the Holders, cash in euro or non-callable European Government Obligations, or a combination thereof, in such amounts as will be sufficient, in the opinion of an internationally recognized firm of independent public accountants, to pay the principal of and premium, if any, and interest on the outstanding Notes on the Stated Maturity thereof or on the applicable redemption date, as the case may be, and the Company must specify whether the Notes are being defeased to maturity or to a particular redemption date;

(b) in the case of an election under Section 8.02 hereof, the Company shall have delivered to the Trustee an Opinion of Counsel reasonably acceptable to the Trustee confirming that (A) the Company has received from, or there has been published by, the Internal Revenue Service and the French Tax Authority a ruling or (B) since the date of this Indenture, there has been a change in the applicable income tax law, in either case to the effect that, and based thereon such Opinion of Counsel shall confirm that, the Holders of the outstanding Notes will not recognize income, gain or loss for U.S. Federal or French income tax purposes, respectively, as a result of such Legal Defeasance and will be subject to U.S. Federal or French income tax on the same amounts, in the same manner and at the same times as would have been the case if such Legal Defeasance had not occurred;

(c) in the case of an election under Section 8.03 hereof, the Company shall have delivered to the Trustee an Opinion of Counsel reasonably acceptable to the Trustee confirming that the Holders of the outstanding Notes will not recognize income, gain or loss for U.S. Federal or French income tax purposes as a result of such Covenant Defeasance and will be subject to U.S. Federal or French income tax on the same amounts, in the same manner and at the same times as would have been the case if such Covenant Defeasance had not occurred;

(d) no Default or Event of Default shall have occurred and be continuing either (A) on the date of such deposit (other than a Default or Event of Default resulting from the incurrence of Indebtedness or the grant of Liens securing such Indebtedness, all or a portion of the proceeds of which will be used to defease the Notes pursuant to this Article 8 concurrently with such incurrence or within 30 days thereof) or (B) insofar as Events of Default described in Sections 6.01(j) through 6.01(l) are concerned, at any time in the period ending on the 550th day after the date of such deposit;

(e) such Legal Defeasance or Covenant Defeasance shall not result in a breach or violation of, or constitute a default under, any material agreement or instrument (other than this Indenture) to which the Company or any of its Restricted Subsidiaries is a party or by which the Company or any of its Restricted Subsidiaries is bound;

(f) the Company shall have delivered to the Trustee an Opinion of Counsel (which may be based on such solvency certificates or solvency opinions as counsel deems necessary or appropriate) to the effect that, after the 550th day following such deposit, the trust funds will not be subject to the effect of any applicable bankruptcy, insolvency, reorganization or similar laws affecting creditors' rights generally;

(g) the Company shall have delivered to the Trustee an Officers' Certificate stating that the deposit was not made by the Company with the intent of preferring the Holders over any other creditors of the Company or with the intent of defeating, hindering, delaying or defrauding creditors of the Company or others; and

(h) the Company shall have delivered to the Trustee an Officers' Certificate and an Opinion of Counsel, each stating that all conditions precedent provided for or relating to the Legal Defeasance or the Covenant Defeasance have been complied with.

SECTION 8.05. SATISFACTION AND DISCHARGE.

This Indenture shall upon the written request of the Company cease to be of further effect with respect to all outstanding Notes (except as to surviving rights of registration of transfer or exchange of Notes herein expressly provided for, the Company' s and any Guarantor' s obligations under Section 7.07, and the Trustee' s and each Paying Agent' s obligations under Sections 8.06 and 8.07), and the Trustee, on demand and at the expense of the Company, shall execute proper instruments acknowledging satisfaction and discharge of this Indenture with respect to such series, when:

(a) either

(i) all outstanding Notes therefor authenticated and delivered (other than (A) Notes which have been destroyed, lost or stolen and which have been replaced or paid as provided in Section 2.07 and (B) Notes for whose payment money has theretofore been deposited in trust with the Trustee or any Paying Agent and thereafter repaid to the Company or discharged from such trust) have been delivered to the Trustee for cancellation; or

(ii) all outstanding Notes not theretofore delivered to the Trustee for cancellation

(A) have become due and payable by reason of the giving of a notice of redemption or otherwise; or

(B) shall become due and payable at their Stated Maturity within one year, or

(C) are to be called for redemption within one year under arrangements satisfactory to the Trustee for the giving of notice of redemption by the Trustee in the name, and at the expense, of the Company,

and the Company or any Guarantor, in the case of clause (A), (B) or (C) above, has irrevocably deposited or caused to be irrevocably deposited with the Trustee as trust funds in trust solely for the benefit of the Holders, cash in euro, non-callable European Government Obligations, or a combination thereof, in an amount sufficient (without consideration of any reinvestment of interest and as certified by an independent public accountant designated by the Company expressed in a written certification thereof delivered to the Trustee) to pay and discharge the entire indebtedness of the Notes not theretofore delivered to the Trustee for cancellation, including principal (and premium, if any) and accrued and unpaid interest to the date of such deposit (in the case of Notes which have become due and payable) or the Stated Maturity or redemption date, as the case may be;

(a) the Company and each Guarantor has paid or caused to be paid all other sums then due and payable hereunder by it under this Indenture;

(b) no Default or Event of Default shall have occurred and be continuing on the date of such deposit or shall occur as a result of such deposit and such deposit shall not result in a breach or violation of, or constitute a default under, any other instrument to which the Company or any Guarantor is a party or by which the Company or any Guarantor is bound; and

(c) the Company has delivered to the Trustee an Officers' Certificate and an Opinion of Counsel, each stating that all conditions precedent herein provided for relating to the satisfaction and discharge of this Indenture have been complied with.

In order to have money available on a payment date to pay principal, premium, if any, or interest on the Notes, the European Government Obligations shall be payable as to principal, premium, if any, or interest at least one Business Day before such payment date in such amounts as shall provide the necessary money. The European Government Obligations shall not be callable at the issuer's option.

SECTION 8.06. DEPOSITED MONEY AND EUROPEAN GOVERNMENT OBLIGATIONS TO BE HELD IN TRUST; OTHER MISCELLANEOUS PROVISIONS.

Subject to Section 8.07 hereof, all money and non-callable European Government Obligations (including the proceeds thereof) deposited with the Trustee pursuant to Section 8.04 or 8.05 hereof in respect of the outstanding Notes shall be (i) held in trust, (ii) and, at the written direction of the Company, such money may be invested, prior to maturity of the Notes, in non-callable European Government Obligations, and (iii) applied by the Trustee, in accordance with the provisions of such Notes and this Indenture, to the payment, either directly or through any Paying Agent (including the Company acting as Paying Agent) as the Trustee may determine, to the Holders of such Notes of all sums due and to become due thereon in respect of principal, premium, if any, and interest but such money need not be segregated from other funds except to the extent required by law.

The Company shall pay and indemnify the Trustee against any tax, fee or other charge imposed on or assessed against the cash or non-callable European Government Obligations deposited pursuant to Section 8.04 or 8.05 hereof or the principal and interest received in respect thereof other than any such tax, fee or other charge which by law is for the account of the Holders of the outstanding Notes.

Anything in this Article 8 to the contrary notwithstanding, the Trustee shall deliver or pay to the Company from time to time upon the written request of the Company any money or non-callable European Government Obligations held by it as provided in Section 8.04 or 8.05 hereof which, in the opinion of a nationally recognized firm of independent public accountants expressed in a written certification thereof delivered to the Trustee (which in the former case may be the opinion delivered under Section 8.04(a) hereof), are in excess of the amount thereof that would then be required to be deposited to effect an equivalent Legal Defeasance or Covenant Defeasance.

SECTION 8.07. REPAYMENT TO COMPANY.

Subject to applicable escheat and abandoned property laws, any money deposited with the Trustee or any Paying Agent (which money shall be held uninvested and without liability for interest), or then held by the Company, in trust for the payment of the principal of, premium, if any, and interest on any Note and remaining unclaimed for two years after such principal, and premium, if any, or interest has become due and payable shall be paid to the Company on its request or (if then held by the Company) shall be discharged from such trust; and the Holder of such Note shall thereafter, as an unsecured general creditor, look only to the Company for payment thereof, and all liability of the Trustee or such Paying Agent with respect to such trust money, and all liability of the Company as trustee thereof, shall thereupon cease; *provided, however*, that the Trustee or such Paying Agent, before being required to make any such repayment, may at the expense of the Company cause to be published once, in *The New York Times* and *The Wall Street Journal* (national edition), notice that such money remains unclaimed and that, after a date specified therein, which shall not be less than 30 days from the date of such notification or publication, any unclaimed balance of such money then remaining will be repaid to the Company.

Nothing contained in this Section 8.07 shall be deemed to affect any obligation of the Trustee or any Paying Agent to search for lost Holders pursuant to Rule 17Ad-17 under the Exchange Act.

SECTION 8.08. REINSTATEMENT.

If the Trustee or a Paying Agent is unable to apply any euros or European Government Obligations in accordance with Section 8.05 or 8.06 hereof, by reason of any order or judgment of any court or governmental authority enjoining, restraining or otherwise prohibiting such application, then the Company's and the Guarantors' obligations under this Indenture, the Notes and the Subsidiary Guarantees shall be revived and reinstated as though no deposit had occurred pursuant to Section 8.02, 8.03 or 8.05 hereof until such time as the Trustee or such Paying Agent is permitted to apply all such money in accordance with Section 8.05 or 8.06 hereof, as the case may be; *provided, however*, that, if the Company or any Guarantor makes any payment of principal of, premium, if any, or interest on any Note following the reinstatement of its obligations, then it shall be subrogated to the rights of the Holders of such Notes to receive such payment from the money or European Government Obligations held by the Trustee or such Paying Agent.

ARTICLE 9

AMENDMENT, SUPPLEMENT AND WAIVER

SECTION 9.01. WITHOUT CONSENT OF HOLDERS OF NOTES.

Notwithstanding Section 9.02 of this Indenture, the Company, the Guarantors and the Trustee may amend or supplement this Indenture or the Notes without the consent of any Holder of a Note:

- (a) to cure any ambiguity, defect or inconsistency;

(b) to provide for uncertificated Notes in addition to or in place of certificated Notes;

(c) to provide for the assumption of the Company's obligations to the Holders of the Notes pursuant to Section 6.01(f) hereof;

(d) to secure the Notes pursuant to the requirements of Section 4.12 or otherwise;

(e) to make any change that would provide any additional rights or benefits to the Holders of the Notes or that does not materially adversely affect the legal rights hereunder of any Holder of a Note; or

(f) to add or to release any Guarantor, in each case as provided in Article 10 hereof.

Upon the written request of the Company accompanied by a resolution of its Board of Directors authorizing the execution of any such amended or supplemental indenture, and upon receipt by the Trustee of the documents described in Section 9.06 hereof, the Trustee shall join with the Company and the Guarantors in the execution of any amended or supplemental indenture authorized or permitted by the terms of this Indenture and to make any further appropriate agreements and stipulations that may be therein contained, but the Trustee shall not be obligated to enter into such amended or supplemental Indenture that affects its own rights, duties or immunities under this Indenture or otherwise.

SECTION 9.02. WITH CONSENT OF HOLDERS OF NOTES.

Except as provided below in this Section 9.02, the Company, the Guarantors and the Trustee may amend or supplement this Indenture and the Notes may be amended or supplemented with the consent of the Holders of at least a majority in principal amount of the Notes then outstanding (including, without limitation, consents obtained in connection with a purchase of, or tender offer or exchange offer for the Notes), and, subject to Sections 6.04 and 6.07 hereof, any existing Default or Event of Default or compliance with any provision of this Indenture or the Notes may be waived with the consent of the Holders of a majority in principal amount of the then outstanding Notes (including, without limitation, consents obtained in connection with a tender offer or exchange offer for the Notes).

Upon the written request of the Company accompanied by a resolution of its Board of Directors authorizing the execution of any such amended or supplemental indenture, and upon the filing with the Trustee of evidence satisfactory to the Trustee of the consent of the Holders of Notes as aforesaid, and upon receipt by the Trustee of the documents described in Section 9.06 hereof, the Trustee shall join with the Company and the Guarantors in the execution of such amended or supplemental indenture unless such amended or supplemental indenture affects the Trustee's own rights, duties or immunities under this Indenture or otherwise, in which case the Trustee may in its discretion, but shall not be obligated to, enter into such amended or supplemental indenture.

It shall not be necessary for the consent of the Holders of Notes under this Section 9.02 to approve the particular form of any proposed amendment, supplement or waiver, but it shall be sufficient if such consent approves the substance thereof.

After an amendment, supplement or waiver under this Section becomes effective, the Company shall mail to the Holders of Notes affected thereby a notice briefly describing the amendment, supplement or waiver. Any failure of the Company to mail such notice, or any defect therein, shall not, however, in any way impair or affect the validity of any such amended or supplemental Indenture or waiver. Subject to Sections 6.04 and 6.07 hereof, the Holders of a majority in principal amount of the Notes then outstanding may waive compliance in a particular instance by the Company with any provision of this Indenture or the Notes. However, without the consent of each Holder affected, an amendment, supplement or waiver may not (with respect to any Notes held by a non-consenting Holder):

- (a) reduce the principal amount of Notes whose Holders must consent to an amendment, supplement or waiver;
- (b) reduce the principal of or change the fixed maturity of any Note or alter any of the provisions with respect to the redemption or purchase of the Notes by the Company;
- (c) reduce the rate of or change the time for payment of interest on any Note;
- (d) waive a Default or Event of Default in the payment of principal of or premium or interest on the Notes (except a rescission of acceleration of the Notes by the Holders of at least a majority in principal amount of the Notes and a waiver of the payment default that resulted from such acceleration);
- (e) make any Note payable in money other than that stated in the Notes;
- (f) make any change in the provisions of this Indenture relating to waivers of past Defaults or Events of Default or the rights of Holders of Notes to receive payments of principal of or premium, if any, or interest on the Notes;
- (g) waive a redemption or repurchase payment with respect to any Note;
- (h) make any change in the ranking of the Notes relative to other Indebtedness of the Company or in any Subsidiary Guarantees relative to other Indebtedness of the Guarantors, in either case in a manner adverse to the Holders of Notes;
- (i) release any Guarantor from any of its obligations under its Subsidiary Guarantee or the Indenture, except in accordance with Sections 10.04, 10.05 and 10.06 hereof;
- (j) make any change in the provisions of Section 4.19 hereof in a manner adverse to the Holders; or

(k) make any change in the foregoing amendment, supplement and waiver provisions.

SECTION 9.03. [INTENTIONALLY OMITTED]

SECTION 9.04. REVOCATION AND EFFECT OF CONSENTS.

Until an amendment, supplement or waiver becomes effective, a consent to it by a Holder of a Note is a continuing consent by the Holder of a Note and every subsequent Holder of a Note or portion of a Note that evidences the same debt as the consenting Holder's Note, even if notation of the consent is not made on any Note. However, any such Holder of a Note or subsequent Holder of a Note may revoke the consent as to its Note if the Trustee receives written notice of revocation before the date the waiver, supplement or amendment becomes effective. An amendment, supplement or waiver becomes effective in accordance with its terms and thereafter binds every Holder.

SECTION 9.05. NOTATION ON OR EXCHANGE OF NOTES.

The Trustee may place an appropriate notation about an amendment, supplement or waiver on any Note thereafter authenticated. The Company in exchange for all Notes may issue and the Trustee shall authenticate new Notes that reflect the amendment, supplement or waiver.

Failure to make the appropriate notation or issue a new Note shall not affect the validity and effect of such amendment, supplement or waiver.

SECTION 9.06. TRUSTEE TO SIGN AMENDMENTS, ETC.

After receipt by the Trustee of the Officers' Certificate and Opinion of Counsel in accordance with this Section 9.06, the Trustee shall sign any amended or supplemental indenture authorized pursuant to this Article 9 if the amendment or supplement does not adversely affect the rights, duties, liabilities or immunities of the Trustee. The Company may not sign an amendment or supplemental indenture until the Board of Directors approves it. In executing any amended or supplemental indenture, the Trustee shall be entitled to receive and (subject to Section 7.01) shall be fully protected in relying upon, an Officers' Certificate and an Opinion of Counsel stating that the execution of such amended or supplemental indenture is authorized or permitted by this Indenture and all conditions precedent have been complied with.

ARTICLE 10

GUARANTEES OF NOTES

SECTION 10.01. SUBSIDIARY GUARANTEES.

