

SECURITIES AND EXCHANGE COMMISSION

FORM 10-K405

Annual report pursuant to section 13 and 15(d), Regulation S-K Item 405

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FILER

OPTICAL SENSORS INC

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SIC: 3841 Surgical & medical instruments & apparatus

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UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 10-K

(Mark one)

[X] ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the Fiscal Year Ended December 31, 1998

[] TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the transition period from _____ to _____.

Commission File No. 0-27600

OPTICAL SENSORS INCORPORATED
(Exact name of registrant as specified in its charter)

Delaware 41-164359
(State or other jurisdiction of (I.R.S. Employer
incorporation or organization) Identification No.)

7615 Golden Triangle Drive
Suite A
Minneapolis, Minnesota 55344-3733
(Address of principal executive offices) (Zip code)

Registrant's telephone number, including area code: (612) 944-5857

Securities registered pursuant to Section 12(b) of the Act: None

Securities registered pursuant to Section 12(g) of the Act:

Common Stock, \$.01 par value
Preferred Share Purchase Rights

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 [X] NO []

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of Registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. [X]

As of March 1, 1999, 8,841,123 shares of Common Stock of the Registrant were outstanding, and the aggregate market value of the Common Stock of the Registrant as of that date (based upon the last reported sale price of the Common Stock at that date as reported by the Nasdaq National Market System), excluding outstanding shares beneficially owned by directors and executive officers, was \$11,720,041.

DOCUMENTS INCORPORATED BY REFERENCE

Part III of this Annual Report on Form 10-K incorporates by reference information (to the extent specific sections are referred to herein) from the Registrant's Proxy Statement for its 1999 Annual Meeting to be held May 6, 1999 (the "1999 Proxy Statement").

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PART I

This Form 10-K contains certain forward-looking statements. For this purpose, any statements contained in this Form 10-K that are not statements of historical fact may be deemed to be forward-looking statements. Without limiting

the foregoing, words such as "may," "will," "expect," "believe," "anticipate," "estimate" or "continue" or comparable terminology are intended to identify forward-looking statements. These statements by their nature involve substantial risks and uncertainties, and actual results may differ materially depending on a variety of factors, including those set forth in the section below entitled "Certain Important Factors."

Item 1. BUSINESS.

General

Optical Sensors Incorporated (the "Company") has developed the SensiCath system, a patient-connected, on-demand arterial blood gas ("ABG") monitoring system, which provides precise and accurate ABG results within 60 seconds without exposure to potentially infectious blood or depleting the patient's blood supply (the "SensiCath System"). ABG tests measure oxygen ("O₂"), carbon dioxide ("CO₂") and acid-base ("pH") in a sample of blood taken from a patient's artery. These tests, which are among the most frequently ordered and most urgently needed tests for critically ill and unstable patients, are the foremost indicators of the body's ability to absorb and use oxygen. Results of ABG tests provide a basis for medical treatment and intervention and are required to accurately regulate the patient's respiratory support system. The Company believes that the SensiCath System is the first ABG analyzer to be integrated into both an arterial pressure monitoring line and a critical care patient monitoring system. The SensiCath System utilizes a disposable, fiberoptic sensor device (the "SensiCath Sensor") connected to a small modular instrument (the "ABG Module") that is part of the Company's OpticalCAM instrumentation ("OpticalCAM"). The SensiCath System is able to either stand alone or interface with various monitoring platforms. Because of the need to conserve resources, in January 1999, the Company suspended direct sales activity of the SensiCath System and reduced associated expenses.

In July 1998, the Company entered into a patent license agreement with the Institute of Critical Care Medicine ("ICCM"), headed by distinguished intensive care medicine specialist Max Harry Weil, M.D., Ph D. The license agreement provides the Company with the exclusive, worldwide right under ICCM's pending and issued patents to use the Company's technology to assess tissue perfusion under the tongue (sublingually) and in the esophagus to aid in the diagnosis and monitoring of shock. Generalized inadequacy of tissue perfusion is the hallmark of clinical shock. Diagnosis of shock may be difficult in its early stages when the signs and symptoms are masked by the body's natural compensatory mechanisms that preserve blood supply to vital organs by reducing blood flow to other organs. If treatment is delayed to the point that the body's compensatory systems can no longer maintain adequate circulation and vital tissue perfusion, the consequences can be disastrous for the patient. To date, there has been no rapid, low-cost, noninvasive method to objectively determine when a patient has inadequate tissue perfusion and is in early shock. The Company is currently developing the CapnoProbe SL, which is a handheld device with a CO₂ probe that is slipped under the tongue like a thermometer. It non-invasively measures the tissue CO₂ of the mucous membrane in the mouth - a sensitive measure that can indicate early clinical shock, even when traditional vital signs may still appear relatively normal, as in compensated shock cases. According to the Wilkerson Group, a leading market research organization, the U.S. market potential for the CapnoProbe is more than \$300 million in the emergency department and intensive care markets alone. In December 1998, the Company filed a 510(k) for FDA clearance of the CapnoProbe SL as a Class II medical device. Prototype versions of the CapnoProbe system are

currently being evaluated at clinical sites in the United States. The Company has completed set up of one manufacturing pod for manual assembly of the prototype probes and finished preliminary plans for automated probe assembly. The Company projects that the product will be available for commercialization in the first quarter of 2000.

In October 1998, the Company implemented a strategic plan to focus its corporate resources on development and commercialization of the CapnoProbe and initiated a workforce reduction of approximately twenty percent. The Company continued its plan to focus on the CapnoProbe in January 1999 by further reducing its workforce, suspending direct sales activity of the SensiCath System and reducing associated expenses. The Company currently has approximately 30 full-time and two part-time employees. In January 1999, the Company also announced that it had engaged Volpe Brown Whelan & Company, LLC, to serve as financial advisor to the Company. The Company is working with Volpe Brown Whelan to explore strategic alternatives, including joint ventures, corporate strategic alliances, sale of the business or product lines, or other business combinations. The Company also exercised its right to convert Instrumentation Laboratory Company ("IL") to a non-exclusive distributor of the SensiCath System in January 1999. The Company does not expect meaningful sales of the SensiCath System in the future.

The Company was incorporated in Minnesota in May 1989 and reincorporated

in Delaware in January 1996. The Company's executive offices are located at 7615 Golden Triangle Drive, Suite A, Minneapolis, Minnesota 55344, and its telephone number is (612) 944-5857.

SensiCath System

The SensiCath System is able to interface with various monitoring platforms, including monitoring systems produced and installed by Marquette Medical Systems, Inc., SpaceLabs Medical, Inc., and the Hewlett-Packard Company. In addition, the OpticalCam provides stand-alone instrumentation capability for the SensiCath System, operating independently of any other monitoring equipment. The SensiCath Sensor contains three optical fibers with fluorescent chemistries for sensing O₂, CO₂ and pH. The disposable, single-patient sensor has been designed to provide accurate ABG data for the 144-hour approved period of use. The ABG Module is the source and receptor of optical signals, provides signal processing and communicates with other components in the monitoring system.

The fiberoptic sensors are located outside the patient's artery (paracorporeal) as a part of an existing arterial pressure monitoring line which is secured to the patient's forearm. The integration of the SensiCath Sensor with an existing arterial line and a bedside monitoring system enables the health care provider to provide integrated bedside management of rapid changes in the patient's cardiopulmonary status. The closed-loop system of the SensiCath Sensor and the arterial line eliminates blood loss and blood exposure resulting from traditional ABG analysis.

The SensiCath Sensor is attached to the standard arterial line already in place on critically ill patients. A standard line includes an arterial cannula, pressure monitoring tubing and pressure transducer. The arterial line is constantly filled with saline or other physiologic solution as part of its function as a pressure monitor. The SensiCath Sensor is added to the arterial line in a flow-through configuration which does not disrupt the arterial pressure waveform or interfere with fluid delivery. Unlike electrochemical ABG analyzers, the SensiCath System needs to be calibrated only once at the outset of its use. The calibration procedure takes approximately five minutes and requires only two small pouches of initialization fluid which are included with the SensiCath Sensor.

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The SensiCath System is then ready to provide ABG measurements. To take an ABG measurement, the health care provider pushes a button on the bedside monitor and draws blood past the sensor. A tone from the monitor signals the health care provider to return the blood to the patient and flush the line. The ABG results then appear on the monitor screen within 60 seconds. The time-consuming and complicated process of removing, handling and analyzing a blood sample, all of which can contribute to delayed and inaccurate results, is unnecessary with the SensiCath System.

The CapnoProbe

The CapnoProbe SL is a handheld device with a CO₂ probe that is slipped under the tongue like a thermometer that non-invasively measures the tissue CO₂ of the mucous membrane in the mouth - a sensitive measure that can indicate early clinical shock, even when traditional vital signs may still appear relatively normal, as in compensated shock cases. According to the Wilkerson Group, a leading market research organization, the U.S. market potential for the CapnoProbe is more than \$300 million in the emergency department and intensive care markets alone. In December 1998, the Company filed a 510(k) for FDA clearance of the CapnoProbe SL as a Class II medical device. The CapnoProbe SL's disposable CO₂ probe is self-calibrating and is planned to provide CO₂ readings in less than one minute. One CapnoProbe sensor will be used on one patient for a single measurement. Multiple measurements would be made depending on the severity of the patient's state and response to therapy. The CapnoProbe instrument will be portable, rugged and battery operated. The Company is using its proven designs from its existing OpticalCAM blood analyte monitor and the CO₂ component of its SensiCath blood gas sensor to reduce technical risk in the program and to speed development to market. No new research is required for the product and all milestones to commercialization are engineering related. Prototype versions of the CapnoProbe system are currently being evaluated at clinical sites in the United States.

Sales and Marketing

During 1998, the Company's principal distribution channel for its products was through IL. In January 1998, the Company entered into an agreement with IL for worldwide distribution of the Company's SensiCath Sensors and OpticalCAM instrumentation. IL was required to purchase sufficient quantities of products from the Company that would result in preestablished annual minimum revenues to the Company. IL failed to meet the quota requirements for 1998, and, accordingly, the Company exercised its right to convert IL's exclusive right to

a non-exclusive right in January 1999. During 1998, the Company also maintained a sales and marketing staff. In January 1999, the Company suspended sales activity of the SensiCath system and reduced expenses and personnel (including sales and marketing personnel) in order to concentrate its resources on the CapnoProbe. The Company does not expect meaningful sales of the SensiCath System in the future.

The Company is currently working with Volpe Brown Whelan & Company, LLC to explore strategic alternatives, including joint ventures, corporate strategic alliances, sale of the business or product lines, or other business combinations. One of the strategic alternatives could include a distribution partner for the CapnoProbe.

Research and Development

The Company's research and development staff is currently focusing on the design and development of the CapnoProbe technology. There can be no assurance that the Company will be able to successfully develop the CapnoProbe product on a timely basis or at all. During 1998, the Company's research and development activities related to improvements to the SensiCath System, including

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modifications to reduce set-up and calibration time for the system, design and analysis of new sensors to measure additional blood analytes and design of cost reduction programs. The Company's research and development expenses for the fiscal years ended December 31, 1998, 1997 and 1996 were \$4,248,029, \$4,975,037 and \$5,632,458, respectively. The Company anticipates that it will continue to spend significant amounts on research and development activities for the foreseeable future.

Manufacturing and Supply

The Company manufactures the SensiCath Sensor at its facility in Minneapolis, Minnesota, which includes approximately 4,000 square feet of manufacturing space. The FDA conducted a scheduled good manufacturing practices ("GMP") inspection of the Company's manufacturing facility in November 1997, and the Company has passed the inspection. The Company has also received ISO 9001 certification for its manufacturing facility. The SensiCath Sensors are manufactured in a unique, reproducible process. The finished device is packaged and sterilized prior to being shipped.

The Company purchases components from various suppliers and relies on single sources for the OpticalCAM monitor, as well as a few key components. To date, the Company has qualified only single sources for certain purchased components of the Company's unique optical platform. While the Company believes that alternate suppliers are available and can be approved in accordance with the Company's vendor qualification procedures, identifying and qualifying such vendors could cause a delay in production of the Company's products. Any such delay could have a material adverse effect on the Company. In addition, the ABG Module is currently manufactured solely by Marquette Medical Systems, Inc.

The Company has not yet established commercial manufacturing for the CapnoProbe.

Competition

Competition in the medical device industry in general and the ABG analyzer market in particular is intense and expected to increase. The Company believes that the principal competitive factors for ABG analyzers and monitors are accuracy, rapid results, cost-effectiveness, integration with bedside monitors, reduction of blood loss and exposure, and price. Several other point-of-care or near-patient blood gas testing manufacturers have commercially available products, including AVL Scientific Corp., i-STAT Corporation, Diametrics Medical, Inc., SenDx Medical Inc. and VIA Medical, Inc. In addition, some manufacturers of laboratory equipment are marketing "mobile" versions of traditional blood gas testing equipment. The Company also expects that manufacturers of central and satellite laboratory testing equipment will compete to maintain their revenues and market share. Most of the Company's competitors have significantly greater financial, technical, research, marketing, sales, distribution and other resources than the Company. There can be no assurance that the Company's competitors will not succeed in developing or marketing technologies and products that are more effective or less expensive than those developed or marketed by the Company or that would render the Company's technology and products obsolete or noncompetitive. Furthermore, there can be no assurance that the emergence of new products, technologies or procedures will not reduce the need for ABG analysis.

To the Company's knowledge, there are no commercially available products that would be directly competitive with the CapnoProbe. Indirect competition is

seen in The Datex-Ohmeda (Instrumentarian Corporation) TONOCAP system. This product measures CO₂ in the tissue of the stomach wall as an indicator of shock and has only recently been introduced to critical care medicine. The TONOCAP system requires placement of a balloon catheter into the stomach and measures air from

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the balloon at regular intervals. However, the administration of a histamine-2 receptor (e.g., Tagamet) and a stomach free of food are required for accurate measurements, making this a difficult product to use in emergency situations where it is most needed. Even with its limitations, there is a growing body of literature that reinforces the importance of measuring gastrointestinal CO₂ as a method of diagnosing shock since there is evidence that if elevated CO₂ cannot be reversed within six to twenty four hours, aggressive treatment will not be effective.

Patents and Proprietary Rights

The Company seeks to protect technology, inventions and improvements that it considers important through the use of patents and trade secrets. The Company currently holds 17 U.S. patents and has filed a number of patent applications in the United States, Japan and key European countries. There can be no assurance, however, that the Company's patents will provide competitive advantages for the Company's products, or that such rights will not be challenged or circumvented by competitors. In addition, there can be no assurance that any pending patent applications will issue. Claims made under patent applications may be denied or significantly narrowed and the issued patents, if any, may not provide significant commercial protection to the Company. The Company could incur substantial costs in proceedings before the U.S. Patent and Trademark Office, including interference proceedings. These proceedings could result in adverse decisions as to the priority of the Company's inventions.

In July 1998, the Company entered into a patent license agreement with the ICCM, which provides the Company with the exclusive, worldwide right under ICCM's pending and issued patents to use the Company's technology to assess tissue perfusion under the tongue (sublingually) and in the esophagus to aid in the diagnosis and monitoring of shock. The CapnoProbe product being developed by the Company is expected to be subject to royalties under the license agreement. The Company is obligated to pay ICCM a minimum annual royalty of \$300,000 for five years in order to maintain exclusivity. The Company may elect, on one year's written notice, not to make the annual minimum royalty payment of \$300,000, but ICCM would have the right to terminate the license agreement. The Company is obligated to pay ICCM a customary royalty equal to a percentage of sales, which varies depending on the selling price to the customer of the CapnoProbe. The Company is also obligated to meet certain product development milestones under the license agreement.

While the Company does not believe that any of its products infringe any valid claims of patents or other proprietary rights held by third parties, there can be no assurance that the Company does not infringe any patents or other proprietary rights held by third parties. If an infringement claim was made, the costs incurred to defend the claim could be substantial and adversely affect the Company, even if the Company were ultimately successful in defending the claim. If the Company's products were found to infringe any proprietary right of a third party, the Company could be required to pay significant damages or license fees to the third party or cease production. Litigation may also be necessary to enforce patent rights held by the Company, or to protect trade secrets or techniques owned by the Company. Any such claims or litigation could result in substantial costs and diversion of effort by management of the Company.

The Company also relies on trade secrets and other unpatented proprietary technology. There can be no assurance that the Company can meaningfully protect its rights in such unpatented proprietary technology or that others will not independently develop substantially equivalent proprietary products or processes or otherwise gain access to the Company's proprietary technology. The Company seeks to protect its trade secrets and proprietary know-how, in part, with confidentiality agreements with employees and consultants. There can be no assurance that the agreements will not be breached, that the

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Company will have adequate remedies for any breach or that the Company's trade secrets will not otherwise become known to or independently developed by competitors.

SensiCath(R), OpticalCAM(TM), and CapnoProbe(TM) are trademarks of the Company.

The Company's products, development activities and manufacturing processes are subject to regulation by numerous governmental authorities, principally the United States Food and Drug Administration ("FDA") and corresponding foreign agencies. In the United States, the FDA administers the Federal Food, Drug and Cosmetics Act and amendments thereto, including the Safe Medical Devices Act of 1990. The Company is subject to the standards and procedures respecting manufacture and marketing of medical devices contained in the Federal Food, Drug and Cosmetics Act and the regulations promulgated thereunder and is subject to inspection by the FDA for compliance with such standards and procedures. Noncompliance with applicable requirements can result in, among other things, fines, injunctions, civil penalties, recall or seizure of products, total or partial suspension of production, failure of the government to grant premarket clearance or premarket approval for devices, withdrawal of marketing approvals and criminal prosecution.

In the United States, medical devices are classified into one of three classes (class I, II or III), on the basis of the controls deemed necessary by the FDA to reasonably assure their safety and effectiveness. Under FDA regulations, class I devices are subject to general controls (e.g., labeling, premarket notification and adherence to good manufacturing practices) and class II devices are subject to general and special controls (e.g., performance standards, postmarket surveillance, patient registries and FDA guidelines). In general, class III devices (e.g., life-sustaining, life-supporting and implantable devices, or new devices which have not been found substantially equivalent to a legally marketed device), in addition to being subject to general and special controls, must receive premarket approval ("PMA") by the FDA to ensure their safety and effectiveness.

Before a new or significantly modified device can be introduced into the market, the manufacturer must generally obtain marketing clearance through a 510(k) notification or approval of a PMA application. A 510(k) clearance will be granted if the proposed device is "substantially equivalent" to a predicate device (i.e., a legally marketed class I or class II medical device, or a class III medical device for which the FDA has not called for the submission of a PMA application). Commercial distribution of a device for which a 510(k) notification is required can begin only after the FDA issues a written determination that the device is "substantially equivalent" to a predicate device. The process of obtaining a 510(k) clearance typically can take several months to a year or longer. A PMA application must be filed if a proposed device is not substantially equivalent to a legally marketed class I or class II device, or if it is a class III device for which the FDA has called for a PMA application. Certain class III devices that were on the market before May 28, 1976 ("preamendments class III devices"), and devices that are substantially equivalent to them, can be brought to market through the 510(k) process until the FDA calls for the submission of PMA applications for preamendments class III devices. The process of obtaining a PMA can be expensive, uncertain and lengthy, frequently requiring anywhere from one to several years from the date the PMA is submitted to the FDA, if approval is obtained at all.

The Company has received 510(k) clearance to market the SensiCath System and the OpticalCAM monitor from the FDA. In December 1998, the Company submitted a 510(k) for the

CapnoProbe, but has not yet received clearance to market. There can be no assurance that this or any other future 510(k) submissions will be cleared by the FDA on a timely basis, if at all.

The Company is also subject to regulation in each of the foreign countries in which it sells its products with regard to product standards, packaging requirements, labeling requirements, import restrictions, tariff regulations, duties and tax requirements. Many of the regulations applicable to the Company's products in such countries are similar to those of the FDA. The national health or social security organizations of certain of such countries require the Company's products to be qualified before they can be marketed in those countries. Delays in receipt of, or a failure to receive such approvals or clearances, or the loss of any previously received approvals or clearances, could have a material adverse effect on the Company. To date, the Company has not experienced significant difficulty in complying with these regulations. In February 1997, the Company received the European Medical Devices Directorate ("MDD") approval to place the "CE" mark on its products. The CE mark enables the Company's products to be marketed, sold and used throughout the European Union, subject to limited "safeguard" powers of member states.

The Company is subject to periodic inspections by the FDA, which is charged with auditing the Company's compliance with good manufacturing practices ("GMP") established by the FDA and other applicable government standards. The

Company is also subject to inspections by the MDD and other European regulatory agencies. Strict regulatory action may be initiated in response to audit deficiencies or to product performance problems. The Company believes that its manufacturing and quality control procedures are in compliance with the requirements of the FDA and MDD regulations. The Company's manufacturing facilities and processes are also subject to periodic inspection and review by its Notified Body in conjunction with the Company's ISO 9001 certification. Failure to maintain GMP and ISO 9001 certifications could have a material adverse effect on the Company.

Employees

The Company currently has approximately 30 full-time and two part-time employees. No employees are covered by collective bargaining agreements, and the Company considers its relationship with its employees to be good.

Item 2. PROPERTIES.

The Company's facilities are located at 7615 Golden Triangle Drive, Minneapolis, Minnesota, and consist of approximately 23,364 square feet. The Company leases these facilities pursuant to a lease that expires on November 30, 1999. The lease provides for rent of approximately \$20,800 per month, including base rent and a pro rata share of operating expenses and real estate taxes. The Company believes it will be able to renew this lease if necessary.

Item 3. LEGAL PROCEEDINGS.

There are no material pending or threatened legal, governmental, administrative or other proceedings to which the Company is a party or of which any of its property is subject.

Item 4. SUBMISSION OF MATTERS TO A VOTE OF SECURITY HOLDERS.

No matter was submitted to a vote of security holders during the fourth quarter of the fiscal year covered by this Report.

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Item 4a. EXECUTIVE OFFICERS OF THE COMPANY.

The executive officers of the Company, their ages and the offices held, as of March 1, 1999, are as follows:

Name	Age	Title
Paulita M. LaPlante	41	President and Chief Executive Officer
Byron (Buzz) Moran	56	General Manager, Non-Invasive Systems
Wesley G. Peterson	51	Chief Financial Officer, Vice President of Finance and Administration and Secretary
Victor Kimball	35	Vice President, Strategic Planning and Product Development
James H. Quackenbush	40	Vice President, Manufacturing and Operations

Information regarding the business experience of the executive officers of the Company is set forth below.

Paulita M. LaPlante has been the President and a Director of the Company since September 1998 and Chief Executive Officer of the Company since December 1998. From June 1994 to September 1998, Ms. LaPlante served as the Company's Vice President of Worldwide Sales, Marketing and Business Development and was Director of Marketing and Business Development from April 1992 to June 1994. She also served as the Company's interim Vice President of Research and Development from January 1994 to September 1994. From 1986 to April 1992, Ms. LaPlante held a variety of positions with American Medical Systems, Inc., including Manager for Prostate Products, Manager of New Business Development and Manager of Worldwide Technical Training.

Byron (Buzz) Moran has been the Company's General Manager, Non-Invasive Systems since December 1998 and from September 1994 to December 1998 was the Company's Vice President of Research and Development and Operations. From January 1985 to August 1994, Mr. Moran held several management positions, including Vice President and General Manager and Vice President of Research and Development, for Spectramed Incorporated, a medical device manufacturer which is a subsidiary of British Oxygen Corporation.

Wesley G. Peterson has been the Company's Chief Financial Officer since January 1992, Vice President of Finance and Administration since June 1994 and Secretary since July 1992. He was also Director of Finance and Administration from January 1992 to June 1994. From December 1986 to December 1991, Mr. Peterson was the Vice President of Finance and Administration for CIMA Labs, Inc., a manufacturer and distributor of pharmaceuticals based in Minneapolis, Minnesota.

Victor Kimball has been the Company's Vice President, Strategic Planning and Product Development since December 1998. From June 1997 to October 1998, Mr. Kimball was Director of Engineering and Business Development and from January 1995 to June 1997, he was Director of

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Engineering. From June 1992 to January 1995 he was Engineering Manager of the Company. From June 1983 to June 1992, Mr. Kimball was an Engineer for TSI Inc. but most recently an Engineer Manager.

James H. Quackenbush has been the Company's Vice President since June 1998. From October 1992 to June 1998, Mr. Quackenbush was Director a Manufacturing and Operations of the Company. From 1989 to October 1992, he served as Senior Manufacturing Engineer and Manager of Stent Operations of Schneider (USA), Inc., a former subsidiary of Pfizer, Inc. which develops and manufactures cardiology products.

PART II

Item 5. MARKET FOR THE REGISTRANT'S COMMON EQUITY AND RELATED STOCKHOLDER MATTERS.

The common stock of Optical Sensors Incorporated has been traded on The Nasdaq National Market, under the symbol OPSI, since the Company's initial public offering on February 14, 1996. The following table sets forth the high and low closing prices for the Company's common stock, as reported by the Nasdaq National Market, for the periods indicated:

Quarter Ended -----	High -----	Low -----
March 31, 1998	\$6.000	\$4.625
June 30, 1998	5.125	3.500
September 30, 1998	4.125	1.000
December 31, 1998	1.875	.906
March 31, 1997	\$11.500	\$7.500
June 30, 1997	8.750	4.500
September 30, 1997	7.375	4.500
December 31, 1997	8.000	4.500

The foregoing prices reflect inter-dealer prices, without dealer markup, mark-down or commissions, and may not represent actual transactions.

As of March 22, 1999, the Company had 238 stockholders of record of its common stock and an estimated 2,700 beneficial holders whose shares were registered in the names of nominees.

Optical Sensors Incorporated has never paid any cash dividends on its common stock, and does not anticipate paying any cash dividends on its common stock in the foreseeable future.

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Item 6. SELECTED FINANCIAL DATA.