Subject to Section 10.07 hereof, the Initial Guarantors, and any additional Guarantors that become Guarantors after the date of this Indenture; *provided* that, at any time a Restricted Subsidiary may become a Guarantor at its option, by executing a supplemental indenture as set forth in Section 10.02 hereof, jointly and severally, unconditionally guarantee to each Holder of a Note authenticated and delivered by the Trustee and to the Trustee and its successors and

assigns, irrespective of the validity and enforceability of this Indenture, the Notes held thereby and the Obligations of the Company hereunder and thereunder, that: (a) the principal of and premium, if any, and interest on the Notes will be promptly paid in full when due, subject to any applicable grace period, whether at maturity, by acceleration, redemption or otherwise, and interest on the overdue principal of and premium, if any, and interest (to the extent permitted by law) on the Notes, and all other payment Obligations of the Company to the Holders or the Trustee hereunder or thereunder will be promptly paid in full and performed, all in accordance with the terms hereof and thereof; and (b) in case of any extension of time of payment or renewal of any Notes or any of such other Obligations, the same will be promptly paid in full when due or performed in accordance with the terms of the extension or renewal, subject to any applicable grace period, whether at stated maturity, by acceleration, redemption or otherwise. Failing payment when so due of any amount so guaranteed or any performance so guaranteed for whatever reason the Guarantors will be jointly and severally obligated to pay the same immediately. An Event of Default under this Indenture or the Notes shall constitute an event of default under the Subsidiary Guarantees, and shall entitle the Holders to accelerate the obligations of the Guarantors hereunder in the same manner and to the same extent as the Obligations of the Company. The Guarantors agree that their obligations hereunder shall be unconditional, irrespective of the validity, regularity or enforceability of the Notes or this Indenture, the absence of any action to enforce the same, any waiver or consent by any Holder with respect to any provisions hereof or thereof, the recovery of any judgment against the Company, any action to enforce the same or any other circumstance (other than complete performance) which might otherwise constitute a legal or equitable discharge or defense of a Guarantor. Each Guarantor further, to the extent permitted by law, waives diligence, presentment, demand of payment, filing of claims with a court in the event of insolvency or bankruptcy of the Company, any right to require a proceeding first against the Company, protest, notice and all demands whatsoever and covenants that its Subsidiary Guarantee will not be discharged except by complete performance of the Obligations contained in the Notes and this Indenture. If any Holder or the Trustee is required by any court or otherwise to return to the Company, the Guarantors, the Trustee or any custodian or other similar official acting under any applicable bankruptcy law in relation to either the Company or the Guarantors, any amount paid by the Company or any Guarantor to the Trustee or such Holder, the Subsidiary Guarantees, to the extent theretofore discharged, shall be reinstated in full force and effect. Each Guarantor agrees that it shall not be entitled to, and waives, any right of subrogation in relation to the Holders in respect of any Obligations guaranteed hereby until payment in full of the Obligations guaranteed hereby. Each Guarantor further agrees that, as between the Guarantors, on the one hand, and the Holders and the Trustee, on the other hand, (a) the maturity of the Obligations guaranteed hereby may be accelerated as provided in Article 6 hereof for the purposes of its Subsidiary Guarantee, notwithstanding any stay, injunction or other prohibition preventing such acceleration in respect of the Obligations guaranteed thereby, and (b) in the event of any declaration of acceleration of such Obligations as provided in Article 6 hereof, such Obligations (whether or not due and payable) shall forthwith become due and payable by the Guarantor for the purpose of its Subsidiary Guarantee. The Guarantors shall have the right to seek contribution from any non-paying Guarantor so long as the exercise of such right does not impair the rights of the Holders under the Subsidiary Guarantees.

SECTION 10.02. EXECUTION AND DELIVERY OF SUBSIDIARY GUARANTEE.

To evidence its Subsidiary Guarantee set forth in Section 10.01 hereof, each Guarantor (including any Restricted Subsidiary that becomes a Guarantor at its option) agrees that a notation of such Subsidiary Guarantee in substantially the form of Exhibit C hereto may be endorsed by manual or facsimile signature by an Officer of such Guarantor on each Note authenticated and delivered by the Trustee and that the supplemental indenture to this Indenture referred to in the next succeeding paragraph shall be executed on behalf of such Guarantor by an Officer of such Guarantor.

To the extent required by the provisions of Section 4.13 hereof, the Company shall cause each of its Restricted Subsidiaries to execute a notation of Subsidiary Guarantee in substantially the form of Exhibit C hereto, and, whether or not required by Section 4.13 hereof, the Company may also cause, at its option, any of its Restricted Subsidiaries to execute such a notation. Such notation of Subsidiary Guarantee shall be accompanied by a supplemental indenture in substantially the form of Exhibit D hereto, along with the Opinion of Counsel and Officers' Certificate required under Section 9.06 of this Indenture; *provided, however*, that any Subsidiary that has been properly designated as an Unrestricted Subsidiary in accordance with this Indenture need not execute a notation of Subsidiary Guarantee for so long as it continues to constitute an Unrestricted Subsidiary.

The delivery of any Note by the Trustee, after the authentication thereof hereunder, shall constitute due delivery of the Subsidiary Guarantees on behalf of the Guarantors. Each Guarantor agrees that its Subsidiary Guarantee shall remain in full force and effect notwithstanding any failure to endorse on each Note a notation of such Subsidiary Guarantee.

If an Officer whose signature is on the notation of Subsidiary Guarantee no longer holds that office at the time the Trustee authenticates the Note on which a notation of Subsidiary Guarantee is endorsed, the Subsidiary Guarantee shall be valid nevertheless.

SECTION 10.03. GUARANTORS MAY CONSOLIDATE, ETC., ON CERTAIN TERMS.

(a) Except as set forth in Articles 4 and 5 hereof, nothing contained in this Indenture shall prohibit a merger between a Guarantor and another Guarantor or a merger between a Guarantor and the Company.

(b) No Guarantor, for so long as it provides a Subsidiary Guarantee pursuant to the terms of this Indenture, shall consolidate with or merge with or into (whether or not such Guarantor is the surviving Person), another Person (other than the Company or another Guarantor), unless: (i) subject to the provisions of Section 10.05 hereof, the Person formed by or surviving any such consolidation or merger (if other than such Guarantor) assumes all the obligations of such Guarantor under the Notes and this Indenture, pursuant to a supplemental indenture in substantially the form of Exhibit D hereto, accompanied by a notation of its Subsidiary Guarantee as provided in such supplemental indenture; (ii) immediately after giving effect to such transaction, no Default or Event of Default exists; (iii) such Guarantor, or any Person formed by or surviving any such consolidation or merger, would have a Consolidated Net Worth (immediately after giving effect to such transaction) equal to or greater than the

Consolidated Net Worth of such Guarantor immediately preceding the transaction; and (iv) the Company would be permitted by virtue of the Company's *pro forma* Consolidated Interest Coverage Ratio, immediately after giving effect to such transaction, to incur at least 1.00 of additional Indebtedness pursuant to the Consolidated Interest Coverage Ratio test set forth in the first paragraph of Section 4.09 hereof.

(c) In the case of any such consolidation or merger and upon the assumption by the successor Person, by supplemental indenture, executed and delivered to the Trustee and substantially in the form of Exhibit D hereto, of the Subsidiary Guarantee and the due and punctual performance of all of the covenants of this Indenture to be performed by the Guarantor, such successor Person shall succeed to and be substituted for the Guarantor with the same effect as if it had been named herein as a Guarantor; *provided, however*, that, solely for purposes of computing Consolidated Net Income for purposes of clause (c) of the first paragraph of Section 4.07 hereof, the Consolidated Net Income of any Person other than the Company and its Restricted Subsidiaries shall only be included for periods subsequent to the effective time of such merger or consolidation.

SECTION 10.04. RELEASES OF GUARANTEES.

In the event of (a) a transfer, conveyance, sale or other disposition of any Capital Stock of Sercel SA or any Sercel Guarantor or (b) the issue by Sercel SA or any Sercel Guarantor of any Equity Interests, in either case to any Person other than the Company or a Restricted Subsidiary of the Company, the Company may elect to have the Sercel Guarantors released and relieved of any obligations under their Subsidiary Guarantees; *provided* that the Net Proceeds of such issuance, transfer, conveyance, sale or other disposition are applied in accordance with the covenant described in Section 4.10 and the Sercel Guarantors have no other guarantees of Indebtedness of the Company or any other Guarantors (other than Permitted Guarantees) then outstanding. If a Restricted Subsidiary has become a Guarantor at its option, it may thereafter be released and relieved of its obligations under its Subsidiary Guarantee at its option; *provided* that such Guarantor has no other guarantee of Indebtedness of the Company or any Guarantor (other than Permitted Guarantees) then outstanding. For purposes of Section 4.09 hereof the release of any Subsidiary Guarantee pursuant to provisions described in this paragraph shall be deemed to be an incurrence by the Restricted Subsidiary whose Subsidiary Guarantee is being released of all Indebtedness then held by such Restricted Subsidiary. Each Subsidiary Guarantee created by a Restricted Subsidiary pursuant to the provisions of Section 4.13 hereof, shall be automatically and unconditionally released and discharged upon the release or discharge of the guarantee of the Indebtedness that resulted in the creation of such Subsidiary Guarantee, except a discharge or release by or as a result of direct payment under such guarantee of such Indebtedness; *provided* that the Guarantor has no other guarantee of Indebtedness of the Company or any Guarantor (other than Permitted Guarantees) then outstanding.

SECTION 10.05. RELEASES FOLLOWING SALE OF ASSETS.

In the event of a transfer, conveyance, sale or other disposition (including by way of merger or consolidation) of all or substantially all of the assets or all of the Capital Stock of any Guarantor, then such Guarantor will be released and relieved of any obligations under its Subsidiary Guarantee and the Indenture; *provided* that the Net Proceeds of such transfer,

conveyance, sale or other disposition are applied in accordance with the provisions of Section 4.10 hereof. Upon delivery by the Company to the Trustee of an Officers' Certificate to the effect of the foregoing, the Trustee shall execute any documents reasonably required in order to evidence the release of any Guarantor from its obligations under its Subsidiary Guarantee and this Indenture. Any Guarantor not released from its obligations under its Subsidiary Guarantee shall remain liable for the full amount of principal of and premium, if any, and interest on the Notes and for the other Obligations of such Guarantor under this Indenture as provided in this Article 10.

SECTION 10.06. RELEASES FOLLOWING DESIGNATION AS AN UNRESTRICTED SUBSIDIARY, ETC.

In the event that the Board of Directors designates a Guarantor to be an Unrestricted Subsidiary, then such Guarantor will be released and relieved of any obligations under its Subsidiary Guarantee and the Indenture; *provided, however*, that such designation is conducted in accordance with this Indenture. A Guarantor shall likewise be released and relieved of such obligations upon the release of any guarantee of the Other Company Indebtedness that required such Guarantor to guarantee the Notes pursuant to Section 4.13 hereof. Upon delivery by the Company to the Trustee of an Officers' Certificate to the effect of the foregoing, the Trustee shall execute any documents reasonably required in order to evidence the release of any Guarantor from its obligations under its Subsidiary Guarantee and this Indenture.

SECTION 10.07. LIMITATION ON GUARANTOR LIABILITY.

Each Guarantor and, by its acceptance of Notes, each Holder, hereby confirms that it is the intention of all such parties that the Subsidiary Guarantee of such Guarantor not constitute a fraudulent transfer or conveyance for purposes of any applicable bankruptcy law, the Uniform Fraudulent Conveyance Act, the Uniform Fraudulent Transfer Act or any similar Federal, state or foreign law to the extent applicable to any Subsidiary Guarantee. To effectuate the foregoing intention, the Trustee, the Holders and the Guarantors hereby irrevocably agree that the obligations of such Guarantor under its Subsidiary Guarantee and this Article 10 shall be limited to the maximum amount as will, after giving effect to such maximum amount and all other contingent and fixed liabilities of such Guarantor that are relevant under such laws, and after giving effect to any collections from, rights to receive contribution from or payments made by or on behalf of any other Guarantor in respect of the obligations of such other Guarantor under this Article 10, result in the obligations of such Guarantor under its Subsidiary Guarantee not constituting a fraudulent transfer or conveyance. In addition, the obligation of a Guarantor to grant a Subsidiary Guarantee and the obligations of each Guarantor under its Subsidiary Guarantee shall be limited to the extent required by applicable law.

SECTION 10.08. "TRUSTEE" TO INCLUDE PAYING AGENT.

In case at any time any Paying Agent other than the Trustee shall have been appointed by the Company and be then acting hereunder, the term "**Trustee**" as used in this Article 10 shall in each case (unless the context shall otherwise require) be construed as extending to and including such Paying Agent within its meaning as fully and for all intents and purposes as if such Paying Agent were named in this Article 10 in place of the Trustee.

ARTICLE 11

MISCELLANEOUS

SECTION 11.01. [INTENTIONALLY OMITTED]

SECTION 11.02. NOTICES.

Any notice or communication by the Company, any Guarantor or the Trustee to the others is duly given if in writing (in the English language) and delivered in person or mailed by first class-mail (registered or certified, return receipt requested), telecopier or overnight air courier guaranteeing next day delivery, to the others' address:

If to the Company or the Guarantors:

CGG S.A.
Tour Maine - Montparnasse
33 avenue de Maine
75755 Paris cedex 15
France
Attention: General Counsel
Telecopy No.: (33-1) 64-47-34-29

If to the Trustee:

The Bank of New York Mellon
Global Corporate Trust
101 Barclay Street, Floor 7E
New York, New York 10286
Telephone: (212) 815-2719
Telecopy No.: (724) 540-6328

The Company, any of the Guarantors or the Trustee, by notice to the others may designate additional or different addresses for subsequent notices or communications.

Any notice or communication to a Holder shall be mailed by first-class mail, certified or registered, return receipt requested, or delivered by overnight air courier guaranteeing next day delivery, in each case to its address shown on the register kept by the Registrar. For Notes which are represented by global certificates held on behalf of Euroclear or Clearstream, notice may be given by delivery of the relevant notices to Euroclear and Clearstream for communication to entitled account holders in substitution of the aforesaid mailing. In addition, for so long as the Notes are listed on the Luxembourg Stock Exchange and its rules so require, any such notice or communication (including, without limitation, any notice of redemption) to Holders shall be published in a newspaper having general circulation in Luxembourg, which newspaper may be the *Luxemburger Wort*, or if such newspaper ceases to be published or timely publication in it will not be practicable, in such other newspaper as the Trustee deems necessary to give fair and reasonable notice to the Holders. Notices may also be published on the Internet site of the Luxembourg Stock Exchange at <http://www.bourse.lu>. Failure to provide a notice or communication to a Holder or any defect in it shall not affect its sufficiency with respect to other Holders.

All notices and communications shall be deemed to have been duly given: at the time delivered by hand, if personally delivered; five Business Days after being deposited in the mail, postage prepaid, if mailed; when receipt acknowledged, if telecopied; and the next Business Day after timely delivery to the courier, if sent by overnight air courier guaranteeing next day delivery. Notwithstanding the foregoing, notices to the Trustee shall be effective only upon receipt. Any notice or communication given by newspaper or internet publication shall be deemed to have been given on the date of publication or, if published more than once or on different dates, on the first date on which publication is made in the manner required in the newspaper, in one of the newspapers referred to above or on the internet site referred to above.

If a notice or communication is given in the manner provided above within the time prescribed, it is duly given, whether or not the addressee receives it.

If the Company gives a notice or communication to Holders, it shall give a copy at the same time to the Trustee and each Agent and, for so long as the Notes are listed on the Luxembourg Stock Exchange, the Luxembourg Stock Exchange.

In case by reason of the suspension of regular mail service, or by reason of any other cause, it shall be impossible to mail any notice required by this Indenture, then such method of notification as shall be made with the approval of the Trustee shall constitute a sufficient mailing of such notice.

SECTION 11.03. [INTENTIONALLY OMITTED]

SECTION 11.04. CERTIFICATE AND OPINION AS TO CONDITIONS PRECEDENT.

Upon any request or application by the Company to the Trustee to take any action under this Indenture, the Company shall furnish to the Trustee:

(a) an Officers' Certificate in form and substance reasonably satisfactory to the Trustee (which shall include the statements set forth in Section 11.05 hereof) stating that, in the opinion of the signers, all conditions precedent and covenants, if any, provided for in this Indenture relating to the proposed action have been satisfied; and

(b) an Opinion of Counsel in form and substance reasonably satisfactory to the Trustee (which shall include the statements set forth in Section 11.05 hereof) stating that, in the opinion of such counsel, all such conditions precedent and covenants have been satisfied.

SECTION 11.05. STATEMENTS REQUIRED IN CERTIFICATE OR OPINION.

Each certificate or opinion with respect to compliance with a condition or covenant provided for in this Indenture shall include:

- (a) a statement that the Person making such certificate or opinion has read such covenant or condition;
- (b) a brief statement as to the nature and scope of the examination or investigation upon which the statements or opinions contained in such certificate or opinion are based;
- (c) a statement that, in the opinion of such Person, he or she has made such examination or investigation as is necessary to enable him or her to express an informed opinion as to whether or not such covenant or condition has been satisfied; and
- (d) a statement as to whether or not, in the opinion of such Person, such condition or covenant has been satisfied.

SECTION 11.06. RULES BY TRUSTEE AND AGENTS.

The Trustee may make reasonable rules for action by or at a meeting of Holders. The Registrar or Paying Agent may make reasonable rules and set reasonable requirements for its functions.

SECTION 11.07. NO PERSONAL LIABILITY OF DIRECTORS, OFFICERS, EMPLOYEES AND SHAREHOLDERS.

No past, present or future director, officer, employee, incorporator, member, partner or shareholder or other owner of Capital Stock of the Company or any Guarantor, as such, shall have any liability for any obligations of the Company or any Guarantor under the Notes, the Subsidiary Guarantees, this Indenture or for any claim based on, in respect of, or by reason of, such obligations or their creation. Each Holder by accepting a Note waives and releases all such liability. The waiver and release are part of the consideration for issuance of the Notes.

SECTION 11.08. GOVERNING LAW.

THE LAW OF THE STATE OF NEW YORK SHALL GOVERN AND BE USED TO CONSTRUE AND ENFORCE THIS INDENTURE, THE NOTES AND THE SUBSIDIARY GUARANTEES.

SECTION 11.09. NO ADVERSE INTERPRETATION OF OTHER AGREEMENTS.

This Indenture may not be used to interpret any other indenture, loan or debt agreement of the Company or its Restricted Subsidiaries or of any other Person. Any such indenture, loan or debt agreement may not be used to interpret this Indenture.

SECTION 11.10. SUCCESSORS.

All agreements of the Company and the Guarantors in this Indenture and the Notes shall bind their successors. All agreements of the Trustee in this Indenture shall bind its successors.

SECTION 11.11. SEVERABILITY.

In case any provision in this Indenture or in the Notes shall be invalid, illegal or unenforceable, the validity, legality and enforceability of the remaining provisions shall not in any way be affected or impaired thereby.

SECTION 11.12. COUNTERPART ORIGINALS.

The parties may sign any number of copies of this Indenture. Each signed copy shall be an original, but all of them together represent the same agreement.

SECTION 11.13. TABLE OF CONTENTS, HEADINGS, ETC.