<TABLE>
<CAPTION>

	Years Ended December 31,				
	1998	1997	1996	1995	1994

	(in thousands, except per share data)				

STATEMENTS OF OPERATIONS DATA

<S>	<C>	<C>	<C>	<C>	<C>
Net sales	\$ 1,019	\$ 141	\$ 163	\$ --	\$ --
Operating expenses	10,533	10,472	9,734	8,249	6,463
Loss from operations	(12,420)	(12,527)	(10,941)	(8,249)	(6,463)
Interest income, net	628	1,193	1,555	118	183
Net loss	\$(11,817)	\$(11,333)	\$(9,385)	\$(8,131)	\$(6,280)

Net loss per common share,
 basic and diluted \$ (1.34) \$ (1.35) \$ (1.30) \$ (19.27) \$ (21.88)

<CAPTION>

	December 31,				
	1998	1997	1996	1995	1994
	(in thousands)				
BALANCE SHEET DATA					
<S>	<C>	<C>	<C>	<C>	<C>
Cash and cash equivalents	\$ 8,080	\$ 17,101	\$ 30,135	\$ 5,395	\$ 2,851
Working capital	9,103	18,220	30,039	5,242	2,363
Total assets	12,565	21,626	32,369	6,367	3,582
Long-term obligations	495	472	--	--	--
Total shareholders' equity	10,984	20,157	31,050	5,778	2,987

</TABLE>

Item 7. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS.

Result of Operations

Fiscal Years Ended December 31, 1998 and 1997

Net sales were \$1,018,864 and \$140,936 for 1998 and 1997, respectively. Sales in 1997 were adversely affected by a recall of the SensiCath initiated by the Company in May 1997 because of an interference problem with a certain portion of the critical care patient population. In December 1997, the Company introduced an enhanced version of its SensiCath Sensor that solved the inference problems, accounting for the sales increase in 1998. In 1998, approximately 26% of net sales were from the sale of SensiCath Sensors, and approximately 74% of net sales were from the placement of OpticalCAM instrumentation. In January 1999, the Company discontinued direct sales activities of the SensiCath System in order to focus its resources on development of the CapnoProbe product. Accordingly, the Company does not expect meaningful sales of the SensiCath System in the future.

Costs of products sold were \$2,905,506 and \$2,195,714 in 1998 and 1997, respectively, an increase of \$709,792 in 1998. The increase in 1998 is the result of higher sales and manufacturing

levels. A total of \$446,000 in 1997 represented a write-down of OpticalCAM inventories to estimated market value. The amount of the write-down reflected the difference between the Company's estimated net realizable value based on the future selling price to its customers of the OpticalCAM System and the cost of inventories on hand or on order at the end of 1997. Under the agreement between the Company and IL, the Company has agreed to sell OpticalCAM instrumentation to IL at the lower of the Company's direct cost of manufacturing or previously scheduled amounts. Accordingly, the Company does not expect to generate any gross margin from the sale of OpticalCAM instrumentation in future periods. The Company expects that spending in this area in 1999 will be reduced by approximately one third due to the decline in sales activities. The remaining anticipated costs consist of fixed overhead expenses and personnel and other resources will be re-directed towards development of the CapnoProbe product.

Research and development expenses were \$4,248,029 and \$4,975,037 in 1998 and 1997, respectively, a decrease of \$727,008, or 15% in 1998. Research and development expenses in 1997 included a \$500,000 payment to Marquette Medical Systems, Inc. under a previously disclosed technology purchase agreement. No comparable payments occurred in 1998. In 1998 the Company's research and development efforts were directed primarily towards SensiCath System improvements. Towards the end of 1998, research and development efforts were directed increasingly towards development of the CapnoProbe product. The Company anticipates that research and development expenses will continue to decline in 1999 by approximately an additional 15%, primarily due to a reduction in personnel. Under the July 1998 license agreement with ICCM, the Company expects to pay \$300,000 in minimum royalties in 1999. The minimum royalty payments will be recorded as research and development expenses because no CapnoProbe sales are anticipated in 1999. The Company is obligated to pay ICCM a customary royalty equal to a percentage of sales, which varies depending on the selling price to the customer of the CapnoProbe. However, the Company does not currently expect to have any commercial sales of the CapnoProbe in 1999. Under the previously disclosed agreement with Marquette Medical Systems, the Company is obligated to make a final payment of \$500,000 if Marquette sells certain minimum quantities of ABG Modules. Based on past performance, the Company does not expect Marquette to accomplish these sales in the foreseeable future.

Selling, general and administrative expenses were \$6,284,904 and \$5,496,772 in 1998 and 1997, respectively, an increase of \$788,132, or 14%, in 1998. The increase is attributable primarily to increased sales activities in 1998. The Company's administrative expenses were essentially unchanged in 1998 from the prior year. In January 1999, the Company discontinued direct sales activities. Accordingly, the Company expects selling, general and administrative expenses to decrease by up to 50% in 1999, not including expenses which might result from its activities in securing a corporate merger, distribution partner or sale of a portion or all of the Company.

Net interest income decreased \$618,318 to \$628,344 in 1998 from \$1,246,662 in 1997, due to declining cash reserves resulting from negative cash flows.

The Company incurred a net loss of \$11,817,330 in 1998 compared to a net loss of \$11,333,358 in 1997. Since inception, the Company has incurred a cumulative net loss of \$58,366,050. The increase in net loss in 1998 was primarily due to the decrease in net interest income described above. Increased spending in selling expenses were offset by reductions in other areas. The Company anticipates that its operating losses will continue for the foreseeable future.

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Fiscal Years Ended December 31, 1997 and 1996

Net sales were \$140,936 and \$163,068 for 1997 and 1996, respectively. Sales in 1997 were adversely affected by the Company's action in May of 1997 to voluntarily recall the SensiCath. The Company completed a number of significant product enhancements in the second half of 1997 and began commercial distribution of the enhanced sensor in December 1997. In 1997, approximately 64% of net sales were from the sale of SensiCath Sensors, and approximately 36% of net sales were from the placement of OpticalCAM instrumentation. Sales in 1996 were primarily from sensors purchased by customers and third parties for evaluation purposes. The Company did not have any instrument sales in 1996.

Costs of products sold were \$2,195,714 and \$1,369,221 in 1997 and 1996, respectively, an increase of \$826,493. A total of \$446,000 of the increase for 1997 represented a write-down of OpticalCAM inventories to estimated market value. The major component of cost of products sold for 1997 and the primary reason for the increase from 1996 to 1997, excluding the inventory write-down, was manufacturing infrastructure costs necessary for anticipated future sales levels, which was established to its current level in the latter part of 1996.

Research and development expenses were \$4,975,037 and \$5,632,458 in 1997 and 1996, respectively, a decrease of \$657,421, or 12% in 1997. The Company completed development of the OpticalCAM in late 1996, which was a significant component of research and development expense in 1996 that did not recur in 1997, and the Company spent less on clinical research activities during 1997 as the SensiCath System reached development maturity. These two factors accounted for the majority of the decrease in research and development expenses. Research and development expenses also included payments to Marquette Medical Systems under a previously disclosed technology purchase agreement of \$500,000 and \$553,250 in 1997 and 1996, respectively.

Selling, general and administrative expenses were \$5,496,772 and \$4,102,147 in 1997 and 1996, respectively, an increase of \$1,394,625, or 34%, in 1997. The increase is attributable primarily to organizational expansion of sales and marketing and product positioning activities beginning the latter half of 1996. During late 1996, the Company completed the initial hiring of its sales and marketing staff to support product positioning and initial product launch activities. Salaries and benefits for the expanded sales and marketing staff and travel expenses related to their activities and depreciation for OpticalCAM demonstration units accounted for a significant portion of the increase in selling, general and administrative expenses in 1997. The Company's administrative expenses decreased slightly in 1997 from the prior year.

Net interest income decreased \$308,824 to \$1,246,662 in 1997 from \$1,555,486 in 1996, due to declining cash reserves resulting from negative cash flows.

The Company incurred a net loss of \$11,333,358 in 1997 compared to a net loss of \$9,385,272 in 1996. Since inception, the Company has incurred a cumulative net loss of \$46,548,720. The increase in net loss in 1997 was primarily due to the increase in operating expenses described above. The Company anticipates that its operating losses will continue for the foreseeable future.

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To date, the Company has financed its operations primarily through the sale of equity securities. From inception through December 31, 1995, the Company raised net proceeds of \$30,400,000 from private equity financings and stock option exercises. In the first quarter of 1996, the Company completed an initial public offering of 2,875,000 shares of Common Stock. The net proceeds to the Company from the public offering were approximately \$33,916,000. In January 1998, the Company sold 441,203 shares of Common Stock to IL, which represented 4.99% of the Company's outstanding Common Stock following completion of the transaction, at a price of \$5.00 per share (which is equal to the closing market price on the date before signing of the agreement) for a total price of \$2,206,015. The proceeds from the sales of stock have been used to fund costs of producing products and for the operating expenses described above and capital expenditures described below. The Company's Common Stock is quoted on the Nasdaq National Market under the symbol "OPSI."

The Company granted IL and its affiliates certain pre-emptive rights to participate in future sales of equity securities by the Company, and certain demand and incidental registration rights under a registration rights agreement previously entered into by the Company and shareholders that purchased shares of stock in private transactions prior to the Company's initial public offering in February 1996. IL is prohibited from selling or otherwise transferring its shares of Common Stock for a period of one year, except to an affiliate or pursuant to the exercise of its registration rights. IL and its affiliates are also subject to certain standstill provisions for a period of five years that prohibit them from (a) acquiring more than 5.0% of the Company's outstanding Common Stock, (b) entering into a voting agreement with respect to the shares IL purchased from the Company, (c) participating in any proxy solicitation or becoming a participant in an election contest, or (d) joining a group for the purpose of acquiring, holding, voting or disposing of shares of Common Stock.

The Company's cash and cash equivalents were \$8,079,871 and \$17,101,130 at December 31, 1998 and 1997, respectively. The decrease in the Company's cash balance is due to the operating losses described above. The Company incurred cash expenditures of \$10,782,956 for operations and \$491,929 for capital expenditures in 1998. In addition, the Company acquired equipment and tooling under capital leases for a total of \$338,061 in 1998. The capital equipment expenditures were principally for the acquisition of manufacturing, research and development and marketing promotional equipment. A substantial portion of the inventory level at December 31, 1998 consisted of key components and ABG Modules and OpticalCAM monitors for which the Company relies on sole suppliers.

As of December 31, 1998, the Company had no material commitments outstanding for tooling and equipment. The Company has contracts to purchase minimum quantities of instrumentation and other sole source inventory items with an outstanding aggregate commitment of approximately \$900,000 in 1999 and 2000.

The Company believes that sufficient liquidity is available to satisfy its operating needs through 1999. However, the Company anticipates that additional funding will be necessary to continue operations past 1999.

Year 2000 Software Performance Exposure

The Company has determined that the software embedded in the ABG Modules is Year 2000 compliant and that its major internal information technology systems are Year 2000 compliant. The Company has ancillary software programs which may not be Year 2000 compliant. Should any of these programs require replacement, the Company anticipates that the total cost will not exceed \$50,000. The Company does not believe this amount nor any impact on ongoing information technology projects will have any material affect on its ongoing operations. The Company has initiated discussions with its significant suppliers, large customers and financial institutions to ensure that those parties have appropriate plans to remediate Year 2000 issues where their systems interface with the Company's systems or otherwise impact its operations. The Company is assessing the extent to which its operations are vulnerable should those organizations fail to properly remediate their computer systems. For those vendors that have not yet certified year 2000 compliance and which are sole suppliers of critical product components, the Company plans to have sufficient inventories on hand at the end of 1999 to support its needs for at least six months. For the Company's distributor, the Company has the ability to ship product directly to the end customer and to invoice and collect receivables should it be necessary to do so. The Company's Year 2000 initiative is being managed by an internal staff. While the Company believes its planning efforts are adequate to address its Year 2000 concerns, there can be no assurance that the systems of other companies which may impact the Company's operations will be converted on a timely basis and will not have a material effect on the Company. The cost of the Year 2000 initiatives is not expected to be material to the

Company's results of operations or financial position.

Certain Important Factors

In addition to the factors identified above, there are several important factors that could cause the Company's actual results to differ materially from those anticipated by the Company or which are reflected in any forward-looking statements of the Company. These factors, and their impact on the success of the Company's operations and its ability to achieve its goals, include the following:

- o Development and Commercialization of CapnoProbe. The Company's future success will depend, in part, on successful development and commercialization of the CapnoProbe product. Although this product is based on the Company's existing technology, the Company is in the later stages of developing and testing prototypes and is currently engaged human clinical trials of the CapnoProbe product. The Company has set up one manufacturing pod for manual assembly of the prototype probes and finished preliminary plans for automated probe assembly. The Company projects that the product will be available for commercialization in the first quarter of 2000. The Company has not yet established commercial manufacturing for the CapnoProbe. Accordingly, there can be no assurance that the Company will successfully develop a commercial CapnoProbe product.
- o Completion of Corporate Alliance or Business Combination. In January 1999, the Company announced that it had engaged Volpe Brown Whelan & Company, LLC, to serve as financial advisor to the Company. The Company is working with Volpe Brown Whelan to explore strategic alternatives, including joint ventures, corporate strategic alliances, sale of the business or product lines, or other business combinations. The Company's future success will depend on its ability to complete such a strategic transaction.
- o Competition. Competition among medical device companies is intense and increasing. There can be no assurance that the Company's competitors will not succeed in developing or marketing

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technologies and products that are more effective or less expensive than the Company's products or that would render the Company's products obsolete or non-competitive.

- o Regulatory Approvals. The Company's ability to market its current products and any products that it may develop in the future requires clearances or approvals from the FDA and other governmental agencies, including, in some instances, foreign and state agencies. The process for maintaining and obtaining necessary regulatory clearances and approvals can be expensive and time consuming. There can be no assurance that the Company will be able to maintain or obtain necessary regulatory approvals and clearances in the future.

Item 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURE ABOUT MARKET RISK.

Not Applicable.

Item 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

The Company's Financial Statements and Independent Auditors' Report thereon on pages 18 to 37 of this Report are incorporated herein by reference.

Item 9. CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE.

None.

PART III

Item 10. DIRECTORS AND EXECUTIVE OFFICERS OF THE REGISTRANT.

(a) Directors, Executive Officers, Promoters and Control Persons

The information under the captions "Election of Directors -- Information About Nominees" and "Election of Directors -- Other Information About Nominees" in the Company's 1999 Proxy Statement is incorporated herein by reference. The information concerning executive officers of the Company is included in this Report under Item 4a, "Executive Officers of the Company."

(b) Section 16(a) Beneficial Ownership Reporting Compliance

The information under the caption "Section 16(a) Beneficial Ownership Reporting Compliance" in the Company's 1999 Proxy Statement is incorporated herein by reference.

Item 11. EXECUTIVE COMPENSATION.

The information under the captions "Election of Directors -- Director Compensation" and "Executive Compensation and Other Benefits" in the Company's 1999 Proxy Statement is incorporated herein by reference.

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Item 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT.

The information under the caption "Principal Shareholders and Beneficial Ownership of Management" in the Company's 1999 Proxy Statement is incorporated herein by reference.

Item 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS.

The information under the caption "Certain Transactions" in the Company's 1999 Proxy Statement is incorporated herein by reference.

PART IV

Item 14. EXHIBITS, FINANCIAL STATEMENT SCHEDULES AND REPORTS ON FORM 8-K.

(a) 1. Financial Statements.

The following Financial Statements of the Company are set forth herein:

Financial Statements:	Page:
-----	-----
Report of Independent Auditors.....	18
Balance Sheets as of December 31, 1998 and 1997.....	19
Statements of Operations for the years ended December 31, 1998, 1997 and 1996.....	20
Statement of Shareholders' Equity for the years ended December 31, 1998, 1997 and 1996.....	21-22
Statements of Cash Flows for the years ended December 31, 1998, 1997 and 1996.....	23
Notes to Financial Statements.....	24-37

2. Financial Statement Schedules.

All schedules are omitted as the required information is inapplicable or the information is presented in the financial statements or related notes thereto.

3. Exhibits

The exhibits to this Report are listed in the Exhibit Index on pages 39 to 43 below.

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A copy of the exhibits referred to above will be furnished at a reasonable cost to any person who was a stockholder of the Company as of March 22, 1999, upon receipt from any such person of a written request for any such exhibit. Such request should be sent to: Optical Sensors Incorporated, 7615 Golden Triangle Drive, Suite A, Minneapolis, Minnesota 55344; Attn: Stockholder Information.

The following is a list of each management contract or compensatory plan or arrangement required to be filed as an exhibit to this Annual Report on Form 10-K pursuant to Item 13(a):

A. 1989 Omnibus Stock Option Plan, as amended.

B. 1991 Stock Option Plan, as amended.

- C. 1993 Stock Option Plan, as amended.
- D. Form of Non-Statutory Stock Option Agreement for Nonemployees pursuant to 1993 Stock Option Plan.
- E. Form of Non-Statutory Stock Option Agreement for Nonemployee Directors pursuant to 1993 Stock Option Plan.
- F. Form of Incentive Stock Option Agreement for Employees pursuant to 1993 Stock Option Plan.
- G. Employee Stock Purchase Plan.
- H. Executive Management Change in Control Severance Pay Plan.
- I. Amendment No. 1 to Executive Management Change in Control Severance Pay Plan.
- J. Key Employee Change in Control Severance Pay Plan.
- K. Board Advisory Agreement between the Company and Sam B. Humphries.
- L. Letter Agreement between the Company and Sam B. Humphries.

(b) Reports on Form 8-K

The Company did not file any Current Reports on Form 8-K during the quarter ended December 31, 1998.

Report of Independent Auditors

Board of Directors
Optical Sensors Incorporated

We have audited the accompanying balance sheets of Optical Sensors Incorporated as of December 31, 1998 and 1997, and the related statements of operations, shareholders' equity and cash flows for each of the three years in the period ended December 31, 1998. 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 generally accepted auditing standards. 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 audits provide a reasonable basis for our opinion.

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of Optical Sensors Incorporated at December 31, 1998 and 1997, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 1998, in conformity with generally accepted accounting principles.

/s/ Ernst & Young LLP

Minneapolis, Minnesota
February 12, 1999

Optical Sensors Incorporated
Balance Sheets

<TABLE>
<CAPTION>

<S>
Assets

	December 31	
	1998	1997

<C>	<C>	<C>

Current assets:		
Cash and cash equivalents	\$ 8,079,871	\$ 17,101,130
Accounts receivable	162,858	27,100
Inventories	1,846,294	2,017,497
Prepaid expenses and other current assets	99,610	70,491
	-----	-----
Total current assets	10,188,633	19,216,218
Property and equipment:		
Leased equipment	1,017,953	679,892
Research and development equipment	740,444	594,542
Leasehold improvements	339,614	259,172
Furniture and equipment	148,621	109,214
Marketing equipment	1,004,840	986,483
Production equipment	460,118	259,363
	-----	-----
	3,711,590	2,888,666
Less accumulated depreciation	(1,866,074)	(974,887)
	-----	-----
	1,845,516	1,913,779
Other assets:		
Patents, net	513,547	434,752
Other assets	16,833	60,785
	-----	-----
	530,380	495,537
	-----	-----
Total assets	\$ 12,564,529	\$ 21,625,534
	=====	=====
Liabilities and shareholders' equity Current liabilities:		
Accounts payable	\$ 353,563	\$ 437,039
Employee compensation	441,917	404,513
Other liabilities and accrued expenses	29,714	2,154
Obligations under capital lease, current portion	260,319	152,756
	-----	-----
Total current liabilities	1,085,513	996,462
Obligations under capital lease, less current portion	494,909	472,206
Shareholders' equity:		
Preferred Stock, par value \$.01 per share		
Authorized shares - 5,000,000	--	--
Common Stock, par value \$.01 per share:		
Authorized shares - 30,000,000		
Issued and outstanding shares - 1998--8,829,401;		
1997--8,400,554	88,294	84,006
Additional paid-in capital	69,317,467	67,088,370
Accumulated deficit	(58,366,050)	(46,548,720)
Deferred compensation	(55,604)	(221,790)
Note receivable from officer	--	(245,000)
	-----	-----
Total shareholders' equity	10,984,107	20,156,866
	-----	-----
Total liabilities and shareholders' equity	\$ 12,564,529	\$ 21,625,534
	=====	=====

</TABLE>

See accompanying notes.

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Optical Sensors Incorporated

Statements of Operations

<TABLE>

<CAPTION>

	Year ended December 31		
	1998	1997	1996
	-----	-----	-----
<S>	<C>	<C>	<C>
Net sales	\$ 1,018,864	\$ 140,936	\$ 163,068
Cost of goods sold	(2,905,566)	(2,195,714)	(1,369,221)
	-----	-----	-----
Gross margin	(1,886,702)	(2,054,778)	(1,206,153)
Operating expenses:			
Research and development	4,248,029	4,975,037	5,632,458
Selling, general and administrative	6,284,904	5,496,772	4,102,147
	-----	-----	-----
Total operating expenses	10,532,933	10,471,809	9,734,605

Operating loss	(12,419,635)	(12,526,587)	(10,940,758)
Interest expense	(95,043)	(21,143)	--
Interest income	723,387	1,267,805	1,555,486
Other expense	(26,039)	(53,433)	--
	602,305	1,193,229	1,555,486
Net loss	\$ (11,817,330)	\$ (11,333,358)	\$ (9,385,272)
Net loss per common share:			
Basic and diluted	\$ (1.34)	\$ (1.35)	\$ (1.30)
Shares used in calculation of net loss per share:			
Basic and diluted	8,819,000	8,375,000	7,222,000

</TABLE>

See accompanying notes.

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Optical Sensors Incorporated
Statement of Shareholders' Equity
Year ended December 31, 1998

<TABLE>
<CAPTION>

	Series A Convertible Preferred Stock		Series B Convertible Preferred Stock		Series C Convertible Preferred Stock		Series D Convertible Preferred Stock	
	Shares	Amount	Shares	Amount	Shares	Amount	Shares	Amount
Balance at December 31, 1995	113,223	\$ 1,133	656,577	\$ 6,566	1,416,008	\$ 14,159	2,210,828	\$ 22,109
Issuance of Common Stock in conjunction with public offering, net of expenses of \$3,459,218	-	-	-	-	-	-	-	-
Conversion of Preferred Stock in conjunction with public offering	(113,223)	(1,133)	(656,577)	(6,566)	(1,416,008)	(14,159)	(2,210,828)	(22,109)
Issuance of Common Stock upon exercise of options and warrants	-	-	-	-	-	-	-	-
Value assigned to warrants in connection with debt and lease financing	-	-	-	-	-	-	-	-
Amortization of deferred compensation	-	-	-	-	-	-	-	-
Net loss	-	-	-	-	-	-	-	-
Balance at December 31, 1996	-	-	-	-	-	-	-	-
Issuance of Common Stock upon exercise of options and warrants and employee stock purchase plan	-	-	-	-	-	-	-	-
Value assigned to warrants in connection with debt and lease financing	-	-	-	-	-	-	-	-
Amortization of deferred compensation	-	-	-	-	-	-	-	-
Net loss	-	-	-	-	-	-	-	-
Balance at December 31, 1997	-	-	-	-	-	-	-	-
Issuance of Common Stock in connection with private placement	-	-	-	-	-	-	-	-
Issuance of Common Stock upon exercise of options and warrants and employee stock purchase plan	-	-	-	-	-	-	-	-
Value assigned to warrants in connection with debt and lease financing	-	-	-	-	-	-	-	-

Forfeiture of Common Stock	-	-	-	-	-	-	-	-	-
Payment on note receivable	-	-	-	-	-	-	-	-	-
Amortization of deferred compensation	-	-	-	-	-	-	-	-	-
Net loss	-	-	-	-	-	-	-	-	-
Balance at December 31, 1998	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-

</TABLE>

See accompanying notes.

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Series E Convertible Preferred Stock		Common Stock		Additional Paid-in Capital	Accumulated Deficit	Deferred Compensation	Note Receivable from Officer	Total
Shares	Amount	Shares	Amount					
<S> <C>	<C>	<C>	<C>	<C>	<C>	<C>	<C>	<C>
370,338	\$3,703	610,443	\$ 6,105	\$32,970,358	\$(25,830,090)	\$(1,171,226)	\$(245,000)	\$ 5,777,817
-	-	2,875,000	28,750	33,887,032	-	-	-	33,915,782
(370,338)	(3,703)	4,766,974	47,670	-	-	-	-	-
-	-	89,080	890	98,856	-	-	-	99,746
-	-	-	-	18,099	-	-	-	18,099
-	-	-	-	-	-	623,452	-	623,452
-	-	-	-	-	(9,385,272)	-	-	(9,385,272)
-	-	8,341,497	83,415	66,974,345	(35,215,362)	(547,774)	(245,000)	31,049,624
-	-	59,057	591	97,093	-	-	-	97,684
-	-	-	-	16,932	-	-	-	16,932
-	-	-	-	-	-	325,984	-	325,984
-	-	-	-	-	(11,333,358)	-	-	(11,333,358)
-	-	8,400,554	84,006	67,088,370	(46,548,720)	(221,790)	(245,000)	20,156,866
-	-	441,203	4,412	2,192,779	-	-	-	2,197,191
-	-	28,477	284	55,696	-	-	-	55,980
-	-	-	-	16,964	-	-	-	16,964
-	-	(40,833)	(408)	(36,342)	-	-	36,750	-
-	-	-	-	-	-	-	208,250	208,250
-	-	-	-	-	-	166,186	-	166,186
-	-	-	-	-	(11,817,330)	-	-	(11,817,330)
-	\$ -	8,829,401	\$88,294	\$69,317,467	\$(58,366,050)	\$(55,604)	\$ -	\$ 10,984,107

</TABLE>

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Optical Sensors Incorporated
Statements of Cash Flows

<S>	Year ended December 31		
	1998	1997	1996
<C>	<C>	<C>	<C>

OPERATING ACTIVITIES			
Net loss	\$ (11,817,330)	\$ (11,333,358)	\$ (9,385,272)
Adjustments to reconcile net loss to net cash used in operating activities:			
Depreciation and amortization	1,059,306	510,537	124,452
Deferred compensation amortization	166,186	325,984	623,452
Writedown of inventories	--	445,706	--
Amortization of warrants in connection with debt and lease financing	16,964	16,932	18,099
Changes in operating assets and liabilities:			
Receivables	(135,758)	63,940	(91,040)
Inventories	62,253	(1,531,286)	(931,917)
Prepaid expenses and other assets	(116,065)	28,085	132,602
Accounts payable and accrued expenses	(18,512)	(475,867)	730,259
Net cash used in operating activities	(10,782,956)	(11,949,327)	(8,779,365)
INVESTING ACTIVITIES			
Purchases of property, plant and equipment (net)	(491,929)	(1,127,097)	(496,084)
Net cash used in investing activities	(491,929)	(1,127,097)	(496,084)
FINANCING ACTIVITIES			
Net proceeds from issuance of Common Stock	2,253,171	97,684	34,015,528
Proceeds from note receivable	208,250	--	--
Payments on obligations under capital leases	(207,795)	(54,930)	--
Net cash provided by financing activities	2,253,626	42,754	34,015,528
Increase (decrease) in cash and cash equivalents	(9,021,259)	(13,033,670)	24,740,079
Cash and cash equivalents at beginning of year	17,101,130	30,134,800	5,394,721
Cash and cash equivalents at end of year	\$ 8,079,871	\$ 17,101,130	\$ 30,134,800

</TABLE>

Supplementary Disclosure of Non-Cash Transactions: In 1998, the Company received 40,833 forfeited shares of Common Stock and forgave \$36,750 on the note receivable from officer. The Company also acquired property and equipment of \$338,061 and \$679,892 under capital lease obligations during the year ended December 31, 1998 and 1997, respectively.