The Table of Contents, Cross-Reference Table and Headings of the Articles and Sections of this Indenture have been inserted for convenience of reference only, are not to be considered a part of this Indenture and shall in no way modify or restrict any of the terms or provisions hereof.

SECTION 11.14. CONSENT TO JURISDICTION; SUBMISSION TO PROCESS; WAIVER OF JURY TRIAL.

Each of the Company and the Guarantors irrevocably submits to the non-exclusive jurisdiction of any New York state or U.S. Federal court located in the Borough of Manhattan in the City and State of New York over any suit, action or proceeding arising out of or relating to this Indenture or any Guarantee or Note. Each of the Company and the Guarantors irrevocably waives, to the fullest extent permitted by law, any objection which it may have, pursuant to articles 14 and 15 of the French Civil Code or otherwise, to the laying of the venue of any such suit, action or proceeding brought in such a court and any claim that any such suit, action or proceeding brought in such a court has been brought in any inconvenient forum. The Trustee, the Company and the Guarantors acknowledge that nothing in this Section shall prevent the Trustee, the Holders, the Company or the Guarantors from bringing any legal action, suit or proceeding arising out of or related to this Indenture or with respect to their respective obligations or liabilities hereunder in any court of competent jurisdiction for such legal action, suit or proceeding.

In furtherance of the foregoing, each of the Company and the Guarantors hereby irrevocably designates and appoints CT Corporation, 111 Eighth Avenue, New York, New York 10011, as the agent of the Company and each of the Guarantors to receive service of all process brought against the Company or any such Guarantor with respect to any such suit, action or proceeding in any such court in the City and State of New York, such service being hereby acknowledged by the Company and each of the Guarantors to be effective and binding service in every respect. Copies of any such process so served shall also be given to the Company in accordance with Section 11.02 hereof, but the failure of the Company or any Guarantor to receive such copies shall not affect in any way the service of such process as aforesaid. On the Issue Date, the Company and the Guarantors shall furnish to the Trustee a consent of CT Corporation agreeing to act hereunder. If for any reason CT Corporation shall resign or otherwise cease to act as such agent, the Company and each of the Guarantors hereby irrevocably agrees to (A) immediately designate and appoint a new agent reasonably acceptable to the Trustee to serve in such capacity and, in such event, such new agent shall be deemed to be substituted for CT Corporation for all purposes hereof and (B) promptly deliver to the Trustee the written consent (in form and substance reasonably satisfactory to the Trustee) of such new agent agreeing to serve in such capacity.

Nothing in this Section shall limit the right of the Trustee or any Holder to serve process in any other manner permitted by law.

To the extent permitted by applicable law, each of the parties hereto hereby waives, and the Holders, by acceptance of their Notes, shall be deemed to have waived, any right to have a jury participate in resolving any dispute, whether sounding in contract, tort, or otherwise, between or among the parties or any other Persons in connection with or arising out of, connected with, or incidental to this Indenture, the Notes or any related agreement. Instead any such dispute shall be resolved in a bench trial without a jury.

SECTION 11.15. PRESCRIPTION.

Claims against the Company for the payment of principal, or premium, if any, on the Notes will be prescribed ten years after the applicable due date for payment thereof. Claims against the Company for the payment of interest on the Notes will be prescribed five years after the applicable due date for payment of interest.

[Signature pages follow.]

The foregoing indenture is hereby accepted and
agreed as of the date first written above:

CGG S.A.

By: /s/ Stephane-Paul Frydman

Name: Stephane-Paul Frydman

Title: Corporate Officer & Chief Financial Officer

The foregoing indenture is hereby accepted and
agreed as of the date first written above:

CGG HOLDING B.V.

By: /s/ Yves Goulard

Name: Yves Goulard

Title: Authorized Signatory

The foregoing indenture is hereby accepted and
agreed as of the date first written above:

CGG MARINE B.V.

By: /s/ Yves Goulard

Name: Yves Goulard

Title: Authorized Signatory

The foregoing indenture is hereby accepted and
agreed as of the date first written above:

CGG MARINE RESOURCES NORGE A/S

By: /s/ Yves Goulard

Name: Yves Goulard

Title: Authorized Signatory

The foregoing indenture is hereby accepted and
agreed as of the date first written above:

CGG HOLDING (U.S.) INC.

By: /s/ Yves Goulard

Name: Yves Goulard

Title: Authorized Signatory

The foregoing indenture is hereby accepted and
agreed as of the date first written above:

CGG SERVICES (U.S.) INC.

By: /s/ Yves Goulard

Name: Yves Goulard

Title: Authorized Signatory

The foregoing indenture is hereby accepted and
agreed as of the date first written above:

VERITAS INVESTMENTS INC.

By: /s/ Yves Goulard

Name: Yves Goulard

Title: Authorized Signatory

The foregoing indenture is hereby accepted and
agreed as of the date first written above:

VIKING MARITIME INC.

By: /s/ Yves Goulard

Name: Yves Goulard

Title: Authorized Signatory

The foregoing indenture is hereby accepted and
agreed as of the date first written above:

VERITAS GEOPHYSICAL (MEXICO) LLC

By: /s/ Yves Goulard

Name: Yves Goulard

Title: Authorized Signatory

The foregoing indenture is hereby accepted and
agreed as of the date first written above:

ALITHEIA RESOURCES INC.

By: /s/ Yves Goulard
Name: Yves Goulard
Title: Authorized Signatory

The foregoing indenture is hereby accepted and
agreed as of the date first written above:

CGG LAND (U.S.) INC.

By: /s/ Yves Goulard

Name: Yves Goulard

Title: Authorized Signatory

The foregoing indenture is hereby accepted and
agreed as of the date first written above:

SERCEL, INC.

By: /s/ Yves Goulard
Name: Yves Goulard
Title: Authorized Signatory

The foregoing indenture is hereby accepted and
agreed as of the date first written above:

SERCEL-GRC CORP.

By: /s/ Yves Goulard
Name: Yves Goulard
Title: Authorized Signatory

The foregoing indenture
is hereby accepted and agreed
as of the date first written above:

THE BANK OF NEW YORK MELLON, as Trustee

By: /s/ Catherine F. Donohue

Name: Catherine F. Donohue

Title: Vice President

THE BANK OF NEW YORK MELLON
LONDON BRANCH, as Paying Agent and Transfer
Agent

By: /s/ Catherine F. Donohue

Name: Catherine F. Donohue

Title: Vice President

THE BANK OF NEW YORK MELLON
(LUXEMBOURG) S.A., as Luxembourg Paying
Agent and Luxembourg Transfer Agent and Registrar

By: /s/ Catherine F. Donohue

Name: Catherine F. Donohue

Title: Attorney-in-fact

(Face of Note)

CGG S.A.

Form of 5.875% Senior Note due 2020

No: []

Up to []

Common Code: []

ISIN : []

CGG S.A. hereby promises to pay to _____ or its registered assigns, the principal sum set forth in the Schedule of Exchange of Notes attached hereto on May 15, 2020.

Interest Payment Dates: May 15 and November 15

Record Dates: May 1 and November 1

Additional provisions of this Note are set forth on the other side of this Note.

IN WITNESS WHEREOF, the parties have caused this instrument to be duly executed.

CGG S.A.

By: _____

Name: _____

Title: _____

TRUSTEE' S CERTIFICATE OF AUTHENTICATION:

This is one of the Global Notes referred
to in the within-mentioned Indenture.

The Bank of New York Mellon, as Trustee

By: _____
Authorized Signatory

Date of Authentication: _____

A-2

5.875% Senior Notes due 2020

THIS GLOBAL NOTE IS HELD BY THE DEPOSITARY (AS DEFINED IN THE INDENTURE GOVERNING THIS NOTE) OR ITS NOMINEE IN CUSTODY FOR THE BENEFIT OF THE BENEFICIAL OWNERS HEREOF, AND IS NOT TRANSFERABLE TO ANY PERSON UNDER ANY CIRCUMSTANCES EXCEPT THAT (I) THE TRUSTEE MAY MAKE SUCH NOTATIONS HEREON AS MAY BE REQUIRED PURSUANT TO SECTION 2.06 OF THE INDENTURE, (II) THIS GLOBAL NOTE MAY BE TRANSFERRED OR EXCHANGED IN WHOLE BUT NOT IN PART PURSUANT TO SECTION 2.06(a) OF THE INDENTURE AND (III) THIS GLOBAL NOTE MAY BE DELIVERED TO THE TRUSTEE FOR CANCELLATION PURSUANT TO SECTION 2.11 OF THE INDENTURE.

[Restricted Notes Legend]

“THIS NOTE (OR ITS PREDECESSOR) WAS ORIGINALLY ISSUED IN A TRANSACTION EXEMPT FROM REGISTRATION UNDER THE UNITED STATES SECURITIES ACT OF 1933 (THE “SECURITIES ACT”), AND THIS NOTE MAY NOT BE OFFERED, SOLD OR OTHERWISE TRANSFERRED IN THE ABSENCE OF SUCH REGISTRATION OR AN APPLICABLE EXEMPTION THEREFROM. EACH PURCHASER OF THIS NOTE IS HEREBY NOTIFIED THAT THE SELLER OF THIS NOTE MAY BE RELYING ON THE EXEMPTION FROM THE PROVISIONS OF SECTION 5 OF THE SECURITIES ACT PROVIDED BY RULE 144A THEREUNDER.

THE HOLDER OF THIS NOTE AGREES FOR THE BENEFIT OF THE ISSUER THAT, PRIOR TO THE DATE WHICH IS SIX MONTHS AFTER THE LATER OF THE ORIGINAL ISSUE DATE HEREOF AND THE LAST DATE ON WHICH THE COMPANY OR ANY AFFILIATE OF THE COMPANY WAS THE OWNER OF THIS NOTE (OR ANY PREDECESSOR OF THIS NOTE) (A) THIS NOTE MAY BE OFFERED, RESOLD, PLEDGED OR OTHERWISE TRANSFERRED, ONLY (I) TO THE COMPANY, (II) IN THE UNITED STATES TO A PERSON WHOM THE SELLER REASONABLY BELIEVES IS A QUALIFIED INSTITUTIONAL BUYER (AS DEFINED IN RULE 144A UNDER THE SECURITIES ACT) IN A TRANSACTION MEETING THE REQUIREMENTS OF RULE 144A, (III) OUTSIDE THE UNITED STATES IN AN OFFSHORE TRANSACTION IN ACCORDANCE WITH RULE 904 UNDER THE SECURITIES ACT TO A PERSON WHO IS NOT A U.S. PERSON, (IV) PURSUANT TO AN EXEMPTION FROM REGISTRATION UNDER THE SECURITIES ACT PROVIDED BY RULE 144 THEREUNDER (IF AVAILABLE) (V) PURSUANT TO ANOTHER AVAILABLE EXEMPTION FROM REGISTRATION UNDER THE SECURITIES ACT, OR (VI) PURSUANT TO AN EFFECTIVE REGISTRATION STATEMENT UNDER THE SECURITIES ACT, IN EACH OF CASES (I) THROUGH (VI) IN ACCORDANCE WITH ANY APPLICABLE SECURITIES LAWS OF ANY STATE OF THE UNITED STATES, AND (B) THE HOLDER WILL, AND EACH SUBSEQUENT HOLDER IS REQUIRED TO, NOTIFY ANY PURCHASER OF THIS NOTE FROM IT OF THE RESALE RESTRICTIONS REFERRED TO IN (A) ABOVE.”

“THIS NOTE (OR ITS PREDECESSOR) WAS ORIGINALLY ISSUED IN A TRANSACTION EXEMPT FROM REGISTRATION UNDER THE U.S. SECURITIES ACT OF 1933, AS AMENDED (THE “SECURITIES ACT”), AND MAY NOT BE TRANSFERRED IN THE UNITED STATES OR TO, OR FOR THE ACCOUNT OR BENEFIT OF, ANY U.S. PERSON EXCEPT PURSUANT TO AN AVAILABLE EXEMPTION FROM THE REGISTRATION REQUIREMENTS OF THE SECURITIES ACT AND ALL APPLICABLE STATE SECURITIES LAWS. TERMS USED ABOVE HAVE THE MEANINGS GIVEN TO THEM IN REGULATION S UNDER THE SECURITIES ACT.”

[Definitive Notes Legend]

“IN CONNECTION WITH ANY TRANSFER, THE HOLDER SHALL DELIVER TO THE REGISTRAR AND TRANSFER AGENT SUCH CERTIFICATES AND OTHER INFORMATION AS SUCH TRANSFER AGENT MAY REASONABLY REQUIRE TO CONFIRM THAT THE TRANSFER COMPLIES WITH THE FOREGOING RESTRICTIONS.”

1. *INTEREST.* CCG S.A., a *société anonyme* incorporated in France and registered at the Paris commercial register under number 969 202 241 (the “**Company**”), promises to pay interest on the principal amount of this Note at 5.875% per annum from April 23, 2014 until maturity. The Company will pay interest semi-annually in arrears on May 15 and November 15 of each year, commencing on November 15, 2014, or if any such day is not a Business Day, on the next succeeding Business Day (each an “**Interest Payment Date**”). Interest on the Notes will accrue from the most recent date to which interest has been paid or, if no interest has been paid, from the date of original issuance; *provided* that if there is no existing Default or Event of Default in the payment of interest, and if this Note is authenticated between a record date referred to on the face hereof and the next succeeding Interest Payment Date, interest shall accrue from such next succeeding Interest Payment Date, except in the case of the original issuance of Notes, in which case interest shall accrue from the date of authentication. The Company shall pay interest (including post-petition interest in any proceeding under applicable bankruptcy law) on overdue principal and premium, if any, from time to time on demand at a rate that is the rate then in effect; it shall pay interest (including post-petition interest in any proceeding under applicable bankruptcy law) on overdue installments of interest (without regard to any applicable grace periods) from time to time on demand at the same rate to the extent lawful. Interest will be computed on the basis of a 360-day year of twelve 30-day months.

2. *METHOD OF PAYMENT.* The Company will pay interest on the Notes (except defaulted interest) to the Persons who are registered Holders of Notes at the close of business on the May 1 and November 1 next preceding the Interest Payment Date, even if such Notes are cancelled after such record date and on or before such Interest Payment Date, except as provided in Section 2.12 of the Indenture with respect to defaulted interest. The Notes will be payable as to principal, premium, if any, and interest at the office or agency of the Company maintained for such purpose within the continental United States and, subject to any fiscal or other laws and regulations applicable thereto, at the specified offices of any other Paying Agent appointed by the Company for such purpose, or, at the option of the Company, payment of interest may be

made by check mailed to the Holders at their addresses set forth in the register of Holders, and *provided* that payment by wire transfer of immediately available funds will be required with respect to principal of, interest and premium, if any, on all Global Notes and all other Notes the Holders of which shall have provided wire transfer instructions to the Company or a Paying Agent. Such payment shall be in such coin or currency of the United States of America as at the time of payment is legal tender for payment of public and private debts. The principal of the Notes shall be payable only upon surrender of any Note at the Corporate Trust Office of the Trustee or at the specified offices of any other Paying Agent.

If the due date for payment of the principal in respect of any Note is not a Business Day at the place in which it is presented for payment, the Holder thereof shall not be entitled to payment of the amount due until the next succeeding Business Day at such place and shall not be entitled to any further interest or other payment in respect of any such delay.

3. *PAYING AGENTS AND REGISTRARS.* Initially, The Bank of New York Mellon, the Trustee under the Indenture (the “**Trustee**”), will act as Paying Agent and Registrar at its Corporate Trust Office in New York, New York, and Dexia Banque Internationale à Luxembourg, société anonyme will act as Registrar and Paying Agent in Luxembourg. The Company may at any time designate one or more additional Paying Agents or rescind the designation of any Paying Agent or approve a change in the office through which any Paying Agent acts, except that the Company will be required to maintain a Paying Agent in the continental United States. The Company will give notice to the Holders of any such change by publication in a newspaper having general circulation in Luxembourg, which newspaper is expected to be *Luxemburger Wort*, or if such newspaper ceases to be published or timely publication in it will not be practicable, in such other newspaper as the Trustee deems necessary to give fair and reasonable notice to the Holders. Such notices may also be published on the internet site of the Luxembourg Stock Exchange at <http://www.bourse.lu>.

4. *INDENTURE.* The Company issued the Notes under an Indenture dated as of April 23, 2014 (the “*Indenture*”), among the Company, the Guarantors and the Trustee. The terms of the Notes include those stated in the Indenture. The Notes are subject to all such terms, and Holders are referred to the Indenture for a statement of such terms. The Notes are general unsecured obligations of the Company limited to up to 400,000,000 aggregate principal amount in the case of Notes issued on April 23, 2014.

5. *OPTIONAL REDEMPTION.*

(a) At any time prior to May 15, 2017, the Company may redeem the Notes at its option, in whole or in part, at a redemption price equal to 100% of the principal amount thereof plus the Applicable Premium as of, and accrued and unpaid interest to, the date of redemption.

(b) At any time on or after May 15, 2017, the Company shall have the option to redeem the Notes, in whole or in part, upon not less than 30 nor more than 60 days’ notice, at the redemption prices (expressed as percentages of principal amount) set forth below

plus accrued and unpaid interest thereon to the applicable redemption date, if redeemed during the twelve-month period beginning on May 15 of the years indicated below:

<u>Year</u>	<u>Note Redemption Price</u>
2017	102.938 %
2018	101.469 %
2019 and thereafter	100.000 %

(c) Further, prior to May 15, 2017, the Company may redeem on any one or more occasions Notes (including Exchange Notes) representing up to 35% of the aggregate principal amount of Notes originally issued from time to time under the Indenture (including any Notes originally issued after the Issue Date but excluding for this purpose any Exchange Notes) at a redemption price of 105.875% of the principal amount thereof, plus accrued and unpaid interest thereon to the redemption date, with the net cash proceeds of one or more Qualified Equity Offerings, *provided* that (i) Notes (including Exchange Notes) representing at least 65% of the aggregate principal amount of Notes originally issued from time to time under the Indenture (including any Notes originally issued after the Issue Date but excluding for this purpose any Exchange Notes) remain outstanding immediately after the occurrence of each such redemption, and (ii) such redemption shall occur within 90 days of the date of the closing of each such Qualified Equity Offering.