See accompanying notes.

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Optical Sensors Incorporated

Notes to Financial Statements

December 31, 1998

1. Business Activity

Optical Sensors Incorporated (the Company) is engaged in developing, manufacturing and marketing fiberoptic chemical sensors used in the monitoring of key physiologic parameters for medically unstable patients. The Company was incorporated on May 23, 1989 and reincorporated in Delaware on January 4, 1996. Prior to 1998 the Company was considered a development stage company.

2. Summary of Significant Accounting Policies

Cash Equivalents

The Company considers all highly liquid investments with a maturity of three months or less when purchased to be cash equivalents. Investments classified as cash equivalents consist primarily of commercial paper and municipal bonds. The market value of investments is based on quoted market prices and approximates cost.

Inventories

Inventories, consisting principally of finished goods, are recorded at the lower of cost (first-in, first-out basis) or market.

Property and Equipment

Property and equipment are stated at cost. Depreciation is provided on a straight-line basis over three to five years. Leasehold improvements are amortized over the shorter of the term of the lease or the estimated life of the

asset. Equipment under capital leases is depreciated over the lease term.

Patents

Patents are stated at cost and are amortized upon issuance of a patent on a straight-line basis over 60 months. The carrying value of a patent will be reviewed if the facts and circumstances suggest that it may be impaired. If this review indicates that patent cost will not be recoverable, as determined based on the undiscounted cash flows over the remaining amortization period, the Company's carrying value of the patent will be reduced by the estimated shortfall of cash flows.

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Optical Sensors Incorporated

Notes to Financial Statements (continued)

2. Summary of Significant Accounting Policies (continued)

Income Taxes

The Company accounts for income taxes using the liability method. Deferred income taxes are provided for temporary differences between the financial reporting and tax bases of assets and liabilities.

Stock-Based Compensation

The Company follows Accounting Principles Board Opinion No. 25, Accounting for Stock Issued to Employees ("APB 25"), and related interpretations in accounting for its stock options. Under APB 25, when the exercise price of stock options equals the market price of the underlying stock on the date of grant, no compensation expense is recognized.

The Company has adopted the disclosure only provisions of the Statement of Financial Accounting Standards No. 123, Accounting for Stock-Based Compensation ("Statement 123"). Accordingly, the Company has made pro forma disclosures of what net loss and net loss per share would have been had the

provisions of Statement 123 been applied to the Company's stock options.

Use of Estimates

The preparation of financial statements in conformity with generally accepted accounting principles requires management to make estimates and assumptions that affect the amounts reported in the financial statements and accompanying notes. Actual results could differ from the estimates.

Accounting for Long-Lived Assets

The Company records losses on long-lived assets used in operations when indicators of impairment are present and the undiscounted cash flows estimated to be generated by those assets are less than the assets' carrying amount.

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Optical Sensors Incorporated

Notes to Financial Statements (continued)

2. Summary of Significant Accounting Policies (continued)

Advertising

Advertising costs are charged to operations in the year incurred. The amounts in 1998, 1997 and 1996 were not material.

Net Loss Per Share

The net loss per share has been computed in accordance with the provisions of the Financial Accounting Standards Board Statement No. 128, Earnings Per Share. The basic and diluted per share amounts are the same.

Reclassifications

Certain reclassifications of previously reported amounts have been made to conform with the current year presentation.

3. Private Label Reseller Agreement

In January 1998, the Company entered into an agreement with Instrumentation Laboratory Company (IL) for worldwide distribution of the Company's SensiCath Sensors and OpticalCAM Instruments. IL would market and distribute the Company's products throughout the world under the names GEM SensiCath and GEM OpticalCAM. The Company agreed to supply IL with SensiCath Sensors, on an exclusive basis, through 2004 and on a non-exclusive basis through 2007. The Company also agreed to supply IL with OpticalCAM Instruments, on a semi-exclusive basis, through 2004. The Company retained the right to sell OpticalCAM Instruments to manufacturers of physiological monitoring, ventilator and anesthesia delivery systems. IL is required to purchase sufficient quantities of products from the Company under the agreement that will result in preestablished annual minimum revenues to the Company. During 1998, IL did not achieve the quota requirements and the Company has exercised its right to convert IL's exclusive right to a non-exclusive right.

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Optical Sensors Incorporated

Notes to Financial Statements (continued)

4. Common Stock

In January 1998, the Company sold 441,203 shares of Common Stock to Instrumentation Laboratory Company (IL) at a price of \$5.00 per share that resulted in proceeds of \$2,197,191, net of expenses related to the sale. The Company granted IL and its affiliates certain preemptive rights to participate in future sales of equity securities by the Company, and certain demand and incidental registration rights under a registration rights agreement previously entered into by the Company and shareholders that purchased shares of stock in private transactions prior to the Company's initial public offering in February 1996. IL was prohibited from selling or otherwise transferring its shares of Common Stock for a period of one year, except to an affiliate or pursuant to the exercise of its registration rights. IL and its affiliates are also subject to certain stand still provisions for a period of five years that prohibit them from (a) acquiring more than 5.0% of the Company's outstanding Common Stock, (b) entering into a voting agreement with respect to the shares IL purchased from the Company, (c) participating in any proxy solicitation or becoming a participant in an election contest, or (d) joining a group for the purpose of acquiring, holding, voting or disposing of shares of Common Stock.

In February 1996, the Company completed an initial public offering of Common Stock in which it sold 2,875,000 shares of Common Stock, resulting in net proceeds of \$33,915,782. Upon completion of the Company's initial public offering of Common Stock, all shares of outstanding Convertible Preferred Stock were converted into 4,766,974 shares of Common Stock.

Shareholder Rights Plan

In December 1996, the Company's Board of Directors adopted a Shareholder Rights Plan by declaring a dividend of one preferred share purchase right (the "Right") for each outstanding share of Common Stock. Under certain circumstances, a Right may be exercised to purchase one one-thousandth of a share of Series A Junior Preferred Stock for \$90. The rights become exercisable if a person or group acquires 15 percent or more of the Company's outstanding Common Stock, subject to certain exceptions. If a person or group acquires 15 percent or more of the Company's outstanding Common Stock, subject to certain exceptions, each right will entitle its holder to buy Common Stock of the Company having a market value of twice the exercise price of the Right. The Rights expire in December 2006 and may be redeemed by the Company for \$.001 per Right at any time before, or, in certain circumstances, within 10 days (subject to extension)

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Optical Sensors Incorporated

Notes to Financial Statements (continued)

4. Common Stock (continued)

following the announcement that a person has acquired 15 percent or more of the Company's outstanding Common Stock. Until a Right is exercised, the holder of a Right, as such, has no rights as a shareholder of the Company.

In connection with the adoption of the Shareholder Rights Plan, the Company authorized 250,000 shares of Series A Junior Preferred Stock (the "Preferred

Stock"). Subject to the rights of holders of any Senior Securities, if any, holders of the Preferred Stock are entitled to quarterly dividends, when, as and if declared by the Board of Directors, in the amount of one thousand times the aggregate per share amount of dividends paid to Common Stock shareholders. Each Preferred Stock share is entitled to one thousand votes on all matters submitted to a vote of the shareholders of the Company. The Preferred Stock has liquidation preference over the Company's Common Stock. The liquidation rate on the Preferred Stock is the greater of (a) \$1,000 per share plus accrued dividends, whether or not earned or declared, or (b) an amount equal to one thousand times the amount distributed to the Common Stock shareholders.

5. Convertible Preferred Stock

The Company had sold certain Series (A through E) of Convertible Preferred Stock beginning in 1991 and going through 1995. Upon completion of the Company's initial public offering of Common Stock, all shares of outstanding Convertible Preferred Stock were converted into 4,766,974 shares of Common Stock.

In conjunction with the sale of the Series C of Convertible Preferred Stock in 1993, the Company had issued warrants to a placement agent to purchase 79,869 shares of Common Stock at \$7.38 per share. These warrants were exercised in 1997 resulting in 14,376 shares of Common Stock being issued in a "cashless" transaction.

Upon completion of the sale of the Series B Convertible Preferred Stock in 1992, the Series C Convertible Preferred Stock in 1993 and the Series D Convertible Preferred Stock in 1995, certain working capital bridge loans were canceled as payment for some of the shares. In consideration for making the loans, the Company issued warrants to the investors to purchase 24,076 shares of Common Stock at \$9.00 per share (relating to the Series B), 26,871 shares of Common Stock at \$12.60 per share (relating to the Series C) and 61,429 shares of Common Stock at \$3.15 per share (relating to the Series D).

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Optical Sensors Incorporated

Notes to Financial Statements (continued)

5. Convertible Preferred Stock (continued)

At December 31, 1998, warrants to purchase 19,160 shares of Common Stock at \$9.00 per share and 59,567 shares of Common Stock at \$3.15 per share remain outstanding. All other warrants have expired or been exercised. The remaining warrants expire in 1999 and 2000.

6. Leases

Operating Leases

The Company leases its office and research and development facility under an operating lease that expires on November 30, 1999. Operating expenses, including maintenance, utilities, real estate taxes and insurance, are paid by the Company. The Company also leases certain office equipment under operating leases.

Total rent expense under operating leases was \$677,000, \$870,000 and \$921,000 for the years ended December 31, 1998, 1997 and 1996, respectively.

Future minimum lease payments under noncancelable operating leases with initial or remaining terms of one year or more as of December 31, 1998 are as follows:

Year ending December 31:

1999	\$516,000
2000	54,000
2001	14,000
2002	8,000

	\$592,000
	=====

Certain of the operating leases contain end of the lease purchase options which have historically averaged 23% of the original cost of the equipment. Should the Company not be able to return assets under existing operating leases, the end of the lease purchase options could reach a total of approximately \$190,000.

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Notes to Financial Statements (continued)

6. Leases (continued)

In connection with the operating lease agreements, the Company has issued warrants to the leasing company to purchase 12,222 shares of Common Stock at \$9.00 per share and 11,904 shares of Common Stock at \$3.15 per share. These warrants expire in 2002 and 2005, respectively.

Capital Leases

In June 1997, the Company entered into an equipment lease agreement. Under the lease agreement, the Company is allowed to lease up to \$2,000,000 of equipment between June 15, 1997 and June 30, 1999. Assets leased under the agreement at December 31, 1998 and 1997 were approximately \$1,018,000 and \$680,000, respectively, with a related obligation of \$755,228 and \$624,962 at December 31, 1998 and 1997, respectively. The term of each lease schedule under the agreement is 42 months with payments due the first of each month.

Future payments under capital leases are as follows:

1999	\$ 339,829
2000	372,366
2001	171,501
Thereafter	4,949

	888,645
Less amount representing payment of interest	(133,417)

	755,228
Less current portion	(260,319)

Long-term capital lease obligations	\$ 494,909
	=====

The equipment lease agreement contains an "advance pay" provision that requires the Company to prepay an amount equal to soft costs (tooling, software, etc.) that exceed 25% of the total drawdown. If the Company makes no further draws under the lease, the prepayments required by the Company would be approximately \$238,000.

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Notes to Financial Statements (continued)

7. Income Taxes

At December 31, 1998, the Company has cumulative net operating loss carryforwards for tax purposes of approximately \$53,538,000 plus research and development tax credit carryforwards of approximately \$1,556,000. These carryforwards are available to offset future taxable income through 2013.

As a result of the sales of Preferred Stock and additional shares of Common Stock, the Company has experienced a change in ownership under the net operating loss limitation rules. The use of losses, incurred through the change in ownership date, to offset future taxable income, will be limited during the carryforward period. The credits will also be subject to limitations under these same rules.

Deferred income taxes reflect the net tax effects of temporary differences between the carrying amount of assets and liabilities for financial reporting purposes and the amounts used for income tax purposes. Significant components of the Company's deferred tax assets and liabilities are as follows:

	December 31	
	1998	1997

Deferred tax assets:		
Net operating loss carryforwards	\$ 18,800,000	\$ 15,900,000
Tax credit carryforwards	1,556,000	1,000,000
Deferred compensation on stock options	788,000	724,000
Vacation accrual	86,000	86,000
Book over tax depreciation	293,000	239,000

Total deferred tax assets	21,523,000	17,949,000
Deferred tax liabilities:		
Other	33,000	33,000
Total deferred tax liabilities	33,000	33,000
Net deferred tax assets	21,490,000	17,916,000
Valuation allowance	(21,490,000)	(17,916,000)
	\$ -	\$ -

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Optical Sensors Incorporated

Notes to Financial Statements (continued)

8. Stock Options

The Company has three stock option plans that include both incentive and non-statutory stock options to be granted to directors, officers, employees and consultants of the Company. Option activity is summarized as follows:

	Shares Available for Grant	Options Outstanding Total Shares	Weighted Average Exercise Price Per Share
Balance at December 31, 1995	308,674	704,798	\$1.80
Granted--incentive stock options	(151,650)	151,650	8.42
Options canceled	36,140	(36,140)	4.62
Options exercised	--	(86,300)	.94
Balance at December 31, 1996	193,164	734,008	3.11
Granted--incentive stock options	(148,205)	148,205	5.22
Options canceled	24,986	(24,986)	5.71
Options exercised	--	(40,032)	1.28
Balance at December 31, 1997	69,945	817,195	3.50
Additional shares reserved	699,464	--	--
Granted--incentive stock options	(1,383,870)	1,383,870	2.75
Options canceled	695,573	(695,573)	5.57
Options exercised	--	(16,423)	1.39
Balance at December 31, 1998	81,112	1,489,069	\$1.84

The weighted average fair value of options granted is summarized as follows:

	1998	1997	1996
Stock price equals exercise price	\$2.20	\$3.02	\$5.26
Stock price is greater than exercise price	-	-	5.41

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Optical Sensors Incorporated

Notes to Financial Statements (continued)

8. Stock Options (continued)

The exercise price of options outstanding at December 31, 1998 ranged from \$.90 to \$13.00 per share, as summarized in the following table:

<TABLE>
<CAPTION>

Options Outstanding		Options Exercisable			
Range of Exercise Price	Number	Weighted Average Exercise Price Per Share	Weighted Average Remaining Contractual Life	Number	Weighted Average Exercise Price Per Share

<S>	<C>	<C>	<C>	<C>	<C>
\$.00 to .90	388,258	\$.90	6.4 years	305,218	\$.90
1.69 to 1.80	964,775	1.69	9.4 years	8,333	1.80
2.70 to 13.00	136,036	5.64	6.0 years	96,790	6.07
	-----		-----		
Total	1,489,069	\$1.84	8.3 years	410,341	\$2.14
	=====		=====		

</TABLE>

The number of options exercisable at December 31, 1998, 1997 and 1996 was 410,341, 349,646 and 239,784, respectively, at a weighted average exercise price per share of \$2.14, \$3.50 and \$3.06, respectively.

Pro forma information regarding net loss and net loss per share is required by Statement 123, and has been determined as if the Company had accounted for its employee stock options under the fair value method of Statement 123. The fair value for these options was estimated at the date of grant using a Black-Scholes option pricing model with the following weighted-average assumptions:

	1998	1997	1996
	-----	-----	-----
Expected stock price volatility	86%	75%	78%
Risk-free interest rate	5.5%	6.5%	5.5%
Expected life of options	7.25 years	7 years	7 years

The Black-Scholes option valuation model was developed for use in estimating the fair value of traded options which have no vesting restrictions and are fully transferable. In addition, option valuation models require the input of highly subjective assumptions. Because the Company's employee stock options have characteristics significantly different from those of traded options, and because changes in the subjective input

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Optical Sensors Incorporated

Notes to Financial Statements (continued)

8. Stock Options (continued)

assumptions can materially affect the fair value estimate, in management's opinion, the existing models do not necessarily provide a reliable single measure of the fair value of its employee stock options.

For purposes of pro forma disclosures, the estimated fair value of the options is amortized to expense over the options' vesting period. The Company's pro forma information is as follows:

	1998	1997	1996
	-----	-----	-----
Pro forma net loss	\$12,597,330	\$11,714,634	\$9,451,264
Pro forma, basic and diluted net loss per common share	\$1.43	\$1.40	\$1.31

These pro forma amounts may not be indicative of future years' amounts since the Statement provides for a phase-in of option values beginning with those granted in 1995.

Deferred Compensation

In August 1995, the Company recognized deferred compensation of \$2,179,693. The amount represented the excess of the deemed value for accounting purposes of the Common Stock issuable upon exercise of certain options over the aggregate exercise price of such options. The related options were those granted during the period June 17, 1995 through October 3, 1995 to purchase a total of 971,640 shares of Common Stock at exercises prices ranging from \$.90 to \$2.70 per share. The remaining unamortized deferred compensation of \$55,605 is expected to be charged to operations in 1999.

9. Technology Agreements

In July 1998, the Company entered into a patent license agreement with the Institute of Critical Care Medicine ("ICCM") which provides the Company with the exclusive, worldwide right under ICCM's pending and issued patents. In consideration for the technology, the Company is obligated to pay ICCM minimum annual royalties of \$300,000 (quarterly payments of \$75,000 beginning with the quarter ended September 1998) for five years in order to maintain exclusivity. The Company may elect, on one

Optical Sensors Incorporated

Notes to Financial Statements (continued)

9. Technology Agreements (continued)

year's written notice, not to make the annual minimum payment of \$300,000 but ICCM would then have the right to terminate the license agreement. The Company is obligated to pay ICCM a customary royalty equal to a percentage of sales, which varies depending on the selling price to the customer. The Company is also obligated to meet certain product development milestones under the license agreement.

In September 1995, the Company entered into an agreement with Marquette Medical Systems, Inc. ("Marquette") to acquire exclusive ownership of certain technology that had been jointly developed by the Company and Marquette. In consideration for the technology, the Company agreed to pay \$2,000,000 payable as follows: \$500,000 upon execution of the agreement, \$500,000 upon completion of the technology, \$500,000 once the product has been sold and installed in 20 hospitals and \$500,000 once the product has been sold and installed in an additional 50 hospitals. The Company also agreed to pay \$50,000 per month for engineering and technical support from August 1, 1995 through January 31, 1998. As of December 31, 1998, the Company has a remaining obligation of \$500,000 under this agreement which will become payable if Marquette meets the product sales requirements.

In August 1991, the Company entered into an agreement to purchase certain fiberoptic chemical sensor technology for \$10,000. In addition, the Company issued 2,778 shares of Common Stock to the licensor upon assignment of the technology. The Company has agreed to pay royalties on sales of industrial and environmental products for which the technology purchased is a significant part. The royalties shall be 5%, 4% and 3% on the first, second and third \$10 million sales increments and 2% on sales in excess of \$40 million. For sales of such products by any future licensees of the Company, the Company shall pay 25% of all licensing fees received up to \$500,000 and 10% thereafter. The Company has made all payments for the technology. The Company does not intend to use the technology in the future and, therefore, does not anticipate paying any royalties under the agreement.

Optical Sensors Incorporated

Notes to Financial Statements (continued)

10. Purchase Commitments

The Company has entered into various purchase agreements under which it is obligated at December 31, 1998. The Company has a \$199,915 purchase order outstanding for a sterilizer. A down payment of \$56,659 was made in September 1998. The purchase order was placed on hold in January 1999 with final resolution pending the outcome of the Company's plans as explained in Note 14.

The Company has entered into purchase commitments with two companies for the purchase of SensiCath instrumentation inventory. Under the terms of the agreements, the Company has agreed to purchase, under a specified pricing structure, a fixed number of units. As of December 31, 1998, the Company is committed to purchase approximately \$900,000 of inventory during 1999 and 2000.

11. Employment Agreement

The Company had an employment agreement (the agreement) with the former President and Chief Executive Officer of the Company. In connection with the agreement, the Company granted the President options to purchase 121,162 shares of Common Stock at a price of \$9.00 per share. In August of 1995, these options were canceled, and the Board of Directors granted the President a non-statutory option to purchase 272,222 shares of Common stock at a price of \$.90 per share.

In September 1995, the President exercised this option. The right to retain certain of the shares was subject to the President's continued employment through August 2, 1999. As payment for the shares, the President executed a \$245,000 promissory note, payable in full on August 1, 1998, at an interest rate of 5.91%. The note was secured by the shares of Common Stock and proceeds of any dividend or other distribution attributable to the shares. During 1998, the President made a \$208,250 principal payment on the note plus accrued interest,

and the Company forgave the remaining principal balance of \$36,750. The Company also entered into a board advisory agreement with the former President and Chief Executive Officer that provides for a payment of \$50,000 payable in April 1999.

Optical Sensors Incorporated

Notes to Financial Statements (continued)

12. Employee Benefit Plans

The Company has a 401(k) savings plan under which employees are eligible to participate after six months of service and attaining the age of 21. Employees may contribute up to the maximum amount which will not violate provisions of the Plan or cause the Plan to exceed the maximum amount allowable as a deduction to the employer. The Company, at its discretion, may make matching contributions equal to a percentage of the employee's contribution. The Company did not contribute to the Plan in 1998, 1997 and 1996.

13. Employee Stock Purchase Plan

In December 1996, the Company adopted an Employee Stock Purchase Plan. Eligible employees can authorize payroll withholdings in each pay period to be designated for stock purchase. Payroll deductions cannot exceed 10% of total compensation and no more than 1,500 shares may be purchased by any one employee in one offering period. There are four three-month offering periods in each year. Employees may purchase shares of Common Stock at the end of each three-month offering period at a price equal to 85% of the market price on the first or last day of the offering period, whichever is lower. Shares issued under the plan during the years ended December 31, 1998 and 1997 were 12,054 and 8,711, respectively.

14. Subsequent Event

In January 1999, the Company announced that it had engaged Volpe Brown Whelan & Company, LLC, investment bankers, to explore on behalf of the Company strategic alternatives, including joint ventures, corporate strategic alliances, sale of the business or product lines, or other business combinations. In January 1999, the Company suspended direct sales activity of the SensiCath System and reduced associated expenses and personnel to focus its resources on the Capro Probe SL(TM). This reduction resulted in severance costs of approximately \$304,000.

The Company has also implemented officer and key employee change of control severance plans.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the Registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

OPTICAL SENSORS INCORPORATED

Dated: March 23, 1999 By: /s/ Paulita M. LaPlante

Paulita M. LaPlante
President and Chief Executive Officer

Pursuant to the requirements of the Securities Exchange Act of 1934, this Report has been signed below on March 23, 1999 by the following persons on behalf of the Registrant and in the capacities and on the dates indicated.

Name	Title
----- /s/ Paulita M. LaPlante ----- Paulita M. LaPlante	President, Chief Executive Officer and Director (principal executive officer)
----- /s/ Wesley G. Peterson ----- Wesley G. Peterson	Chief Financial Officer, Vice President of Finance and Administration and Secretary (principal financial and accounting officer)

/s/ Richard B. Egen Director

Richard B. Egen

/s/ Sam B. Humphries Director

Sam B. Humphries

/s/ Richard J. Meelia Director

Richard J. Meelia

Director

Demetre M. Nicoloff, M.D.

Director

Gary A. Peterson

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OPTICAL SENSORS INCORPORATED
EXHIBIT INDEX TO ANNUAL REPORT ON FORM 10-K
FOR THE YEAR ENDED DECEMBER 31, 1998

<TABLE>
<CAPTION>

Item No.	Item	Method of Filing
<S>	<C>	<C>
3.1	Restated Certificate of Incorporation of the Company.	Incorporated by reference to Exhibit 3.3 contained in the Company's Registration Statement on Form S-1 (File No. 33-99904).
3.2	Certificate of Designation, Preferences and Rights of Series A Junior Preferred Stock.	Incorporated by reference to Exhibit 3.2 contained in the Company's Annual Report on Form 10-K for the year ended December 31, 1996 (File No. 0-27600).
3.3	Bylaws of the Company, as amended.	Filed herewith.
4.1	Specimen Common Stock Certificate	Incorporated by reference to Exhibit 4.1 contained in the Company's Registration Statement on Form S-1 (File No. 33-99904).
4.2	Form of Warrant issued in connection with the Convertible Bridge Loan Agreement dated November 22, 1991	Incorporated by reference to Exhibit 4.4 contained in the Company's Registration Statement on Form S-1 (File No. 33-99904).
4.3	Form of Warrant issued in connection with the On-Call Bridge Loan Agreement dated December 6, 1991	Incorporated by reference to Exhibit 4.5 contained in the Company's Registration Statement on Form S-1 (File No. 33-99904).
4.4	Form of Warrant issued in connection with the Convertible Bridge Loan Agreement dated May 4, 1993	Incorporated by reference to Exhibit 4.6 contained in the Company's Registration Statement on Form S-1 (File No. 33-99904).
4.5	Form of Warrant issued in connection with the Bridge Loan Agreement dated June 1, 1995	Incorporated by reference to Exhibit 4.7 contained in the Company's Registration Statement on Form S-1 (File No. 33-99904).
4.6	Warrant dated November 6, 1992 issued to Comdisco, Inc.	Incorporated by reference to Exhibit 4.8 contained in the Company's Registration Statement on Form S-1 (File No. 33-99904).