(d) The Company may at any time unconditionally redeem, in whole but not in part, the Notes at a redemption price of 100% of the principal amount thereof plus accrued and unpaid interest thereon to the date of redemption if it or any Guarantor has become or would become obligated to pay any Additional Amounts in respect of the Notes as a result of (a)(i) any change in or amendment to the laws or treaties (or regulations or rulings promulgated thereunder) of a Relevant Taxing Jurisdiction or (ii) any change in or amendment to any official position regarding the application or interpretation of such laws, treaties, regulations or rulings, which change or amendment is announced and becomes effective on or after the date of the Indenture (or, if the applicable Relevant Taxing Jurisdiction became a Relevant Taxing Jurisdiction on a date after the date of the Indenture, such later date); and (b) such obligation cannot be avoided by the Company or any such Guarantor taking reasonable measures available to it.

6. MANDATORY REDEMPTION.

Except as set forth in paragraph 7 below, the Company shall not be required to make mandatory redemption or sinking fund payments with respect to the Notes.

7. PUT OPTION OF HOLDER.

(a) If there is a Change of Control, each Holder shall have the right to require the Company to purchase all or any portion (equal to 100,000 or an integral multiple of 1,000 in excess thereof) of such Holder's Notes, pursuant to an offer described in Section 4.15 of the Indenture (a "**Change of Control Offer**"), at a purchase price in cash equal to 101% of the aggregate principal amount thereof plus accrued and unpaid interest thereon to the date of purchase (the "**Change of Control Payment**"). Within 30 days following any Change of Control, the Company shall give notice to each Holder and the Trustee describing the transaction that constitutes the Change of Control and setting forth the procedures governing the Change of Control Offer as required by the Indenture.

(b) If the Company or a Restricted Subsidiary consummates any Asset Sales, within 30 days of each date on which the aggregate amount of Excess Proceeds exceeds 20,000,000, the Company shall commence an offer to all Holders of Notes (an “**Asset Sale Offer**”) pursuant to Section 3.09 of the Indenture to purchase the maximum principal amount of Notes that may be purchased out of the Excess Proceeds at an offer price in cash in an amount equal to 100% of the principal amount thereof, plus accrued and unpaid interest thereon to the date of purchase, in accordance with the procedures set forth in the Indenture; *provided, however*, that, if the Company is required to apply such Excess Proceeds to purchase, or to offer to purchase, any Pari Passu Indebtedness, the Company shall only be required to offer to purchase the maximum principal amount of Notes that may be purchased out of the amount of such Excess Proceeds multiplied by a fraction, the numerator of which is the aggregate principal amount of Notes outstanding and the denominator of which is the aggregate principal amount of Notes outstanding plus the aggregate principal amount of Pari Passu Indebtedness outstanding. To the extent that the aggregate principal amount of Notes tendered pursuant to an Asset Sale Offer is less than the amount that the Company is required to purchase, the Company may use any remaining Excess Proceeds for general corporate purposes in any manner not prohibited by the Indenture. If the aggregate principal amount of Notes surrendered by Holders thereof exceeds the amount that the Company is required to purchase, the Trustee shall select the Notes to be purchased on a pro rata basis (with such adjustments as may be deemed appropriate by the Trustee so that only Notes in denominations of 100,000, or integral multiples of 1,000 in excess thereof, shall be purchased). Holders of Notes that are the subject of an offer to purchase will receive an Asset Sale Offer from the Company prior to any related purchase date and may elect to have such Notes purchased by completing the form entitled “Option of Holder to Elect Purchase” on the reverse of the Notes.

8. *NOTICE OF REDEMPTION.* Notice of redemption will be mailed by first class mail at least 30 days but not more than 60 days before the redemption date to each Holder whose Notes are to be redeemed at its registered address. For Notes which are represented by global certificates held on behalf of Euroclear or Clearstream, notice may be given by delivery of the relevant notices to Euroclear or Clearstream for communication to entitled account holders in substitution for the aforesaid mailing. For so long as the Notes are listed on the Luxembourg Stock Exchange and for so long as the rules of such exchange require, notices of redemption shall be published once by the Trustee, not less than five Business Days prior to the redemption date, in a newspaper having general circulation in Luxembourg, which newspaper is expected to be *Luxemburger Wort*, or if such newspaper ceases to be published or timely publication in it will not be practicable, in such other newspaper as the Trustee deems necessary to give fair and reasonable notice to the Holders. Notices may also be published on the internet site of the Luxembourg Stock Exchange at <http://www.bourse.lu>. Notes in denominations larger than 100,000 may be redeemed in part but only in whole multiples of 1,000 in excess thereof, unless all of the Notes held by a Holder are to be redeemed. On and after the redemption date interest ceases to accrue on Notes or portions thereof called for redemption.

9. *DENOMINATIONS, TRANSFER, EXCHANGE.* The Notes are in registered form without coupons in denominations of 100,000 and integral multiples of 1,000 in excess thereof. The transfer of Notes may be registered and Notes may be exchanged as provided in the Indenture. The Registrar and the Trustee may require a Holder, among other things, to furnish appropriate endorsements and transfer documents and the Company may require a Holder to pay any taxes and fees required by law or permitted by the Indenture. The Company need not exchange or register the transfer of any Note or portion of a Note selected for redemption, except for the unredeemed portion of any Note being redeemed in part. Also, it need not exchange or register the transfer of any Notes for a period of 15 days before a selection of Notes to be redeemed.

10. *PERSONS DEEMED OWNERS.* The registered Holder of a Note may be treated as its owner for all purposes.

11. *AMENDMENT, SUPPLEMENT AND WAIVER.* Subject to certain exceptions, the Indenture or the Notes may be amended or supplemented with the consent of the Holders of at least a majority in principal amount of the then outstanding Notes, and any existing Default or Event of Default or compliance with any provision of the Indenture or the Notes may be waived with the consent of the Holders of at least a majority in principal amount of the then outstanding Notes. Without the consent of any Holder of a Note, the Indenture or the Notes may be amended or supplemented to cure any ambiguity, defect or inconsistency, to provide for uncertificated Notes in addition to or in place of certificated Notes, to provide for the assumption of the Company's obligations to Holders of the Notes in case of a merger or consolidation or sale of all or substantially all of the Company's properties or assets, to secure the Notes, to make any change that would provide any additional rights or benefits to the Holders of the Notes or that does not materially adversely affect the legal rights under the Indenture of any such Holder or to add any additional Guarantor or to release any Guarantor from its Subsidiary Guarantee, in each case as provided in the Indenture.

12. *DEFAULTS AND REMEDIES.* Events of Default include: (i) default for 30 days in the payment when due of interest on the Notes; (ii) default in payment when due of the principal of or premium, if any, on the Notes; (iii) failure by the Company to comply with Section 4.10 or 4.15 of the Indenture; (iv) failure by the Company for 30 days after it receives written notice from the Trustee or the Holders of at least 25% in principal amount of the then outstanding Notes to observe or perform any other covenant or other agreement in the Indenture or the Notes; (v) the declaration or payment of any dividend or the making of any other payment or distribution described in subclause (y) of Section 4.07(c) of the Indenture, which declaration, payment or distribution would not be permitted by Section 4.07 of the Indenture if it were treated as a Restricted Payment; (vi) the Company consolidates or merges with or into (whether or not the Company is the surviving corporation), or sells, assigns, transfers, leases, conveys, demerges or otherwise disposes of all or substantially all of its properties and assets in one or more related transactions, to, another Person, unless the conditions precedent specified in clauses (1) through (5) of Section 6.01(f) of the Indenture have been complied with; (vii) default under any mortgage, indenture or instrument under which there may be issued or by which there may be secured or evidenced any Indebtedness for money borrowed by the Company or any of its Restricted Subsidiaries (or the payment of which is guaranteed by the Company or any of its Restricted Subsidiaries), whether such Indebtedness or guarantee now exists or is created after the date of the Indenture, which default (a) is caused by a failure to pay principal of or premium or interest on such Indebtedness prior to the expiration of any grace period provided in such Indebtedness, including any extension thereof (a "**Payment Default**") or (b) results in the

acceleration of such Indebtedness prior to its express maturity and, in each case, the principal amount of any such Indebtedness, together with the principal amount of any other such Indebtedness under which there has been a Payment Default or the maturity of which has been so accelerated, aggregates in excess of 50,000,000, and *provided further*, that if such default is cured or waived or any such acceleration rescinded, or such Indebtedness is repaid within a period of 10 days from the continuation of such default beyond the applicable grace period or the occurrence of such acceleration, as the case may be, an Event of Default and any consequential acceleration of the Notes shall be automatically rescinded, so long as said rescission does not conflict with any judgment or decree; (vii) failure by the Company or any of its Restricted Subsidiaries to pay final judgments (not covered by insurance) aggregating in excess of 50,000,000, which judgments are not paid, discharged or stayed for a period of 60 days; (viii) failure by any Guarantor to perform any covenant set forth in its Subsidiary Guarantee, or the repudiation by any Guarantor of its obligations under its Subsidiary Guarantee or the unenforceability of any Subsidiary Guarantee for any reason other than as provided in the Indenture; and (ix) certain events of bankruptcy or insolvency with respect to the Company or any Significant Subsidiary. If any Event of Default occurs and is continuing, the Trustee or the Holders of at least 25% in principal amount of the then outstanding Notes may, by notice, declare all the Notes to be due and payable immediately. Notwithstanding the foregoing, in the case of an Event of Default arising from certain events of bankruptcy or insolvency with respect to the Company or any Significant Subsidiary, all outstanding Notes will become due and payable without further action or notice. The Holders of a majority in principal amount of the then outstanding Notes by written notice to the Trustee may on behalf of all of the Holders rescind an acceleration and its consequences if the rescission would not conflict with any judgment or decree and if all existing Events of Default (except nonpayment of principal, interest or premium, if any, that have become due solely because of such acceleration) have been cured or waived. Holders may not enforce the Indenture or the Notes except as provided in the Indenture. Subject to certain limitations, Holders of a majority in principal amount of the then outstanding Notes may direct the Trustee in its exercise of any trust or power. The Trustee may withhold from Holders of the Notes notice of any continuing Default or Event of Default (except a Default or Event of Default relating to the payment of principal or interest) if it determines that withholding notice is in their interest. The Holders of a majority in aggregate principal amount of the Notes then outstanding by notice to the Trustee may on behalf of the Holders of all of the Notes waive any existing Default or Event of Default and its consequences under the Indenture except a continuing Default or Event of Default in the payment of the principal of or premium, if any, or interest on the Notes. The Company is required to deliver to the Trustee annually a statement regarding compliance with the Indenture, and the Company is required upon becoming aware of any Default or Event of Default, to deliver to the Trustee a statement specifying such Default or Event of Default.

13. *DEFEASANCE*. The Notes are subject to legal and covenant defeasance upon the terms and conditions specified in Article 8 of the Indenture.

14. *TRUSTEE DEALINGS WITH COMPANY*. The Trustee, in its individual or any other capacity, may make loans to, accept deposits from, and perform services for the Company or its Affiliates, and may otherwise deal with the Company or its Affiliates, as if it were not the Trustee.

15. *NO RECOURSE AGAINST OTHERS.* A director, officer, employee, incorporator, member, partner or shareholder or other owner of capital stock of the Company or any Guarantor, as such, shall not have any liability for any obligations of the Company or any Guarantor under the Notes, the Subsidiary Guarantees or the Indenture or for any claim based on, in respect of, or by reason of, such obligations or their creation. Each Holder by accepting a Note waives and releases all such liability. The waiver and release are part of the consideration for the issuance of the Notes.

16. *AUTHENTICATION.* This Note shall not be valid until authenticated by the manual signature of an authorized signatory of the Trustee or an authenticating agent.

17. *ABBREVIATIONS.* Customary abbreviations may be used in the name of a Holder or an assignee, such as: TEN COM (= tenants in common), TEN ENT (= tenants by the entireties), JT TEN (= joint tenants with right of survivorship and not as tenants in common), CUST (= Custodian), and U/G/M/A (= Uniform Gifts to Minors Act).

18. *SUBSIDIARY GUARANTEES.* The Company's obligations under the Notes are fully, irrevocably and unconditionally guaranteed on an unsecured senior basis, to the extent set forth in the Indenture, by each of the Guarantors. In addition, this Note is entitled to the benefits of the guarantee of each party that subsequent to the date of the Indenture becomes a Guarantor pursuant to the terms of the Indenture. Upon the terms and subject to the conditions set forth in the Indenture, any such party will unconditionally agree that the principal, interest and premium, if any, on the Notes will be duly and punctually paid in full when due, all as more fully set forth in Article 10 of the Indenture.

19. *COMMON CODES; ISINS.* The Company has caused Common Codes and ISINs to be printed on the Notes and the Trustee may use the Common Codes and ISINs in notices of redemption as a convenience to Holders. No representation is made as to the accuracy of such numbers either as printed on the Notes or as contained in any notice of redemption and reliance may be placed only on the other identification numbers placed thereon.

The Company will furnish to any Holder upon written request and without charge a copy of the Indenture. Requests may be made to:

CGG S.A.
Tour Maine - Montparnasse
33, avenue de Maine
75755 Paris cedex 15
France
Attention: General Counsel

ASSIGNMENT FORM

To assign this Note, fill in the form below: (I) or (we) assign and transfer this Note to

(Insert Assignee' s Soc. Sec. or Tax I.D. no.)

(Print or Type Assignee' s Name, Address and Zip Code)

and irrevocably appoint _____ to transfer this Note on the books of the Company. The agent may substitute another to act for him.

Date: _____

Your Signature: _____

(Sign exactly as your name appears on the face of this Note)

Signature Guarantee: _____

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SCHEDULE OF EXCHANGE OF NOTES¹

The initial principal amount of this Global Note is []. The following exchanges of a part of this Global Note for other Notes have been made:

<u>Date of Exchange</u>	<u>Amount of Decrease in Principal Amount of This Global Note</u>	<u>Amount of Increase in Principal Amount of This Global Note</u>	<u>Principal Amount of This Global Note Following Such Decrease (or Increase)</u>	<u>Signature of Authorized Officer of Trustee</u>
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¹ This should be included only if the Note is issued in global form.

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OPTION OF HOLDER TO ELECT PURCHASE

If you want to elect to have this Note purchased by the Company pursuant to Section 4.10 or 4.15 of the Indenture, check the box below:

☐ Section 4.10

☐ Section 4.15

If you want to elect to have only part of the Note purchased by the Company pursuant to Section 4.10 or Section 4.15 of the Indenture, state the amount you elect to have purchased: \$ _____

Date: _____

Your Signature: _____

(Sign exactly as your name appears on the face of this Note)

Soc. Sec. or Tax Identification No.: _____

Signature Guarantee: _____

A-13

FORM OF CERTIFICATE FOR TRANSFER OF BENEFICIAL INTEREST
FROM RULE 144A GLOBAL NOTE TO REGULATION S GLOBAL NOTE
(Pursuant to Section 2.06(a)(i) of the Indenture)

The Bank of New York Mellon,
as Trustee and Registrar
Global Corporate Trust
101 Barclay Street, Floor 7E
New York, New York 10286

Re: 5.875% Senior Notes due 2020 of CGG S.A.

Reference is hereby made to the Indenture, dated as of April 23, 2014 (the “**Indenture**”), among CGG S.A. (the “**Company**”), any guarantors party thereto (the “**Guarantors**”) and The Bank of New York Mellon, as trustee (the “**Trustee**”). Capitalized terms used but not defined herein shall have the meanings given to them in the Indenture.

This letter relates to _____ principal amount of Notes which are evidenced by one or more Rule 144A Global Notes and held with the Depository in the name of _____ (the “**Transferor**”). The Transferor has requested a transfer of such beneficial interest in the Notes to a Person who will take delivery thereof in the form of an equal principal amount of Notes evidenced by one or more Regulation S Global Notes, which amount, immediately after such transfer, is to be held with the Depository.

In connection with such request and in respect of such Notes, the Transferor hereby certifies that such transfer has been effected in compliance with the transfer restrictions applicable to the Global Notes and pursuant to and in accordance with Rule 903 or Rule 904 under the United States Securities Act of 1933, as amended (the “**Securities Act**”), and accordingly the Transferor hereby further certifies that:

(1) The offer of the Notes was not made to a person in the United States;

(2) either:

(a) at the time the buy order was originated, the transferee was outside the United States or the Transferor and any person acting on its behalf reasonably believed and believes that the transferee was outside the United States; or

(b) the transaction was executed in, on or through the facilities of a designated offshore securities market and neither the Transferor nor any person acting on its behalf knows that the transaction was prearranged with a buyer in the United States;

(3) no directed selling efforts have been made in contravention of the requirements of Rule 904(b) of Regulation S;

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(4) the transaction is not part of a plan or scheme to evade the registration provisions of the Securities Act; and

(5) upon completion of the transaction, the beneficial interest being transferred as described above is to be held with the Depository through Euroclear or Clearstream or both.

Upon giving effect to this request to exchange a beneficial interest in a Rule 144A Global Note for a beneficial interest in a Regulation S Global Note, the resulting beneficial interest shall be subject to the restrictions on transfer applicable to Regulation S Global Notes pursuant to the Indenture and the Securities Act and, if such transfer occurs prior to the end of the 40-day compliance distribution period associated with the initial offering of Notes, the beneficial interests in the Regulation S Global Notes shall be held through Euroclear or Clearstream.

This certificate and the statements contained herein are made for your benefit and the benefit of the Company and the Guarantors. Terms used in this certificate and not otherwise defined in the Indenture have the meanings set forth in Regulation S under the Securities Act.

[INSERT NAME OF TRANSFEROR]

By: _____

Name:

Title:

Dated:

cc: CGG S.A.

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FORM OF CERTIFICATE FOR TRANSFER OF BENEFICIAL INTEREST
FROM REGULATION S GLOBAL NOTE TO RULE 144A GLOBAL NOTE
(Pursuant to Section 2.06(a)(ii) of the Indenture)

The Bank of New York Mellon,
as Trustee and Registrar
Global Corporate Trust
101 Barclay Street, Floor 7E
New York, New York 10286

Re: 5.875% Senior Notes due 2020 of CGG S.A.

Reference is hereby made to the Indenture, dated as of April 23, 2014 (the “**Indenture**”), among CCG S.A. (the “**Company**”), any guarantors party thereto (the “**Guarantors**”) and The Bank of New York Mellon, as trustee (the “**Trustee**”). Capitalized terms used but not defined herein shall have the meanings given to them in the Indenture.

This letter relates to _____ principal amount of Notes which are evidenced by one or more of the following Notes that are being held by the Depository: (i) Regulation S Global Notes or (ii) Rule 144 Global Notes, in each case in the name of _____ (the “**Transferor**”). The Transferor has requested a transfer of such beneficial interest in the Notes to a Person who will take delivery thereof in the form of an equal principal amount of Notes evidenced by one or more Rule 144A Global Notes to be held with the Depository,

In connection with such request and in respect of such Notes, the Transferor hereby certifies that:

[CHECK ONE]

- ☐ such transfer is being effected pursuant to and in accordance with Rule 144A under the United States Securities Act of 1933, as amended (the “Securities Act”), and, accordingly, the Transferor hereby further certifies that the Notes are being transferred to a Person that the Transferor reasonably believes is purchasing the Notes for its own account, or for one or more accounts with respect to which such Person exercises sole investment discretion, and such Person and each such account is a “qualified institutional buyer” within the meaning of Rule 144A in a transaction meeting the requirements of Rule 144A;

or

- ☐ such transfer is being effected pursuant to and in accordance with Rule 144 under the Securities Act;

or

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-
- ☐ such transfer is being effected pursuant to an exemption from the registration requirements of the Securities Act other than one described above, and the Transferor hereby further certifies that the Notes are being transferred in compliance with the transfer restrictions applicable to the Global Notes and in accordance with the requirements of the exemption claimed, which certification is, if requested by the Company or the Registrar, supported by an Opinion of Counsel, provided by the transferor or the transferee (a copy of which the Transferor has attached to this certification) in form reasonably acceptable to the Company and to the Registrar, to the effect that such transfer is in compliance with the Securities Act and any applicable blue sky laws of any state of the United States;

and such Notes are being transferred in compliance with any applicable blue sky securities laws of any state of the United States or any other applicable jurisdiction.

Upon giving effect to this request to exchange a beneficial interest in Regulation S Global Notes or Rule 144A Global Notes for a beneficial interest in Rule 144A Global Notes the resulting beneficial interest shall be subject to the restrictions on transfer applicable to Rule 144A Global Notes pursuant to the Indenture and the Securities Act.

This certificate and the statements contained herein are made for your benefit and the benefit of the Company and the Guarantors.

By: _____
Name:
Title:

Dated:

cc: CGG S.A.

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FORM OF CERTIFICATE FOR EXCHANGE OR REGISTRATION OF TRANSFER
OF DEFINITIVE NOTES
(Pursuant to Section 2.06(b) of the Indenture)

The Bank of New York Mellon,
as Trustee and Registrar
Global Corporate Trust
101 Barclay Street, Floor 7E
New York, New York 10286

Re: 5.875% Senior Notes due 2020 of CGG S.A.

Reference is hereby made to the Indenture, dated as of May 31, 2011 (the “**Indenture**”), among CGG S.A. (the “**Company**”), any guarantors party thereto (the “**Guarantors**”) and The Bank of New York Mellon, as trustee (the “**Trustee**”). Capitalized terms used but not defined herein shall have the meanings given to them in the Indenture.

This relates to _____ principal amount of Notes which are evidenced by one or more Definitive Notes in the name of _____ (the “**Transferor**”). The Transferor has requested an exchange or transfer of such Definitive Note(s) in the form of an equal principal amount of Notes evidenced by one or more Definitive Notes, to be delivered to the Transferor or, in the case of a transfer of such Notes, to such Person as the Transferor instructs the Trustee.

In connection with such request and in respect of the Notes surrendered to the Trustee herewith (the “**Surrendered Notes**”), the Holder of such Surrendered Notes hereby certifies that:

[CHECK ONE]

☐ the Surrendered Notes are being acquired for the Transferor’s own account, without transfer;

or

☐ the Surrendered Notes are being transferred to the Company or one of its Subsidiaries;

or

☐ the Surrendered Notes are being transferred pursuant to and in accordance with Rule 144A under the United States Securities Act of 1933, as amended (the “**Securities Act**”), and, accordingly, the Transferor hereby further certifies that the Surrendered Notes are being transferred to a Person that the Transferor reasonably believes is purchasing the Surrendered Notes for its own account, or for one or more accounts with respect to which such Person exercises sole investment discretion, and such Person and each such account is a “qualified institutional buyer” within the meaning of Rule 144A, in each case in a transaction meeting the requirements of Rule 144A;

or

☐ the Surrendered Notes are being transferred in a transaction permitted by Rule 144 under the Securities Act;

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or

☐ the Surrendered Notes are being transferred pursuant to an effective registration statement under the Securities Act;

and the Surrendered Notes are being transferred in compliance with any applicable blue sky securities laws of any state of the United States or any other applicable jurisdiction.

This certificate and the statements contained herein are made for your benefit and the benefit of the Company and the Guarantors.

[INSERT NAME OF TRANSFEROR]

By: _____

Name:

Title:

Dated:

cc: CGG S.A.

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SUBSIDIARY GUARANTEE

Subject to Section 10.07 of the Indenture, each Guarantor, has jointly and severally, unconditionally guaranteed to each Holder of a Note authenticated and delivered by the Trustee and to the Trustee and its successors and assigns, irrespective of the validity and enforceability of the Indenture, the Notes and the Obligations of the Company under the Notes or under the Indenture, that: (a) the principal of and premium, if any, and interest on the Notes will be promptly paid in full when due, subject to any applicable grace period, whether at maturity, by acceleration, redemption or otherwise, and interest on overdue principal of and premium, if any, (to the extent permitted by law) interest on the Notes and all other payment Obligations of the Company to the Holders or the Trustee under the Indenture or under the Notes will be promptly paid in full and performed, all in accordance with the terms thereof; and (b) in case of any extension of time of payment or renewal of any Notes or any of such other payment Obligations, the same will be promptly paid in full when due or performed in accordance with the terms of the extension or renewal, subject to any applicable grace period, whether at stated maturity, by acceleration, redemption or otherwise. Failing payment when so due of any amount so guaranteed or any performance so guaranteed for whatever reason, the Guarantors will be jointly and severally obligated to pay the same immediately. An Event of Default under the Indenture or the Notes shall constitute an event of default under the Subsidiary Guarantees, and shall entitle the Holders to accelerate the obligations of the Guarantors under the Indenture in the same manner and to the same extent as the Obligations of the Company. The Guarantors have agreed that their Obligations under the Indenture shall be unconditional, irrespective of the validity, regularity or enforceability of the Notes or the Indenture, the absence of any action to enforce the same, any waiver or consent by any Holder with respect to any provisions hereof or thereof, the recovery of any judgment against the Company, any action to enforce the same or any other circumstance which might otherwise constitute a legal or equitable discharge or defense of a Guarantor. Each Guarantor further, to the extent permitted by law, has waived diligence, presentment, demand of payment, filing of claims with a court in the event of insolvency or bankruptcy of the Company, any right to require a proceeding first against the Company, protest, notice and all demands whatsoever and covenants that its Subsidiary Guarantee will not be discharged except by complete performance of the Obligations contained in the Notes and the Indenture. If any Holder or the Trustee is required by any court or otherwise to return to the Company, the Guarantors, or Trustee, liquidator or other similar official acting in relation to either the Company or the Guarantors, any amount paid by the Company or any Guarantor to the Trustee or such Holder, the Subsidiary Guarantees, to the extent theretofore discharged, shall be reinstated in full force and effect. Each Guarantor has agreed that it shall not be entitled to, and hereby has waived, any right of subrogation in relation to the Holders in respect of any Obligations guaranteed under the Indenture. Each Guarantor further has agreed that, as between the Guarantors, on the one hand, and the Holders and the Trustee, on the other hand, (a) the maturity of the Obligations guaranteed under the Indenture may be accelerated as provided in Article 6 of the Indenture for the purposes of its Subsidiary Guarantee, notwithstanding any stay, injunction or other prohibition preventing such acceleration in respect of the Obligations guaranteed thereby, and (b) in the event of any declaration of acceleration of such Obligations as provided in Article 6 of the Indenture, such Obligations (whether or not due and payable) shall forthwith become due and payable by the Guarantor for the purpose of its Subsidiary Guarantee.

The Guarantors shall have the right to seek contribution from any non-paying Guarantor so long as the exercise of such right does not impair the rights of the Holders under the Subsidiary Guarantees.

The obligations of the Guarantors to the Holders and to the Trustee pursuant to the Subsidiary Guarantees and the Indenture are expressly set forth in Article 10 of the Indenture, and reference is hereby made to such Indenture for the precise terms of the Subsidiary Guarantees. The terms of Article 10 of the Indenture are incorporated herein by reference. The Subsidiary Guarantees are subject to release as and to the extent provided in Sections 10.04, 10.05 and 10.06 of the Indenture.

Each Subsidiary Guarantee is a continuing guarantee and shall remain in full force and effect and shall be binding upon each Guarantor and its respective successors and assigns to the extent set forth in the Indenture until full and final payment of all of the Company' s Obligations under the Notes and the Indenture and shall inure to the benefit of the successors and assigns of the Trustee and the Holders and, in the event of any transfer or assignment of rights by any Holder or the Trustee, the rights and privileges conferred in the Indenture upon that party shall automatically extend to and be vested in such transferee or assignee, all subject to the terms and conditions hereof. Each Subsidiary Guarantee is a guarantee of payment and not a guarantee of collection.

For purposes hereof, each Guarantor' s liability under its Subsidiary Guarantee shall be limited in amount as provided in Section 10.07 of the Indenture.

Capitalized terms used herein have the same meanings given in the Indenture unless otherwise indicated.

[GUARANTORS]

By: _____
Name:
Title:

CGG S.A.

and

the Guarantors named herein

5.875% SENIOR NOTES DUE 2020

FORM OF SUPPLEMENTAL INDENTURE

DATED AS OF _____, _____

THE BANK OF NEW YORK MELLON

Trustee

D-1

This SUPPLEMENTAL INDENTURE, dated as of _____, _____ is among CGG S.A., a *société anonyme* incorporated in France and registered at the Paris commercial register under number 969 202 241 (the “**Company**”), each of the parties identified under the caption “Guarantors” on the signature page hereto (the “**Guarantors**”) and The Bank of New York Mellon, as Trustee.

RECITALS

WHEREAS, the Company and the Trustee entered into an Indenture, dated as of April 23, 2014 (the “**Indenture**”), pursuant to which the Company has originally issued 400,000,000 in principal amount of 5.875% Senior Notes due 2020 (the “**Notes**”);

WHEREAS, Section 9.01(f) of the Indenture provides that the Company and the Trustee may amend or supplement the Indenture in order to execute and deliver a guarantee (a “**Subsidiary Guarantee**”) to comply with Section 10.02 thereof without the consent of the Holders of the Notes; and

WHEREAS, all acts and things prescribed by the Indenture, by law and by the charter and the bylaws (or comparable constituent documents) of the Company, of the Guarantors and of the Trustee necessary to make this Supplemental Indenture a valid instrument legally binding on the Company, the Guarantors and the Trustee, in accordance with its terms, have been duly done and performed.

NOW, THEREFORE, to comply with the provisions of the Indenture and in consideration of the above premises, the Company, the Guarantors and the Trustee covenant and agree for the equal and proportionate benefit of the respective Holders of the Notes as follows:

ARTICLE 1

SECTION 1.01. This Supplemental Indenture is supplemental to the Indenture and does and shall be deemed to form a part of, and shall be construed in connection with and as part of, the Indenture for any and all purposes.

SECTION 1.02. This Supplemental Indenture shall become effective immediately upon its execution and delivery by each of the Company, the Guarantors and the Trustee.

ARTICLE 2

From this date, in accordance with Section 10.02 and by executing this Supplemental Indenture and the accompanying notation of Subsidiary Guarantee (a copy of which is attached hereto), the Guarantors whose signatures appear below are subject to the provisions of the Indenture to the extent provided for in Article 10 thereunder.

ARTICLE 3

SECTION 3.01. Except as specifically modified herein, the Indenture and the Notes are in all respects ratified and confirmed (*mutatis mutandis*) and shall remain in full force and effect in accordance with their terms with all capitalized terms used herein without definition having the same respective meanings ascribed to them as in the Indenture.

SECTION 3.02. Except as otherwise expressly provided herein, no duties, responsibilities or liabilities are assumed, or shall be construed to be assumed, by the Trustee by reason of this Supplemental Indenture. This Supplemental Indenture is executed and accepted by the Trustee subject to all the terms and conditions set forth in the Indenture with the same force and effect as if those terms and conditions were repeated at length herein and made applicable to the Trustee with respect hereto.

SECTION 3.03. THE LAW OF THE STATE OF NEW YORK SHALL GOVERN AND BE USED TO CONSTRUE AND ENFORCE THIS SUPPLEMENTAL INDENTURE.

SECTION 3.04. The parties may sign any number of copies of this Supplemental Indenture. Each signed copy shall be an original, but all of such executed copies together shall represent the same agreement.

[NEXT PAGE IS SIGNATURE PAGE]

D-3

IN WITNESS WHEREOF, the parties hereto have caused this Supplemental Indenture to be duly executed, all as of the date first written above.

CGG S.A.

By: _____
Name:
Title:

[GUARANTORS]

By: _____
Name:
Title:

THE BANK OF NEW YORK MELLON, as
Trustee

By: _____
Name:
Title:

D-4

Dated June 24, 2014

CGG AND THE GUARANTORS NAMED HEREIN

5.875% SENIOR NOTES DUE 2020

SUPPLEMENTAL INDENTURE

THE BANK OF NEW YORK MELLON

TRUSTEE

Linklaters

Ref: L-223941

Linklaters LLP

This SUPPLEMENTAL INDENTURE, dated as of June 24, 2014, is among CGG S.A., a *société anonyme* incorporated in France and registered at the Paris commercial register under number 969 202 241 (the “**Company**”), CGG Canada Services Ltd., a Canadian (Alberta) corporation, Sercel Canada Ltd., a Canadian (New Brunswick) corporation, and Sercel Australia Pty Ltd. an Australian (New South Wales) corporation (together, the “**Additional Guarantors**”) and The Bank of New York Mellon, as Trustee (the “**Trustee**”).

RECITALS

WHEREAS, the Company and the Trustee entered into an Indenture, dated as of April 23, 2014 (the “**Indenture**”), pursuant to which the Company has originally issued 400,000,000 in principal amount of 5.875% Senior Notes due 2020 (the “**Notes**”); and

WHEREAS, Section 9.01(f) of the Indenture provides that the Company and the Trustee may amend or supplement the Indenture in order to execute and deliver a guarantee (a “**Subsidiary Guarantee**”) to comply with Section 10.02 thereof without the consent of the Holders of the Notes; and

WHEREAS, all acts and things prescribed by the Indenture, by law and by the charter and the bylaws (or comparable constituent documents) of the Company, of each Additional Guarantor and of the Trustee necessary to make this Supplemental Indenture a valid instrument legally binding on the Company, the Additional Guarantor and the Trustee, in accordance with its terms, have been duly done and performed.

NOW, THEREFORE, to comply with the provisions of the Indenture and in consideration of the above premises, the Company, each Additional Guarantor and the Trustee covenant and agree for the equal and proportionate benefit of the respective Holders of the Notes as follows:

ARTICLE 1

SECTION 1.01. This Supplemental Indenture is supplemental to the Indenture and does and shall be deemed to form a part of, and shall be construed in connection with and as part of, the Indenture for any and all purposes.

SECTION 1.02. This Supplemental Indenture shall become effective immediately upon its execution and delivery by each of the Company, each Additional Guarantor and the Trustee.

ARTICLE 2

From this date, in accordance with Section 10.02 of the Indenture and by executing this Supplemental Indenture and the accompanying notation of Subsidiary Guarantee (a copy of which is attached hereto), each Additional Guarantor whose signature appears below is subject to the provisions of the Indenture to the extent provided for in Article 10 thereunder.

ARTICLE 3

SECTION 3.01. Except as specifically modified herein, the Indenture and the Notes are in all respects ratified and confirmed (*mutatis mutandis*) and shall remain in full force and effect in accordance with their terms with all capitalized terms used herein without definition having the same respective meanings ascribed to them as in the Indenture.

SECTION 3.02. Except as otherwise expressly provided herein, no duties, responsibilities or liabilities are assumed, or shall be construed to be assumed, by the Trustee by reason of this Supplemental Indenture. This Supplemental Indenture is executed and accepted by the Trustee subject to all the terms and conditions set forth in the Indenture with the same force and effect as if those terms and conditions were repeated at length herein and made applicable to the Trustee with respect hereto.

The Company and each Additional Guarantor each represent and warrant to the Trustee that the Supplemental Indenture has been duly and validly executed and delivered by it and constitutes its legal, valid and binding obligations, enforceable against it in accordance with its terms.