</TABLE>

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<TABLE> <CAPTION> <S>	<C>	<C>
4.7	Warrant Dated August 31, 1995 issued to Comdisco, Inc.	Incorporated by reference to Exhibit 4.9 contained in the Company's Registration Statement on Form S-1 (File No. 33-99904).
4.8	Rights Agreement dated as of December 3, 1996 between the Company and Norwest Bank Minnesota, N.A.	Incorporated by reference to Exhibit 4.1 contained in the Company's Current Report on Form 8-K dated December 3, 1996 (File No. 0-27600).
10.1	Lease dated October 7, 1991 between Registrant and First Industrial L.P. (successor to MIG Kappa III Companies)	Incorporated by reference to Exhibit 10.1 contained in the Company's Registration Statement on Form S-1 (File No. 33-99904).
10.2	Equipment Lease dated November 6, 1992, as amended, between the Company and Comdisco, Inc.	Incorporated by reference to Exhibit 10.2 contained in the Company's Registration Statement on Form S-1 (File No. 33-99904).
10.3	Letter Agreement dated October 1, 1995 between the Company and Marquette Electronics, Inc.	Incorporated by reference to Exhibit 10.3 contained in the Company's Registration Statement on Form S-1 (File No. 33-99904).
10.4	Registration Rights Agreement, dated April 28, 1992, as amended	Incorporated by reference to Exhibit 10.9 contained in the Company's Registration Statement on Form S-1 (File No. 33-99904).
10.5	1989 Omnibus Stock Option Plan, as amended	Incorporated by reference to Exhibit 10.11 contained in the Company's Registration Statement on Form S-1 (File No. 33-99904).
10.6	1991 Stock Option Plan, as amended	Incorporated by reference to Exhibit 10.12 contained in the Company's Registration Statement on Form S-1 (File No. 33-99904).
10.7	1993 Stock Option Plan, as amended	Filed herewith.
10.8	Form of Non-Statutory Stock Option Agreement for Nonemployees pursuant to 1993 Stock Option Plan	Incorporated by reference to Exhibit 10.21 contained in the Company's Registration Statement on Form S-1 (File No. 33-99904).

</TABLE>

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<TABLE> <CAPTION> <S>	<C>	<C>
10.9	Form of Non-Statutory Stock Option Agreement for Nonemployee Directors pursuant to 1993 Stock Option Plan	Incorporated by reference to Exhibit 10.18 contained in the Company's Registration Statement on Form S-1 (File No. 33-99904).
10.10	Form of Incentive Stock Option Agreement for Employees pursuant to 1993 Stock Option Plan	Incorporated by reference to Exhibit 10.19 contained in the Company's Registration Statement on Form S-1 (File No. 33-99904).
10.11	Employee Stock Purchase Plan	Incorporated by reference to Exhibit 99.1 contained in the Company's Registration Statement on Form S-8 (File No. 333-17493).
10.12	First Amendment to Lease Agreement dated April 26, 1996 between First Industrial Financing Partnership, L.P. and the Company.	Incorporated by reference to Exhibit 10.21 contained in the Company's Annual Report on Form 10-K for the year ended December 31, 1996 (File No. 0-27600).
10.13	Supply Agreement dated August 22, 1996 between the Company and Marquette Electronics, Inc. (1)	Incorporated by reference to Exhibit 10.22 contained in the Company's Annual Report on Form 10-K for the year ended December 31, 1996 (File No. 0-27600).

10.14	Manufacturing Supply Agreement dated September 10, 1996 between the Company and SpecTran Specialty Optics Company. (1)	Incorporated by reference to Exhibit 10.23 contained in the Company's Annual Report on Form 10-K for the year ended December 31, 1996 (File No. 0-27600).
10.15	Purchase Order dated February 21, 1997 between the Company and SeaMED Corporation. (1)	Incorporated by reference to Exhibit 10.24 contained in the Company's Annual Report on Form 10-K for the year ended December 31, 1996 (File No. 0-27600).
10.16	Second Amendment to Lease Agreement, dated April 14, 1997, between First Industrial Financing Partnership, L.P. and the Company.	Incorporated by reference to Exhibit 10.21 contained in the Company's Annual Report on Form 10-K for the year ended December 31, 1997 (File No. 0-27600)

</TABLE>

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<TABLE>

<CAPTION>

<S>

<C>

10.17	Master Equipment Lease dated June 15, 1997 between Phoenix Leasing Incorporated and the Company	Incorporated by reference to Exhibit 10.22 contained in the Company's Annual Report on Form 10-K for the year ended December 31, 1997 (File No. 0-27600)
10.18	Amendment No. 1 to Master Equipment Lease dated August 15, 1997 between Phoenix Leasing Incorporated and the Company	Incorporated by reference to Exhibit 10.23 contained in the Company's Annual Report on Form 10-K for the year ended December 31, 1997 (File No. 0-27600)
10.19	Private Label Reseller Agreement dated as of January 7, 1998 between the Company and Instrumentation Laboratory Company. (1)	Incorporated by reference to Exhibit 10.1 contained in the Company's Current Report on Form 8-K, dated January 7, 1998 (File No. 0-27600).
10.20	Stock Purchase Agreement dated as of January 7, 1998 between the Company and Grupo CH Werfen, S.A.	Incorporated by reference to Exhibit 10.2 contained in the Company's Current Report on Form 8-K, dated January 7, 1998 (File No. 0-27600).
10.21	OEM Agreement dated February 5, 1998 between the Company and Marquette Medical Systems, Inc. (1)	Incorporated by reference to Exhibit 10.26 contained in the Company's Annual Report on Form 10-K for the year ended December 31, 1997 (File No. 0-27600)
10.22	Patent License Agreement dated July 20, 1998 between the Company and the Institute of Critical Care Medicine (1)	Incorporated by reference to Exhibit 10.1 contained in the Company's Quarterly Report on Form 10-Q for the quarter ended September 30, 1998 (File No. 0-27600)
10.23	Board Advisory Agreement dated September 11, 1998 between the Company and Sam B. Humphries	Filed herewith electronically.
10.24	Letter Agreement dated September 14, 1998 between the Company and Sam B. Humphries	Filed herewith electronically.
10.25	Executive Management Change in Control Severance Pay Plan	Filed herewith electronically.
10.26	Amendment No. 1 to Executive Management Change in Control Severance Pay Plan	Filed herewith electronically.

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10.27	Key Employee Change in Control Severance Pay Plan	Filed herewith electronically.
23.1	Independent Auditors' Consent	Filed herewith electronically.
27.1	Financial Data Schedule	Filed herewith electronically.

</TABLE>

(1) Confidential treatment has been granted by the Commission with respect to designated portions contained within document. Such portions have been omitted and filed separately with the Commission pursuant to Rule 24b-2 of the Securities and Exchange Act of 1934, as amended.

BYLAWS
 OF
 OPTICAL SENSORS INCORPORATED
 A Delaware Corporation
 (the "Corporation")
 (As amended through September 9, 1998)

ARTICLE I.

OFFICES

Section 1. Registered Office. The registered office of the Corporation required by the Delaware General Corporation Law to be maintained in the State of Delaware is as designated in the Certificate of Incorporation. The Board of Directors of the Corporation may, from time to time, change the location of the registered office. On or before the day that such change is to become effective, a certificate of such change and of the new address of the new registered office shall be filed with the Secretary of State of the State of Delaware.

Section 2. Other Office. The Corporation may also have offices at such other places, both within and without the State of Delaware, as the Board of Directors may from time to time determine or the business of the Corporation may require.

ARTICLE II.

MEETINGS OF STOCKHOLDERS

Section 1. Place and Time of Annual Meeting. An annual meeting of the stockholders shall be held for the purpose of electing directors and conducting such other business as may come before the meeting. The date, time and place of the annual meeting shall be determined by resolution of the Board of Directors. At each annual meeting, the stockholders entitled to vote shall elect a Board of Directors and they may transact such other business as shall be stated in the notice of the meeting.

Section 2. Special Meetings. Special meetings of the stockholders, for any purpose or purposes, unless otherwise prescribed by statute or by the Certificate of Incorporation, may be called by the Chief Executive Officer and shall be called by the Chief Executive Officer at the request in writing of (a) two or more members of the Board of Directors, (b) stockholders holding fifty percent (50%) or more of the voting power of all shares entitled to vote, (c)

stockholders owning at least twenty-five percent (25%) or more of the outstanding shares of the Corporation's Series B Convertible Preferred Stock, but only for so long as any such shares are outstanding, or (d) stockholders owning at least twenty-five percent (25%) or more of the outstanding shares of the Corporation's Series C Convertible Preferred Stock, but only for so long as any such shares are outstanding. Such requests, which shall be by registered mail or delivered in person to the Chief Executive Officer, and shall state the purpose or purposes of the proposed meeting.

Section 3. Notice. Written or printed notice of every annual or special meeting of the stockholders, stating the place, date, time, and, in the case of special meetings, the purpose or purposes, of such meeting, shall be given to each stockholder entitled to vote at such meeting not less than ten, nor more than sixty, days before the date of the meeting. All such notices shall be delivered, either personally or by mail, and if mailed, such notice shall be deemed to be delivered when deposited in the United States mail addressed to the stockholder at his or her address as it appears on the records of the Corporation, with postage prepaid.

Section 4. Waiver of Notice. Whenever any notice is required to be given under the provisions of the statutes, or of the Certificate of Incorporation or of these Bylaws, a waiver thereof in writing, signed by the person or persons entitled to said notice, whether before or after the time stated therein, shall be deemed equivalent thereto.

Section 5. Stockholder's List. The officer having charge of the stock ledger of the Corporation shall make, at least ten days before every meeting of the stockholders, a complete list of the stockholders entitled to vote at such meeting arranged in alphabetical order, specifying the address of and the number of shares registered in the name of each stockholder. Such list shall be open to the examination of any stockholder, for any purpose germane to the meeting, during ordinary business hours, for a period of at least ten days prior to the meeting, either at a place within the city where the meeting is to be held, which place shall be specified in the notice of the meeting or, if not so specified, at the place where the meeting is to be held. The list shall also be produced and kept at the time and place of the meeting during the whole time thereof, and may be inspected by any stockholder who is present.

Section 6. Quorum. The holders of a majority of the stock issued and outstanding and entitled to vote thereat, present in person or represented by proxy, shall constitute a quorum at all meetings of the stockholders except as otherwise provided by statute or by the Certificate of Incorporation. If a quorum is present, the holders of the shares present in person or represented by proxy at the meeting, and entitled to vote thereat, shall have the power, by the affirmative vote of the holders of a majority of such shares, to adjourn the meeting to another time and/or place. Unless the adjournment is for more than thirty days or unless a new record date is set for the adjourned meeting, no notice of the adjourned meeting need be given to any stockholder provided that the time and place of the adjourned meeting were announced at the meeting at which the adjournment was taken. At the adjourned meeting the Corporation may

transact any business which might have been transacted at the original meeting.

Section 7. Vote Required. When a quorum is present or represented at any meeting, the vote of the holders of a majority of the stock having voting power present in person or represented by proxy shall decide any question brought before such meeting, unless the question is one upon which by express provisions of an applicable statute or of the Certificate of Incorporation a different vote is required, in which case such express provision shall govern and control the decision of such question.

Section 8. Voting Rights. Every stockholder shall at every meeting of the stockholders be entitled to one vote in person or by proxy for each share of the capital stock

having voting power held by such stockholder, except that no proxy shall be voted after three years from its date, unless such proxy provides for a longer period. An appointment of a proxy for shares held jointly by two (2) or more stockholders is valid if signed by any one (1) of them, unless the Corporation receives from any one (1) of those stockholders written notice either denying the authority of that person to appoint a proxy or appointing a different proxy. To be valid, all proxies must meet the requirements of, and shall be governed by, the Delaware General Corporation Law.

ARTICLE III.

DIRECTORS

Section 1. Number, Election and Term of Office. The number of directors which shall constitute the whole board shall be at least one (1) or such other number as shall be fixed from time to time by resolution of the Board. The directors shall be elected at the annual meeting of the stockholders, except as provided in Section 4 of this Article III, and each director elected shall hold office until the next annual meeting of stockholders or until a successor is duly elected and qualified or until his or her earlier death, resignation or removal as hereinafter provided.