The Trustee shall not be responsible or accountable in any way whatsoever for or with respect to the validity, execution (by any party other than the Trustee) or sufficiency of this Supplemental Indenture and makes no representation with respect thereto.

SECTION 3.03. THE LAW OF THE STATE OF NEW YORK SHALL GOVERN AND BE USED TO CONSTRUCT AND ENFORCE THIS SUPPLEMENTAL INDENTURE.

SECTION 3.04. The parties may sign any number of copies of this Supplemental Indenture. Each signed copy shall be an original, but all of such executed copies together shall represent the same agreement.

[Signature page follows]

IN WITNESS WHEREOF, the parties hereto have caused this Supplemental Indenture to be duly executed, all as of the date first written above.

CGG S.A.

By: /s/ Stéphane-Paul Frydman

Name: Stéphane-Paul Frydman

Title: Corporate officer & Chief Financial
Officer

Supplemental Indenture 5.875% Senior Notes due 2020) Signature Page

CGG CANADA SERVICES LTD.

By: /s/ Yves Goulard

Name: Yves Goulard

Title: Authorized Signatory

Supplemental Indenture 5.875% Senior Notes due 2020) Signature Page

SERCEL CANADA LTD.

By: /s/ Yves Goulard

Name: Yves Goulard

Title: Authorized Signatory

Supplemental Indenture 5.875% Senior Notes due 2020) Signature Page

Signed Sealed and Delivered for SERCEL
AUSTRALIA PTY LTD by its attorney under
power of attorney in the presence of:

/s/ Beatrice Place-Faget

Witness Signature

Beatrice Place-Faget

Print Name

/s/ Yves Goulard

Attorney Signature

Yves Goulard

Print Name

Supplemental Indenture 5.875% Senior Notes due 2020) Signature Page

THE BANK OF NEW YORK MELLON, as Trustee

By: /s/ Catherine F. Donohue
Name: Catherine F. Donohue
Title: Vice President

Supplemental Indenture 5.875% Senior Notes due 2020) Signature Page

Dated January 7, 2016

CGG AND THE GUARANTORS NAMED HEREIN

5.875% SENIOR NOTES DUE 2020

SUPPLEMENTAL INDENTURE

THE BANK OF NEW YORK MELLON

TRUSTEE

Linklaters

Ref: L-237418

Linklaters LLP

This SUPPLEMENTAL INDENTURE, dated as of January 7, 2016, is among CGG S.A., a *société anonyme* incorporated in France and registered at the Paris commercial register under number 969 202 241 (the “**Company**”), CGG HOLDING I (UK) LIMITED, a UK corporation, and CGG HOLDING II (UK) LIMITED, a UK corporation, (together, the “**Additional Guarantors**”) and The Bank of New York Mellon, as Trustee (the “**Trustee**”).

RECITALS

WHEREAS, the Company and the Trustee entered into an Indenture, dated as of April 23, 2014, as amended by a Supplemental Indenture dated June 24, 2014 (the “**Indenture**”), pursuant to which the Company has originally issued 400,000,000 in principal amount of 5.875% Senior Notes due 2020 (the “**Notes**”); and

WHEREAS, Section 9.01(f) of the Indenture provides that the Company and the Trustee may amend or supplement the Indenture in order to execute and deliver a guarantee (a “**Subsidiary Guarantee**”) to comply with Section 10.02 thereof without the consent of the Holders of the Notes; and

WHEREAS, all acts and things prescribed by the Indenture, by law and by the charter and the bylaws (or comparable constituent documents) of the Company, of each Additional Guarantor and of the Trustee necessary to make this Supplemental Indenture a valid instrument legally binding on the Company, the Additional Guarantors and the Trustee, in accordance with its terms, have been duly done and performed.

NOW, THEREFORE, to comply with the provisions of the Indenture and in consideration of the above premises, the Company, each Additional Guarantor and the Trustee covenant and agree for the equal and proportionate benefit of the respective Holders of the Notes as follows:

ARTICLE 1

SECTION 1.01. This Supplemental Indenture is supplemental to the Indenture and does and shall be deemed to form a part of, and shall be construed in connection with and as part of, the Indenture for any and all purposes.

SECTION 1.02. This Supplemental Indenture shall become effective immediately upon its execution and delivery by each of the Company, each Additional Guarantor and the Trustee.

ARTICLE 2

From this date, in accordance with Section 10.02 of the Indenture and by executing this Supplemental Indenture and the accompanying notation of Subsidiary Guarantee (a copy of which is attached hereto), each Additional Guarantor whose signature appears below is subject to the provisions of the Indenture to the extent provided for in Article 10 thereunder.

ARTICLE 3

SECTION 3.01. Except as specifically modified herein, the Indenture and the Notes are in all respects ratified and confirmed (*mutatis mutandis*) and shall remain in full force and effect in accordance with their terms with all capitalized terms used herein without definition having the same respective meanings ascribed to them as in the Indenture.

SECTION 3.02. Except as otherwise expressly provided herein, no duties, responsibilities or liabilities are assumed, or shall be construed to be assumed, by the Trustee by reason of this Supplemental Indenture. This Supplemental Indenture is executed and accepted by the Trustee subject to all the terms and conditions set forth in the Indenture with the same force and effect as if those terms and conditions were repeated at length herein and made applicable to the Trustee with respect hereto.

The Company and each Additional Guarantor each represent and warrant to the Trustee that the Supplemental Indenture has been duly and validly executed and delivered by it and constitutes its legal, valid and binding obligations, enforceable against it in accordance with its terms.

The Trustee shall not be responsible or accountable in any way whatsoever for or with respect to the validity, execution (by any party other than the Trustee) or sufficiency of this Supplemental Indenture and makes no representation with respect thereto.

SECTION 3.03. THE LAW OF THE STATE OF NEW YORK SHALL GOVERN AND BE USED TO CONSTRUE AND ENFORCE THIS SUPPLEMENTAL INDENTURE.

SECTION 3.04. The parties may sign any number of copies of this Supplemental Indenture. Each signed copy shall be an original, but all of such executed copies together shall represent the same agreement.

[Signature page follows]

IN WITNESS WHEREOF, the parties hereto have caused this Supplemental Indenture to be duly executed, all as of the date first written above.

CGG S.A.

By: /s/ Stephane-Paul FRYDMAN
Name: Stephane-Paul FRYDMAN
Title: Corporate Officer and Chief Financial
Officer

Supplemental Indenture 5.875% Senior Notes due 2020 Signature Page

CGG HOLDING I (UK) LIMITED

By: /s/ S. Boast

Name: S. Boast

Title: Director

Supplemental Indenture 5.875% Senior Notes due 2020 Signature Page

CGG HOLDING II (UK) LIMITED

By: /s/ S. Boast

Name: S. Boast

Title: Director

Supplemental Indenture 5.875% Senior Notes due 2020 Signature Page

THE BANK OF NEW YORK MELLON,
as Trustee

By: /s/ Catherine F. Donohue

Name: Catherine F. Donohue

Title: Vice President

Supplemental Indenture 5.875% Senior Notes due 2020 Signature Page

CGG S.A.

and

the Guarantors named herein

5.875% SENIOR NOTES DUE 2020

THIRD SUPPLEMENTAL INDENTURE

DATED AS OF FEBRUARY 22, 2017

THE BANK OF NEW YORK MELLON

Trustee

This THIRD SUPPLEMENTAL INDENTURE, dated as of February 22, 2017, is among CGG S.A., a *société anonyme* incorporated in France and registered at the Paris commercial register under number 969 202 241 (the “**Company**”), each of the parties identified under the caption “Guarantors” on the signature page hereto (the “**Guarantors**”) and The Bank of New York Mellon, as Trustee.

RECITALS

WHEREAS, the Company and the Trustee entered into an Indenture, dated as of April 23, 2014 (the “**Original Indenture**”), as amended by a First Supplemental Indenture dated as of June 24, 2014 and a Second Supplemental Indenture dated as of January 7, 2016, each of which was executed in order for the Additional Guarantors named therein to execute and deliver a guarantee (the Original Indenture, together with such Supplemental Indentures, the “**Indenture**”), pursuant to which the Company has originally issued 400,000,000 in principal amount of 5.875% Senior Notes due 2020 (the “**Notes**”); and

WHEREAS, Section 9.02 of the Indenture provides that the Company, the Guarantors, any other obligor under the Notes and the Trustee may amend certain sections of the Indenture with the consent of the Holders of at least a majority in principal amount of the Notes then outstanding; and

WHEREAS, the Holders of at least a majority in principal amount of the Notes outstanding have consented to the amendments effected by this Fifth Supplemental Indenture; and

WHEREAS, the Company and the Guarantors desire to amend certain provisions of the Indenture and to ratify and confirm the Indenture and the Guarantors desire to become parties to the previous Supplemental Indentures to the extent not already parties thereto, as set forth in Articles 2 and 3 hereof; and

WHEREAS, the Guarantors intend to execute a new notation of Subsidiary Guarantee to comply with Sections 9.01 and 10.02 of the Indenture, which Section 9.01(f) provides that the Company, the Guarantors and the Trustee may amend or supplement the Indenture in order to execute a guarantee without the consent of the Holders of the Notes; and

WHEREAS, all acts and things prescribed by the Indenture, by law and by the charter and the bylaws (or comparable constituent documents) of the Company, of the Guarantors and of the Trustee necessary to make this Third Supplemental Indenture a valid instrument legally binding on the Company, the Guarantors and the Trustee, in accordance with its terms, have been duly done and performed;

NOW, THEREFORE, to comply with the provisions of the Indenture and in consideration of the above premises, the Company, the Guarantors and the Trustee covenant and agree for the equal and proportionate benefit of the respective Holders of the Notes as follows:

ARTICLE 1

Section 1.01. This Third Supplemental Indenture is supplemental to the Indenture and does and shall be deemed to form a part of, and shall be construed in connection with and as part of, the Indenture for any and all purposes.

Section 1.02. This Third Supplemental Indenture shall become effective immediately upon its execution and delivery by each of the Company, the Guarantors and the Trustee.

ARTICLE 2

Section 2.01. The following additions are hereby made in Section 1.01 of the Indenture: ““**French Revolving Facility**” means the revolving credit facility in an initial principal amount of \$325 million under the Company’ s senior secured French-law revolving facility agreement dated July 31, 2013, as last amended and restated pursuant to an amendment and restatement agreement dated February 4, 2016, and as further amended and/or restated from time to time.”;

““**MAH Appointment**” means the taking of any corporate action or other steps or the opening of proceedings by the Company or any Restricted Subsidiaries for the appointment of a *mandataire ad hoc* in accordance with articles L.611-3 and L.611-15 to L.611-16 of the French *Code de commerce*; to the extent that (i) such proceedings are started on or prior to July 31, 2017 and no such proceedings shall be continuing after February 28, 2018 and (ii) any such proceedings are opened by the Company only following the receipt of all consents or waivers required in connection with such action in respect of any Relevant Financial Indebtedness.”;

““**Nordic Facility**” means the \$250 million term and revolving facilities agreement, dated July 1, 2013, as amended and restated on December 16, 2014, and as may be further amended from time to time, entered into between, among others, CGG Geo Vessels AS, as borrower, and Nordea Bank Finland Plc, London Branch, as administrative agent and as security agent.”;

““**Relevant Financial Indebtedness**” means Indebtedness of any member of the Group outstanding under any of the following: (a) the French Revolving Facility; (b) the U.S. Revolving Facility; (c) the Nordic Facility; or (d) the Term Loan B Facility.”;

““**Term Loan B Facility**” means the \$342 million term loan facility under the Company’ s term loan credit agreement dated November 19, 2015, as amended and/or restated from time to time.”; and

““**U.S. Revolving Facility**” means the revolving credit facility in an initial principal amount of \$165 million under the Company’ s senior secured credit agreement dated July 15, 2013, as last amended and restated pursuant to an amendment and restatement agreement dated January 10, 2016 (as amended on February 4, 2016), and as further amended and/or restated from time to time.”.

Section 2.02. Clause (k) of Section 6.01 of the Indenture is hereby amended and restated in its entirety as follows:

“SECTION 6.01 EVENTS OF DEFAULT

An “Event of Default” occurs if:

[...]

- (k) the Company or any Significant Subsidiary takes any corporate action or other steps are taken or legal proceedings are started under applicable bankruptcy laws for its *sauvegarde judiciaire*, *redressement judiciaire*, *liquidation judiciaire* or other winding-up, dissolution, administration or reorganization (whether by way of voluntary arrangement, scheme of arrangement or otherwise) or for the appointment of a *mandataire ad hoc*, *conciliateur* or *administrateur provisoire*, or other liquidator, receiver, administrator, administrative receiver, conservator, custodian, trustee or similar officer of it or of any or all of its revenues and assets, other than an action, legal proceeding or other step on vexatious or frivolous grounds or which is withdrawn or discharged within 40 days (*provided that*, notwithstanding anything herein to the contrary, an MAH Appointment shall not constitute a Default or an Event of Default under this Section 6.01(k)); or”.

SECTION 2.03. The following provisions are hereby added under a new Section 4.25:

“SECTION 4.25 INFORMATION UNDERTAKINGS

The Company hereby undertakes to:

- (a) by January 31, 2017, cooperate and to take all steps as may be reasonably required of the Company so that an independent business review covering a financial review of the budget for the fiscal year 2017 and the business plan up to the fiscal year 2019 and an illustrative recovery analysis in respect of the Company and its consolidated group is made available by PricewaterhouseCoopers LLP to those beneficial owners of Notes and their advisers who have signed non-disclosure agreements in a form satisfactory to the Company (acting reasonably) and any hold-harmless letters required by PricewaterhouseCoopers LLP, it being acknowledged and agreed that the Company cannot procure that PricewaterhouseCoopers LLP makes available such independent business review to such beneficial owners of Notes;
- (b) deliver to those beneficial owners of Notes and their advisers who have signed non-disclosure agreements in a form satisfactory to the Company (acting reasonably) the business plan in respect of the Company and its consolidated group for the next three-year period in a form approved by the Company’s Board of Directors;
- (c) by the date such plan is delivered to the lenders under the French Revolving Facility and the U.S. Revolving Facility, deliver to those beneficial owners of Notes and their advisers who have signed non-disclosure agreements in a form satisfactory to the Company (acting reasonably), subject to a cleansing mechanism to be separately agreed by the Company and the advisers of the beneficial owners of Notes, a plan addressing the capital structure constraints of the Company and its consolidated group approved by the Company’s Board of Directors;

-
- (d) provide access to meetings or calls with those beneficial owners of Notes and their advisers who have signed non-disclosure agreements in a form satisfactory to the Company (acting reasonably), subject to a cleansing mechanism to be separately agreed by the Company and the advisers of the beneficial owners of Notes, to discuss overall progress in respect of the capital structure constraints of the Company and its consolidated group no less than every two weeks; and
 - (e) deliver to the Trustee within five Business Days of the end of each calendar month written confirmation as to whether the aggregate amount of cash, Cash Equivalents and the amount under committed credit facilities which is available to be drawn by the Company and the members of its consolidated group is greater than \$175,000,000 (or its equivalent in other currencies) as at the end of each calendar month.”.

ARTICLE 3

Section 3.01. Except as specifically modified herein, the Indenture and the Notes are in all respects ratified and confirmed (*mutatis mutandis*) and shall remain in full force and effect in accordance with their terms with all capitalized terms used herein without definition having the same respective meanings ascribed to them as in the Indenture, and the Guarantors hereby become parties to the previous Supplemental Indentures to the extent not already parties thereto.

Section 3.02. Except as otherwise expressly provided herein, no duties, responsibilities or liabilities are assumed, or shall be construed to be assumed, by the Trustee by reason of this Third Supplemental Indenture. This Third Supplemental Indenture is executed and accepted by the Trustee subject to all the terms and conditions set forth in the Indenture with the same force and effect as if those terms and conditions were repeated at length herein and made applicable to the Trustee with respect hereto.

The Company and each Guarantor each represents and warrants to the Trustee that this Third Supplemental Indenture has been duly and validly executed and delivered by it and constitutes its legal, valid and binding obligations, enforceable against it in accordance with its terms.

The Trustee shall not be responsible or accountable in any way whatsoever for or with respect to the validity, execution (by any party other than the Trustee) or sufficiency of this Third Supplemental Indenture and makes no representation with respect thereto.

Section 3.03. THE LAW OF THE STATE OF NEW YORK SHALL GOVERN AND BE USED TO CONSTRUE AND ENFORCE THIS THIRD SUPPLEMENTAL INDENTURE.

Section 3.04. The parties may sign any number of copies of this Third Supplemental Indenture. Each signed copy shall be an original, but all of such executed copies together shall represent the same agreement.

[NEXT PAGE IS SIGNATURE PAGE]

IN WITNESS WHEREOF, the parties hereto have caused this Third Supplemental Indenture to be duly executed, all as of the date first written above.

CGG S.A.

By /s/ Jean-Georges Malcor

Name: Jean-Georges Malcor

Title: CEO

[signature page to Third Supplemental Indenture (2020 Notes)]

THE GUARANTORS

CGG HOLDING B.V.

By /s/ Beatrice Place-Faget

Name: Beatrice Place-Faget

Title: Managing Director

[signature page to Third Supplemental Indenture (2020 Notes)]

CGG MARINE B.V.

By /s/ Agatha Cottin

Name: Agatha Cottin

Title: Managing Director

[signature page to Third Supplemental Indenture (2020 Notes)]

By /s/ Marianne Lefdal

Name: Marianne Lefdal

Title: Chairman of the Board of Directors

[signature page to Third Supplemental Indenture (2020 Notes)]

CGG HOLDING (U.S.) INC.

By /s/ Vincent Thielen

Name: Vincent Thielen

Title: SVP Treasurer

[signature page to Third Supplemental Indenture (2020 Notes)]

CGG SERVICES (U.S.) INC.

By /s/ Vincent Thielen

Name: Vincent Thielen

Title: SVP Treasurer

[signature page to Third Supplemental Indenture (2020 Notes)]

CGG LAND (U.S.) INC.

By /s/ Vincent Thielen

Name: Vincent Thielen

Title: SVP Treasurer

[signature page to Third Supplemental Indenture (2020 Notes)]

VIKING MARITIME INC.

By /s/ Vincent Thielen

Name: Vincent Thielen

Title: SVP Treasurer

[signature page to Third Supplemental Indenture (2020 Notes)]

ALITHEIA RESOURCES INC.

By /s/ Vincent Thielen

Name: Vincent Thielen

Title: SVP Treasurer

[signature page to Third Supplemental Indenture (2020 Notes)]

CGG CANADA SERVICES LTD.

By /s/ Meng Meng Wang _____

Name: Meng Meng Wang

Title: Secretary and Treasurer

[signature page to Third Supplemental Indenture (2020 Notes)]

CGG HOLDING I (UK) LIMITED

By /s/ S. Boast

Name: S. Boast

Title: Director

[signature page to Third Supplemental Indenture (2020 Notes)]

CGG HOLDING II (UK) LIMITED

By /s/ S. Boast

Name: S. Boast

Title: Director

[signature page to Third Supplemental Indenture (2020 Notes)]

SERCEL, INC.

By /s/ Pascal Rouiller

Name: Pascal Rouiller

Title: CEO

[signature page to Third Supplemental Indenture (2020 Notes)]

SERCEL-GRC CORP.

By /s/ Richard Kelly

Name: Richard Kelly

Title: Treasurer & Company Secretary

[signature page to Third Supplemental Indenture (2020 Notes)]

SERCEL CANADA LTD.

By /s/ Pascal Rouiller

Name: Pascal Rouiller

Title: President

[signature page to Third Supplemental Indenture (2020 Notes)]

Executed in accordance with section 127

of the *Corporations Act* 2001 by SERCEL

AUSTRALIA PTY LTD:

/s/ Pascal Rouiller

Director Signature

Pascal Rouiller

Print Name

/s/ Valérie Féry-Norris

Director Signature

Valérie Féry-Norris

Print Name

[signature page to Third Supplemental Indenture (2020 Notes)]

THE BANK OF NEW YORK MELLON, as Trustee

By /s/ Catherine F. Donohue

Name: Catherine F. Donohue

Title: Vice President

[signature page to Third Supplemental Indenture (2020 Notes)]

Dated June 24, 2014

CGG AND THE GUARANTORS NAMED HEREIN

6.875% SENIOR NOTES DUE 2022

SUPPLEMENTAL INDENTURE

THE BANK OF NEW YORK MELLON

TRUSTEE

Linklaters

Ref: L-223941

Linklaters LLP

This SUPPLEMENTAL INDENTURE, dated as of June 24, 2014, is among CGG S.A., a *société anonyme* incorporated in France and registered at the Paris commercial register under number 969 202 241 (the “**Company**”), CGG Canada Services Ltd., a Canadian (Alberta) corporation, Sercel Canada Ltd., a Canadian (New Brunswick) corporation, and Sercel Australia Pty Ltd. an Australian (New South Wales) corporation (together, the “**Additional Guarantors**”) and The Bank of New York Mellon, as Trustee (the “**Trustee**”).

RECITALS

WHEREAS, the Company and the Trustee entered into an Indenture, dated as of May 1, 2014 (the “**Indenture**”), pursuant to which the Company has originally issued \$500,000,000 in principal amount of 6.875% Senior Notes due 2022 (the “**Notes**”); and

WHEREAS, Section 9.01(f) of the Indenture provides that the Company and the Trustee may amend or supplement the Indenture in order to execute and deliver a guarantee (a “**Subsidiary Guarantee**”) to comply with Section 10.02 thereof without the consent of the Holders of the Notes; and

WHEREAS, all acts and things prescribed by the Indenture, by law and by the charter and the bylaws (or comparable constituent documents) of the Company, of each Additional Guarantor and of the Trustee necessary to make this Supplemental Indenture a valid instrument legally binding on the Company, each Additional Guarantor and the Trustee, in accordance with its terms, have been duly done and performed.

NOW, THEREFORE, to comply with the provisions of the Indenture and in consideration of the above premises, the Company, each Additional Guarantor and the Trustee covenant and agree for the equal and proportionate benefit of the respective Holders of the Notes as follows:

ARTICLE 1

SECTION 1.01. This Supplemental Indenture is supplemental to the Indenture and does and shall be deemed to form a part of, and shall be construed in connection with and as part of, the Indenture for any and all purposes.

SECTION 1.02. This Supplemental Indenture shall become effective immediately upon its execution and delivery by each of the Company, each Additional Guarantor and the Trustee.

ARTICLE 2

From this date, in accordance with Section 10.02 of the Indenture and by executing this Supplemental Indenture and the accompanying notation of Subsidiary Guarantee (a copy of which is attached hereto), each Additional Guarantor whose signature appears below is subject to the provisions of the Indenture to the extent provided for in Article 10 thereunder.

ARTICLE 3

SECTION 3.01. Except as specifically modified herein, the Indenture and the Notes are in all respects ratified and confirmed (*mutatis mutandis*) and shall remain in full force and effect in accordance with their terms with all capitalized terms used herein without definition having the same respective meanings ascribed to them as in the Indenture.

SECTION 3.02. Except as otherwise expressly provided herein, no duties, responsibilities or liabilities are assumed, or shall be construed to be assumed, by the Trustee by reason of this Supplemental Indenture. This Supplemental Indenture is executed and accepted by the Trustee subject to all the terms and conditions set forth in the Indenture with the same force and effect as if those terms and conditions were repeated at length herein and made applicable to the Trustee with respect hereto.

The Company and each Additional Guarantor each represent and warrant to the Trustee that the Supplemental Indenture has been duly and validly executed and delivered by it and constitutes its legal, valid and binding obligations, enforceable against it in accordance with its terms.

The Trustee shall not be responsible or accountable in any way whatsoever for or with respect to the validity, execution (by any party other than the Trustee) or sufficiency of this Supplemental Indenture and makes no representation with respect thereto.

SECTION 3.03. THE LAW OF THE STATE OF NEW YORK SHALL GOVERN AND BE USED TO CONSTRUE AND ENFORCE THIS SUPPLEMENTAL INDENTURE.

SECTION 3.04. The parties may sign any number of copies of this Supplemental Indenture. Each signed copy shall be an original, but all of such executed copies together shall represent the same agreement.

[Signature page follows]

IN WITNESS WHEREOF, the parties hereto have caused this Supplemental Indenture to be duly executed, all as of the date first written above.

CGG S.A.

By: /s/ Stephane-Paul Frydman

Name: Stephane-Paul Frydman

Title: Corporate Officer & Chief Financial
Officer

Supplemental Indenture 6.875% Senior Notes due 2022 Signature Page

By: /s/ Yves Goulard
Name: Yves
Goulard
Title: Authorized
Signatory

Supplemental Indenture 6.875% Senior Notes due 2022 Signature Page

SERCEL CANADA LTD.

By: /s/ Yves Goulard

Name: Yves Goulard

Title: Authorized Signatory

Supplemental Indenture 6.875% Senior Notes due 2022 Signature Page

Signed Sealed and Delivered for SERCEL
AUSTRALIA PTY LTD by its attorney under
power of attorney in the presence of:

/s/ Beatrice Place-Faget

Witness Signature

Beatrice Place-Faget

Print Name

/s/ Yves Goulard

Attorney Signature

Yves Goulard

Print Name

Supplemental Indenture 6.875% Senior Notes due 2022 Signature Page

THE BANK OF NEW YORK MELLON,
as Trustee

By: /s/ Catherine F. Donohue

Name: Catherine F. Donohue

Title: Vice President

Supplemental Indenture 6.875% Senior Notes due 2022 Signature Page

Dated January 7, 2016

CGG AND THE GUARANTORS NAMED HEREIN

6.875% SENIOR NOTES DUE 2022

SUPPLEMENTAL INDENTURE

THE BANK OF NEW YORK MELLON

TRUSTEE

Linklaters

Ref: L-237418

Linklaters LLP

This SUPPLEMENTAL INDENTURE, dated as of January 7, 2016, is among CGG S.A., a *société anonyme* incorporated in France and registered at the Paris commercial register under number 969 202 241 (the “**Company**”), CGG HOLDING I (UK) LIMITED, a UK corporation, and CGG HOLDING II (UK) LIMITED, a UK corporation (together, the “**Additional Guarantors**”) and The Bank of New York Mellon, as Trustee (the “**Trustee**”).

RECITALS

WHEREAS, the Company and the Trustee entered into an Indenture, dated as of May 1, 2014, as amended by a Supplemental Indenture dated June 24, 2014 (the “**Indenture**”), pursuant to which the Company has originally issued \$500,000,000 in principal amount of 6.875% Senior Notes due 2022 (the “**Notes**”); and

WHEREAS, Section 9.01(f) of the Indenture provides that the Company and the Trustee may amend or supplement the Indenture in order to execute and deliver a guarantee (a “**Subsidiary Guarantee**”) to comply with Section 10.02 thereof without the consent of the Holders of the Notes; and

WHEREAS, all acts and things prescribed by the Indenture, by law and by the charter and the bylaws (or comparable constituent documents) of the Company, of each Additional Guarantor and of the Trustee necessary to make this Supplemental Indenture a valid instrument legally binding on the Company, each Additional Guarantor and the Trustee, in accordance with its terms, have been duly done and performed.

NOW, THEREFORE, to comply with the provisions of the Indenture and in consideration of the above premises, the Company, each Additional Guarantor and the Trustee covenant and agree for the equal and proportionate benefit of the respective Holders of the Notes as follows:

ARTICLE 1

SECTION 1.01. This Supplemental Indenture is supplemental to the Indenture and does and shall be deemed to form a part of, and shall be construed in connection with and as part of, the Indenture for any and all purposes.

SECTION 1.02. This Supplemental Indenture shall become effective immediately upon its execution and delivery by each of the Company, each Additional Guarantor and the Trustee.

ARTICLE 2

From this date, in accordance with Section 10.02 of the Indenture and by executing this Supplemental Indenture and the accompanying notation of Subsidiary Guarantee (a copy of which is attached hereto), each Additional Guarantor whose signature appears below is subject to the provisions of the Indenture to the extent provided for in Article 10 thereunder.

ARTICLE 3

SECTION 3.01. Except as specifically modified herein, the Indenture and the Notes are in all respects ratified and confirmed (*mutatis mutandis*) and shall remain in full force and effect in accordance with their terms with all capitalized terms used herein without definition having the same respective meanings ascribed to them as in the Indenture.

SECTION 3.02. Except as otherwise expressly provided herein, no duties, responsibilities or liabilities are assumed, or shall be construed to be assumed, by the Trustee by reason of this Supplemental Indenture. This Supplemental Indenture is executed and accepted by the Trustee subject to all the terms and conditions set forth in the Indenture with the same force and effect as if those terms and conditions were repeated at length herein and made applicable to the Trustee with respect hereto.

The Company and each Additional Guarantor each represent and warrant to the Trustee that the Supplemental Indenture has been duly and validly executed and delivered by it and constitutes its legal, valid and binding obligations, enforceable against it in accordance with its terms.

The Trustee shall not be responsible or accountable in any way whatsoever for or with respect to the validity, execution (by any party other than the Trustee) or sufficiency of this Supplemental Indenture and makes no representation with respect thereto.

SECTION 3.03. THE LAW OF THE STATE OF NEW YORK SHALL GOVERN AND BE USED TO CONSTRUCT AND ENFORCE THIS SUPPLEMENTAL INDENTURE.

SECTION 3.04. The parties may sign any number of copies of this Supplemental Indenture. Each signed copy shall be an original, but all of such executed copies together shall represent the same agreement.

[Signature page follows]

IN WITNESS WHEREOF, the parties hereto have caused this Supplemental Indenture to be duly executed, all as of the date first written above.

CGG S.A.

By: /s/ Stephane-Paul FRYDMAN

Name: Stephane-Paul FRYDMAN

Title: Corporate Officer and Chief Financial
Officer

Supplemental Indenture 6.875% Senior Notes due 2022 Signature Page

CGG HOLDING I (UK) LIMITED

By: /s/ S. Boast

Name: S. Boast

Title: Director

Supplemental Indenture 6.875% Senior Notes due 2022 Signature Page

CGG HOLDING II (UK) LIMITED

By: /s/ S. Boast

Name: S. Boast

Title: Director

Supplemental Indenture 6.875% Senior Notes due 2022 Signature Page

THE BANK OF NEW YORK MELLON, as Trustee

By: /s/ Catherine F. Donohue

Name: Catherine F. Donohue

Title: Vice President

Supplemental Indenture 6.875% Senior Notes due 2022 Signature Page

CGG S.A.

and

the Guarantors named herein

6.875% SENIOR NOTES DUE 2022

THIRD SUPPLEMENTAL INDENTURE

DATED AS OF FEBRUARY 22, 2017

THE BANK OF NEW YORK MELLON

Trustee

This THIRD SUPPLEMENTAL INDENTURE, dated as of February 22, 2017, is among CGG S.A., a *société anonyme* incorporated in France and registered at the Paris commercial register under number 969 202 241 (the “**Company**”), each of the parties identified under the caption “Guarantors” on the signature page hereto (the “**Guarantors**”) and The Bank of New York Mellon, as Trustee.

RECITALS

WHEREAS, the Company and the Trustee entered into an Indenture, dated as of May 1, 2014 (the “**Original Indenture**”), as amended by a First Supplemental Indenture dated as of June 24, 2012 and a Second Supplemental Indenture dated as of January 7, 2016, each of which was executed in order for the Additional Guarantors named therein to execute and deliver a guarantee (the Original Indenture, together with such Supplemental Indentures, the “**Indenture**”), pursuant to which the Company has originally issued \$500,000,000 in principal amount of 6.875% Senior Notes due 2022 (the “**Notes**”); and

WHEREAS, Section 9.02 of the Indenture provides that the Company, the Guarantors, any other obligor under the Notes and the Trustee may amend certain sections of the Indenture with the consent of the Holders of at least a majority in principal amount of the Notes then outstanding; and

WHEREAS, the Holders of at least a majority in principal amount of the Notes outstanding have consented to the amendments effected by this Fifth Supplemental Indenture; and

WHEREAS, the Company and the Guarantors desire to amend certain provisions of the Indenture and to ratify and confirm the Indenture and the Guarantors desire to become parties to the previous Supplemental Indentures to the extent not already parties thereto, as set forth in Articles 2 and 3 hereof; and

WHEREAS, the Guarantors intend to execute a new notation of Subsidiary Guarantee to comply with Sections 9.01 and 10.02 of the Indenture, which Section 9.01(f) provides that the Company, the Guarantors and the Trustee may amend or supplement the Indenture in order to execute a guarantee without the consent of the Holders of the Notes; and

WHEREAS, all acts and things prescribed by the Indenture, by law and by the charter and the bylaws (or comparable constituent documents) of the Company, of the Guarantors and of the Trustee necessary to make this Third Supplemental Indenture a valid instrument legally binding on the Company, the Guarantors and the Trustee, in accordance with its terms, have been duly done and performed;

NOW, THEREFORE, to comply with the provisions of the Indenture and in consideration of the above premises, the Company, the Guarantors and the Trustee covenant and agree for the equal and proportionate benefit of the respective Holders of the Notes as follows:

ARTICLE 1

Section 1.01. This Third Supplemental Indenture is supplemental to the Indenture and does and shall be deemed to form a part of, and shall be construed in connection with and as part of, the Indenture for any and all purposes.

Section 1.02. This Third Supplemental Indenture shall become effective immediately upon its execution and delivery by each of the Company, the Guarantors and the Trustee.

ARTICLE 2

Section 2.01. The following additions are hereby made in Section 1.01 of the Indenture:

“**French Revolving Facility**” means the revolving credit facility in an initial principal amount of \$325 million under the Company’s senior secured French-law revolving facility agreement dated July 31, 2013, as last amended and restated pursuant to an amendment and restatement agreement dated February 4, 2016, and as further amended and/or restated from time to time.”;

“**MAH Appointment**” means the taking of any corporate action or other steps or the opening of proceedings by the Company or any Restricted Subsidiaries for the appointment of a *mandataire ad hoc* in accordance with articles L.611-3 and L.611-15 to L.611-16 of the French *Code de commerce*; to the extent that (i) such proceedings are started on or prior to July 31, 2017 and no such proceedings shall be continuing after February 28, 2018 and (ii) any such proceedings are opened by the Company only following the receipt of all consents or waivers required in connection with such action in respect of any Relevant Financial Indebtedness.”;

“**Nordic Facility**” means the \$250 million term and revolving facilities agreement, dated July 1, 2013, as amended and restated on December 16, 2014, and as may be further amended from time to time, entered into between, among others, CGG Geo Vessels AS, as borrower, and Nordea Bank Finland Plc, London Branch, as administrative agent and as security agent.”;

“**Relevant Financial Indebtedness**” means Indebtedness of any member of the Group outstanding under any of the following: (a) the French Revolving Facility; (b) the U.S. Revolving Facility; (c) the Nordic Facility; or (d) the Term Loan B Facility.”;

“**Term Loan B Facility**” means the \$342 million term loan facility under the Company’s term loan credit agreement dated November 19, 2015, as amended and/or restated from time to time.”; and

“**U.S. Revolving Facility**” means the revolving credit facility in an initial principal amount of \$165 million under the Company’s senior secured credit agreement dated July 15, 2013, as last amended and restated pursuant to an amendment and restatement agreement dated January 10, 2016 (as amended on February 4, 2016), and as further amended and/or restated from time to time.”.

Section 2.02. Clause (k) of Section 6.01 of the Indenture is hereby amended and restated in its entirety as follows:

“SECTION 6.01 Events OF DEFAULT

An “Event of Default” occurs if:

[...]

- (k) the Company or any Significant Subsidiary takes any corporate action or other steps are taken or legal proceedings are started under applicable bankruptcy laws for its *sauvegarde judiciaire*, *redressement judiciaire*, *liquidation judiciaire* or other winding-up, dissolution, administration or reorganization (whether by way of voluntary arrangement, scheme of arrangement or otherwise) or for the appointment of a *mandataire ad hoc*, *conciliateur* or *administrateur provisoire*, or other liquidator, receiver, administrator, administrative receiver, conservator, custodian, trustee or similar officer of it or of any or all of its revenues and assets, other than an action, legal proceeding or other step on vexatious or frivolous grounds or which is withdrawn or discharged within 40 days (*provided that*, notwithstanding anything herein to the contrary, an MAH Appointment shall not constitute a Default or an Event of Default under this Section 6.01(k)); or”.

SECTION 2.03. The following provisions are hereby added under a new Section 4.25:

“SECTION 4.25 INFORMATION UNDERTAKINGS

The Company hereby undertakes to:

- (a) by January 31, 2017, cooperate and to take all steps as may be reasonably required of the Company so that an independent business review covering a financial review of the budget for the fiscal year 2017 and the business plan up to the fiscal year 2019 and an illustrative recovery analysis in respect of the Company and its consolidated group is made available by PricewaterhouseCoopers LLP to those beneficial owners of Notes and their advisers who have signed non-disclosure agreements in a form satisfactory to the Company (acting reasonably) and any hold-harmless letters required by PricewaterhouseCoopers LLP, it being acknowledged and agreed that the Company cannot procure that PricewaterhouseCoopers LLP makes available such independent business review to such beneficial owners of Notes;
- (b) deliver to those beneficial owners of Notes and their advisers who have signed non-disclosure agreements in a form satisfactory to the Company (acting reasonably) the business plan in respect of the Company and its consolidated group for the next three-year period in a form approved by the Company’s Board of Directors;
- (c) by the date such plan is delivered to the lenders under the French Revolving Facility and the U.S. Revolving Facility, deliver to those beneficial owners of Notes and their advisers who have signed non-disclosure agreements in a form satisfactory to the Company (acting reasonably), subject to a cleansing mechanism to be separately agreed by the Company and the advisers of the beneficial owners of Notes, a plan addressing the capital structure constraints of the Company and its consolidated group approved by the Company’s Board of Directors;

-
- (d) provide access to meetings or calls with those beneficial owners of Notes and their advisers who have signed non-disclosure agreements in a form satisfactory to the Company (acting reasonably), subject to a cleansing mechanism to be separately agreed by the Company and the advisers of the beneficial owners of Notes, to discuss overall progress in respect of the capital structure constraints of the Company and its consolidated group no less than every two weeks; and
 - (e) deliver to the Trustee within five Business Days of the end of each calendar month written confirmation as to whether the aggregate amount of cash, Cash Equivalents and the amount under committed credit facilities which is available to be drawn by the Company and the members of its consolidated group is greater than \$175,000,000 (or its equivalent in other currencies) as at the end of each calendar month.”.

ARTICLE 3

Section 3.01. Except as specifically modified herein, the Indenture and the Notes are in all respects ratified and confirmed (*mutatis mutandis*) and shall remain in full force and effect in accordance with their terms with all capitalized terms used herein without definition having the same respective meanings ascribed to them as in the Indenture, and the Guarantors hereby become parties to the previous Supplemental Indentures to the extent not already parties thereto.

Section 3.02. Except as otherwise expressly provided herein, no duties, responsibilities or liabilities are assumed, or shall be construed to be assumed, by the Trustee by reason of this Third Supplemental Indenture. This Third Supplemental Indenture is executed and accepted by the Trustee subject to all the terms and conditions set forth in the Indenture with the same force and effect as if those terms and conditions were repeated at length herein and made applicable to the Trustee with respect hereto.

The Company and each Guarantor each represents and warrants to the Trustee that this Third Supplemental Indenture has been duly and validly executed and delivered by it and constitutes its legal, valid and binding obligations, enforceable against it in accordance with its terms.

The Trustee shall not be responsible or accountable in any way whatsoever for or with respect to the validity, execution (by any party other than the Trustee) or sufficiency of this Third Supplemental Indenture and makes no representation with respect thereto.

Section 3.03. THE LAW OF THE STATE OF NEW YORK SHALL GOVERN AND BE USED TO CONSTRUE AND ENFORCE THIS THIRD SUPPLEMENTAL INDENTURE.

Section 3.04. The parties may sign any number of copies of this Third Supplemental Indenture. Each signed copy shall be an original, but all of such executed copies together shall represent the same agreement.

[NEXT PAGE IS SIGNATURE PAGE]

IN WITNESS WHEREOF, the parties hereto have caused this Third Supplemental Indenture to be duly executed, all as of the date first written above.

CGG S.A.

By /s/ Jean-Georges Malcor

Name: Jean-Georges Malcor

Title: CEO

[signature page to Third Supplemental Indenture (2022 Notes)]

THE GUARANTORS

CGG Holding B.V.

By /s/ Beatrice Place-Faget

Name: Beatrice Place-Faget

Title: Managing Director

[signature page to Third Supplemental Indenture (2022 Notes)]

CGG MARINE B.V.

By /s/ Agatha Cottin

Name: Agatha Cottin

Title: Managing Director

[signature page to Third Supplemental Indenture (2022 Notes)]

By /s/ Marianne Lefdal

Name: Marianne Lefdal

Title: Chairman of the Board of Directors

[signature page to Third Supplemental Indenture (2022 Notes)]

CGG HOLDING (U.S.) INC.

By /s/ Vincent Thielen

Name: Vincent Thielen

Title: SVP Treasurer

[signature page to Third Supplemental Indenture (2022 Notes)]

CGG SERVICES (U.S.) INC.

By /s/ Vincent Thielen

Name: Vincent Thielen

Title: SVP Treasurer

[signature page to Third Supplemental Indenture (2022 Notes)]

CGG LAND (U.S.) INC.

By /s/ Vincent Thielen

Name: Vincent Thielen

Title: SVP Treasurer

[signature page to Third Supplemental Indenture (2022 Notes)]

VIKING MARITIME INC.

By /s/ Vincent Thielen

Name: Vincent Thielen

Title: SVP Treasurer

[signature page to Third Supplemental Indenture (2022 Notes)]

ALITHEIA RESOURCES INC.

By /s/ Vincent Thielen

Name: Vincent Thielen

Title: SVP Treasurer

[signature page to Third Supplemental Indenture (2022 Notes)]

CGG CANADA SERVICES LTD.

By /s/ Meng Meng Wang _____

Name: Meng Meng Wang

Title: Secretary and Treasurer

[signature page to Third Supplemental Indenture (2022 Notes)]

By /s/ S. Boast

Name: S. Boast

Title: Director

[signature page to Third Supplemental Indenture (2022 Notes)]

CGG HOLDING II (UK) LIMITED

By /s/ S. Boast

Name: S. Boast

Title: Director

[signature page to Third Supplemental Indenture (2022 Notes)]

SERCEL, INC.

By /s/ Pascal Rouiller

Name: Pascal Rouiller

Title: CEO

[signature page to Third Supplemental Indenture (2022 Notes)]

SERCEL-GRC CORP.

By /s/ Richard Kelly

Name: Richard Kelly

Title: Treasurer & Company Secretary

[signature page to Third Supplemental Indenture (2022 Notes)]

SERCEL CANADA LTD.

By /s/ Pascal Rouiller

Name: Pascal Rouiller

Title: President

[signature page to Third Supplemental Indenture (2022 Notes)]

Executed in accordance with section 127
of the *Corporations Act* 2001 by Sercel

AUSTRALIA PTY LTD:

/s/ Pascal Rouiller

Director Signature

Pascal Rouiller

Print Name

/s/ Valérie Féry-Norris

Director Signature

Valérie Féry-Norris

Print Name

[signature page to Third Supplemental Indenture (2022 Notes)]

THE BANK OF NEW YORK MELLON, as Trustee

By /s/ Catherine F. Donohue

Name: Catherine F. Donohue

Title: Vice President

[signature page to Third Supplemental Indenture (2022 Notes)]

List of CGG subsidiaries (March 31, 2017)

(Certain dormant or small subsidiaries of the Group have not been included in the list below)

<u>French Companies</u>	<u>Head Office</u>	<u>% of interest</u>
CGG Services SAS	Massy, France	100.0
CGG Explo SARL	Massy, France	100.0
Geomar SAS	Massy, France	100.0
Sercel Holding SAS	Carquefou, France	100.0
Sercel SAS	Carquefou, France	100.0
<u>Foreign Companies</u>	<u>Head Office</u>	<u>% of interest</u>
CGG Holding BV	The Hague, Netherlands	100.0
CGG Marine BV	The Hague , Netherlands	100.0
CGG Data Management (Netherlands) BV	Montfoort, Netherlands	100.0
CGG Services (NL) BV	The Hague, Netherlands	100.0
CGG International SA	Geneva, Switzerland	100.0
CGG Data Services AG	Zug, Switzerland	100.0
CGG Marine Resources Norge AS	Oslo, Norway	100.0
CGG Geo Vessels AS	Oslo, Norway	100.0
CGG Services (Norway) AS	Oslo, Norway	100.0
Exploration Investment Resources II AS	Oslo, Norway	100.0
Exploration Vessel Resources II AS	Oslo, Norway	100.0
CGG Services (UK) Limited	Crawley, United Kingdom	100.0
CGG Data Management (UK) Limited	Crawley, United Kingdom	100.0
Robertson (UK) Limited	Crawley, United Kingdom	100.0
Robertson GeoSpec International Limited	Crawley, United Kingdom	100.0
CGG Holding I (UK) Limited	Crawley, United Kingdom	100.0
CGG Holding II (UK) Limited	Crawley, United Kingdom	100.0
CGG Holding III (UK) Limited	Crawley, United Kingdom	100.0
CGG do Brasil Participações Ltda	Rio do Janeiro, Brazil	100.0
Veritas do Brasil Ltda	Rio do Janeiro, Brazil	100.0
LASA Prospeccoes SA	Rio do Janeiro, Brazil	100.0
CGG Mexico, SA de CV	Mexico City, Mexico	100.0
Geoinnovation Corporativa S. de RL de CV	Mexico City, Mexico	100.0
CGG Holding (U.S.) Inc.	Houston, United States	100.0
CGG Services (U.S.) Inc.	Houston, United States	100.0
CGG Land (U.S.) Inc.	Houston, United States	100.0
Viking Maritime Inc.	Houston, United States	100.0
CGG Canada Services Ltd	Calgary, Canada	100.0
CGG Services (Canada) Inc.	Calgary, Canada	100.0
CGG Services (Australia) Pty Ltd	Perth, Australia	100.0
CGG Aviation (Australia) Pty Ltd	Perth, Australia	100.0
PT CGG Services Indonesia	Jakarta, Indonesia	95.0
CGG Services India Private Ltd	Navi Mumbai, India	100.0
CGG Technology Services (Beijing) Co. Ltd	Beijing, China	100.0
CGG Geoscience (Beijing) Ltd	Beijing, China	100.0
CGG Services (Singapore) Pte Ltd	Singapore	100.0
CGG Services (Malaysia) Sdn Bhd	Kuala Lumpur, Malaysia	100.0
CGG Vostok	Moscow, Russia	100.0
Compagnie Générale de Géophysique (Nigeria) Ltd	Lagos, Nigeria	100.0

<u>French Companies</u>	<u>Head Office</u>	<u>% of interest</u>
Veritas Geophysical (Nigeria) Ltd	Lagos, Nigeria	100.0
CGG Airborne Survey (Pty) Ltd	Sandton, South Africa	100.0
Sercel England Ltd	Edinburgh, United Kingdom	100.0
Sercel-GRC	Tulsa, United States	100.0
Sercel Inc.	Houston, United States	100.0
Sercel Canada Ltd	Calgary, Canada	100.0
Sercel Australia Pty Ltd	Sydney, Australia	100.0
Hebei Sercel-Junfeng Geophysical Prospecting Equipment Co. Ltd	Hebei ,China	51.0
Sercel (Beijing) Technological Services Co. Ltd	Beijing, China	100.0
Sercel Singapore Pte Ltd	Singapore	100.0
De Regt Marine Cables BV	Krimpen Aan de Lek, Netherlands	100.0
De Regt Germany GmbH	Dortmund, Germany	100.0

Each of our subsidiaries listed above is organised in the country in which its head office is located, and each such subsidiary does business under its registered name.

I, Jean-Georges Malcor, Chief Executive Officer of the company, certify that:

1. I have reviewed this annual report on Form 20-F of CGG;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the company as of, and for, the periods presented in this report;
4. The company' s other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f) for the company and have:
 - a) designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the company, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - b) designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - c) evaluated the effectiveness of the company' s disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - d) disclosed in this report any change in the company' s internal control over financial reporting that occurred during the period covered by the annual report that has materially affected, or is reasonably likely to materially affect, the company' s internal control over financial reporting; and
5. The company' s other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the company' s auditors and the audit committee of the company' s board of directors (or persons performing the equivalent functions):
 - a) all significant deficiencies and material weaknesses in the design or operation of internal controls over financial reporting which are reasonably likely to adversely affect the company' s ability to record, process, summarize and report financial information; and
 - b) any fraud, whether or not material, that involves management or other employees who have a significant role in the company' s internal controls over financial reporting.

Date: May 1, 2017

By:

/s/ Jean-Georges Malcor

Jean-Georges Malcor
Chief Executive Officer

I, Stéphane-Paul Frydman, Chief Financial Officer of the company, certify that:

1. I have reviewed this annual report on Form 20-F of CGG;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the company as of, and for, the periods presented in this report;
4. The company' s other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f) for the company and have:
 - a) designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the company, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - b) designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles ;
 - c) evaluated the effectiveness of the company' s disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - d) disclosed in this report any change in the company' s internal control over financial reporting that occurred during the period covered by the annual report that has materially affected, or is reasonably likely to materially affect, the company' s internal control over financial reporting; and.
5. The company' s other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the company' s auditors and the audit committee of the company' s board of directors (or persons performing the equivalent functions):
 - a) all significant deficiencies and material weaknesses in the design or operation of internal controls over financial reporting which are reasonably likely to adversely affect the company' s ability to record, process, summarize and report financial information; and
 - b) any fraud, whether or not material, that involves management or other employees who have a significant role in the company' s internal controls over financial reporting.

Date: May 1, 2017

By: /s/ Stéphane-Paul Frydman

Stéphane-Paul Frydman
Chief Financial Officer

Written Statement of the Chief Executive Officer

pursuant to 18 U.S.C. §1350

Solely for the purposes of complying with 18 U.S.C. §1350, I, the undersigned Chief Executive Officer of CGG (the “Company”), hereby certify, based on my knowledge, that the Annual Report on Form 20-F of the Company for the year ended December 31, 2016 (the “Report”) fully complies with the requirements of Section 13(a) of the Securities Exchange Act of 1934 and that information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

/s/ Jean-Georges Malcor

By: Jean-Georges Malcor
Chief Executive Officer

May 1, 2017

A signed original of this written statement required by Section 906 has been provided to CGG and will be retained by CGG and furnished to the Securities and Exchange Commission or its staff upon request.

Written Statement of the Chief Financial Officer pursuant to 18 U.S.C. §1350

Solely for the purposes of complying with 18 U.S.C. §1350, I, the undersigned Chief Financial Officer of CGG (the “Company”), hereby certify, based on my knowledge, that the Annual Report on Form 20-F of the Company for the year ended December 31, 2016 (the “Report”) fully complies with the requirements of Section 13(a) of the Securities Exchange Act of 1934 and that information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

/s/ Stéphane-Paul Frydman

By: Stéphane-Paul Frydman
Chief Financial Officer

May 1, 2017

A signed original of this written statement required by Section 906 has been provided to CGG and will be retained by CGG and furnished to the Securities and Exchange Commission or its staff upon request to the Securities and Exchange Commission or its staff upon request.

Consent of Independent Registered Public Accounting Firm

We consent to the incorporation by reference in the following Registration Statements:

- (1) Registration Statement (Form S-8 No. 333-212796) pertaining to the CGG 2016 Stock Option Plan, and
- (2) Registration Statement (Form S-8 No. 333-210768) pertaining to the CGG 2015 Stock Option Plan, and
- (3) Registration Statement (Form S-8 No. 333-197785) pertaining to the CGG 2013 Stock Option Plan and the CGG 2014 Stock Option Plan, and
- (4) Registration Statement (Form S-8 No. 333-188120) pertaining to the Compagnie Générale de Géophysique-Veritas 2012 Stock Option Plan and the Compagnie Générale de Géophysique-Veritas 2012 Performance Share Allocation Plan, and
- (5) Registration Statement (Form S-8 No. 333-173638) pertaining to the Compagnie Générale de Géophysique-Veritas 2011 Stock Option Plan and the Compagnie Générale de Géophysique-Veritas 2011 Performance Share Allocation Plan, and
- (6) Registration Statement (Form S-8 No. 333-166250) pertaining to the Compagnie Générale de Géophysique-Veritas 2010 Stock Option Plan and the Compagnie Générale de Géophysique-Veritas 2010 Performance Share Allocation Plan, and
- (7) Registration Statement (Form S-8 No. 333-158684) pertaining to the Compagnie Générale de Géophysique-Veritas 2009 Stock Option Plan and the Compagnie Générale de Géophysique-Veritas 2009 Performance Share Plan,

of our reports dated May 1, 2017, with respect to the consolidated financial statements of CGG and the effectiveness of internal control over financial reporting of CGG included in its Annual Report (Form 20-F) for the year ended December 31, 2016 filed with the Securities and Exchange Commission.

Paris La Défense, France
May 1, 2017

/s/ERNST & YOUNG et Autres