Section 2. Management By Board of Directors. The business of the Corporation shall be managed by its Board of Directors, which may exercise all such powers of the Corporation and do all such lawful acts and things as are not by statute, or by Certificate of Incorporation, or by these Bylaws directed or required to be exercised or done by the stockholders.

Section 3. Removal. Any director or the entire Board of Directors may be removed at any time, with or without cause, by the holders of a majority of the shares of stock of the Corporation then entitled to vote at an election of directors, except as otherwise provided by statute.

Section 4. Vacancies. Vacancies and newly created directorships resulting from any increase in the authorized number of directors may be filled by a majority of the directors then in office though less than a quorum, and each director so chosen shall hold office until the next annual election or until a successor is duly elected and qualified or until his or her earlier death, resignation or removal as hereinafter provided.

Section 5. Annual Meetings. The annual meeting of each newly elected Board of Directors shall be held without other notice than this Bylaw immediately after, and at the same place as, the annual meeting of stockholders.

Section 6. Other Meetings and Notice. Regular meetings, other than the annual meeting, of the Board of Directors may be held without notice at such time and at such place as shall from time to time be determined by the board. Special meetings of the Board of Directors may be called by or at the request of the Chief Executive Officer on at least twenty-four hours' notice to each director, either personally, by telephone, by mail, or by telegraph; in like manner

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and on like notice the Chief Executive Officer must call a special meeting on the written request of a majority of directors. Whenever any notice is required to be given under the provisions of the statutes, or of the Certificate of Incorporation or of these Bylaws, a waiver thereof in writing, signed by the person or persons entitled to said notice, whether before or after the time stated therein, shall be deemed equivalent thereto.

Section 7. Quorum. A majority of the total number of directors shall constitute a quorum for the transaction of business. The vote of a majority of directors present at a meeting at which a quorum is present shall be the act of the Board of Directors. If a quorum shall not be present at any meeting of the Board of Directors, the directors present thereat may adjourn the meeting from time to time, without notice other than announcement at the meeting, until a quorum shall be present.

Section 8. Committees. The Board of Directors may, by resolution passed by a majority of the whole board, designate one or more committees, each committee to consist of one or more of the directors of the Corporation, which to the extent provided in such resolution shall have and may exercise the powers of the Board of Directors in the management and affairs of the Corporation except as otherwise limited by statute. The Board of Directors may designate one or more directors as alternate members of any committee. Such committee or committees shall have such name or names as may be determined from time to time by resolution adopted by the Board of Directors. Each committee shall keep regular minutes of its meetings and report the same to the Board of Directors when required.

Section 9. Committee Rules. Each committee of the Board of Directors may

fix its own rules of procedure and shall hold its meetings as provided by such rules, except as may otherwise be provided by the resolution of the Board of Directors designating such committee, but in all cases the presence of at least a majority of the members of such committee shall be necessary to constitute a quorum. In the event that a member and that member's alternate, if alternates are designated by the Board of Directors as provided in Section 8 of this Article III, of such committee is/are absent or disqualified, the member or members thereof present at any meeting and not disqualified from voting, whether or not such member or members constitute a quorum, may unanimously appoint another member of the Board of Directors to act at the meeting in place of any such absent or disqualified members.

Section 10. Informal Action. Any action permitted to be taken at any meeting of the Board of Directors, or of any committee thereof, may be taken without a meeting if all members of the board or committee, as the case may be, consent thereto in writing, and the writing or writings are filed with the minutes of proceedings of the board or committee.

Section 11. Participation by Conference Telephone. Directors of the Corporation may participate in a meeting of the Board of Directors or any committee thereof by means of conference telephone or similar communications equipment by means of which all persons participating in the meeting can hear each other, and participation in such a manner shall constitute presence in person at such meeting.

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Section 12. Compensation. The directors may be paid for expenses of attendance at each meeting of the Board of Directors and may be paid a fixed sum for attendance at each meeting of the Board of Directors or a stated salary. No such payment shall preclude any director from serving the Corporation in any other capacity and receiving compensation therefor. Members of committees designated by the Board of Directors may be allowed like compensation for attending committee meetings.

ARTICLE IV.

OFFICERS

Section 1. Number. The officers of the Corporation shall be chosen by the Board of Directors and shall include a Chief Executive Officer or a President, a Secretary and a Chief Financial Officer. The Board of Directors may also choose a Chairman of the Board of Directors (who must be a director) and one or more Vice Presidents, and one or more Assistant Secretaries and Assistant Financial Officers. Any number of offices or functions of those offices may be held or exercised by the same person unless the Certificate of Incorporation or the Bylaws otherwise provide.

Section 2. Election and Term of Office. The officers of the Corporation shall be elected annually by the Board of Directors at the first meeting of the Board of Directors held after each annual meeting of stockholders. If the election of officers shall not be held at such meeting, such election shall be held as soon thereafter as may be convenient. Vacancies may be filled or new offices created and filled at any meeting of the Board of Directors. Each officer shall hold office until the next annual meeting of the Board of Directors or until a successor is duly elected and qualified or until his or her earlier death, resignation or removal as hereinafter provided.

Section 3. Removal. Any officer or agent elected or appointed by the Board of Directors may be removed by the Board of Directors whenever in its judgment the best interests of the Corporation would be served thereby, but such removal shall be without prejudice of the contract rights, if any, of the person so removed.

Section 4. Vacancies. A vacancy in any office because of death, resignation, removal, disqualification or otherwise, may be filled by the Board of Directors for the unexpired portion of the term by a majority vote of the directors then in office.

Section 5. Compensation. Compensation of all officers shall be fixed by the Board of Directors, and no officer shall be prevented from receiving such compensation by virtue of the fact that he is also a director of the Corporation.

Section 6. Chairman of the Board of Directors. The Chairman of the Board of Directors, if there be one, shall preside at all meetings of the stockholders and of the Board of Directors. If there be no Chief Executive Officer or President, the Chairman of the Board shall be the Chief Executive Officer of the Corporation, and except where by law the signature of the Chief Executive Officer is required, the Chairman of the Board of Directors shall possess the

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same power as the Chief Executive Officer to sign all contracts, certificates and other instruments of the Corporation which may be authorized by the Board of Directors. The Chairman of the Board of Directors shall also perform such other duties and may exercise such other powers as from time to time may be assigned to him by these By-Laws or by the Board of Directors.

Section 7. The Chief Executive Officer. The Chief Executive Officer, if there be one, shall be subject to the control of the Board of Directors and, if there be one, the Chairman of the Board of Directors, have general supervision of the business of the Corporation and shall see that all orders and resolutions of the Board of Directors are carried into effect. He or she shall execute bonds, mortgages and other contracts of the Corporation, except where required or permitted by law to be otherwise signed and executed or except where the signing and execution thereof shall be expressly delegated by the Board of Directors to some other officer or agent of the Corporation. In the absence or

disability of the Chairman of the Board of Directors, or if there be none, the Chief Executive Officer shall preside at all meetings of the stockholders and the Board of Directors.

Section 8. The President. The President, if there be one, shall be subject to the control of the Board of Directors and, if there be one, the Chief Executive Officer, have general supervision of the business of the Corporation and shall see that all orders and resolutions of the Board of Directors are carried into effect. He or she shall execute bonds, mortgages and other contracts of the Corporation, except where required or permitted by law to be otherwise signed and executed or except where the signing and execution thereof shall be expressly delegated by the Board of Directors to some other officer or agent of the Corporation. In the absence or disability of the Chairman of the Board of Directors and the Chief Executive Officer, or if there be none, the President shall preside at all meetings of the stockholders and the Board of Directors. If there be no Chief Executive Officer, the President shall be the Chief Executive Officer of the Corporation.

Section 9. The Vice President. The vice president, if any, or if there shall be more than one, the vice presidents in the order determined by the Board of Directors, shall in the absence or disability of the Chief Executive Officer (and if there be no Chairman of the Board of Directors) perform the duties and exercise the powers of the chief executive officer and shall perform such other duties and have such other powers as the Board of Directors may from time to time prescribe.

Section 10. The Secretary and Assistant Secretaries. The secretary shall attend all meetings of the Board of Directors and all meetings of the stockholders and record all the proceedings of the meetings of the Corporation and of the Board of Directors in a book to be kept for that purpose and shall perform like duties for the standing committees when required. The secretary shall give, or cause to be given, notice of all meetings of the stockholders and special meetings of the Board of Directors; perform such other duties as may be prescribed by the Board of Directors or Chief Executive Officer, under whose supervision he or she shall be. The assistant secretary, if any, or if there be more than one, the assistant secretaries in the order determined by the Board of Directors, shall in the absence or disability of the secretary perform

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the duties and exercise the powers of the secretary and shall perform such other duties and have such other powers as the Board of Directors may from time to time prescribe.

Section 11. The Chief Financial Officer and Assistant Financial Officer. The chief financial officer shall have the custody of the corporate funds and securities; shall keep full and accurate accounts of receipts and disbursements in books belonging to the Corporation; shall deposit all monies and other valuable effects in the name and to the credit of the Corporation in such depositories as may be designated by the Board of Directors; shall disburse the

funds of the Corporation as may be ordered by the Board of Directors, taking proper vouchers for such disbursements; and shall render to the chief executive officer and the Board of Directors at its regular meetings, or when the Board of Directors so requires, an account of the Corporation. If required by the Board of Directors, the chief financial officer shall give the Corporation a bond (which shall be renewed every six years) in such sums and with such surety or sureties as shall be satisfactory to the Board of Directors for the faithful performance of the duties of the office of chief financial officer and for the restoration to the Corporation, in case of death, resignation, retirement or removal from office, of all books, papers, vouchers, money, and other property of whatever kind in the possession or under the control of the chief financial officer belonging to the Corporation. The assistant financial officer, if any, or if there shall be more than one, the assistant financial officers in the order determined by the Board of Directors, shall in the absence or disability of the chief financial officer perform the duties and exercise the powers of the chief financial officer and shall perform such other duties and have such other powers as the Board of Directors may from time to time prescribe.

Section 12. Other Officers, Assistant Officers and Agents. Officers, assistant officers and agents, if any, other than those whose duties are provided for in these Bylaws, shall have such authority and perform such duties as may from time to time be prescribed by resolution of the Board of Directors.

ARTICLE V.

CERTIFICATE OF STOCK

Section 1. Form. Every holder of stock in the Corporation shall be entitled to have a certificate, signed by, or in the name of the Corporation by (i) the Chairman of the Board of Directors, the Chief Executive Officer or a Vice President and (ii) by the Chief Financial Officer or an Assistant Financial Officer, or the Secretary or an Assistant Secretary of the Corporation, certifying the number of shares owned by him or her in the Corporation. Where a certificate is signed (1) by a transfer agent or an assistant transfer agent, other than the Corporation or its employee or (2) by a registrar, other than the Corporation or its employee, any other signature on the certificate may be facsimile. In case any officer or officers who have signed, or whose facsimile signature or signatures have been used on, any such certificate or certificates shall cease to be such officer or officers of the Corporation whether because of death, resignation or otherwise before such certificate or certificates have been delivered by the Corporation, such certificate or certificates may nevertheless be issued and delivered as though the person or

persons who signed such certificate or certificates or whose facsimile signature or signatures have been used thereon had not ceased to be such officer or officers of the Corporation.

Section 2. Lost Certificates. The Board of Directors may direct a new certificate or certificates to be issued in place of any certificate or certificates theretofore issued by the Corporation alleged to have been lost, stolen or destroyed, upon the making of an affidavit of that fact by the person claiming the certificate of stock to be lost, stolen or destroyed. When authorizing such issue of a new certificate or certificates, the Board of Directors may, in its discretion and as a condition precedent to the issuance thereof, require the owner of such lost, stolen or destroyed certificate or certificates, or his or her legal representative, to give the Corporation a bond in such sum as it may direct as indemnity against any claim that may be made against the Corporation with respect to the certificate alleged to have been lost, stolen or destroyed.

Section 3. Fixing a Record Date. The Board of Directors may fix in advance not more than sixty nor less than ten days preceding the date of any meeting of stockholders, or the date for the payment of any dividend, or the date for the allotment of rights, or the date when any change or conversion or exchange of capital stock shall go into effect, or a date in connection with obtaining such consent, as a record date for the determination of the stockholders entitled to notice of, and to vote at, any such meeting, and any adjournment thereof, or entitled to receive payment of any such dividend, or entitled to any such allotment of rights, or entitled to exercise the rights in respect to any such change, conversion, or exchange of capital stock, or entitled to give such consent, and in such case such stockholders and only such stockholders as shall be stockholders of record on the date so fixed shall be entitled to such notice of, and to vote at, such meeting and any adjournment thereof, or to receive payments of such dividend, or to receive such allotment or rights, or to exercise such rights, or to give such consents, as the case may be, notwithstanding any transfer of any stock on the books of the Corporation after any such record date fixed as aforesaid. If no record date is fixed, the time for determining stockholders shall be at the close of business on the day next preceding the day on which notice is given, or if notice is waived, at the close of business on the day next preceding the day on which the meeting is held. The time for determining stockholders for any other purpose shall be at the close of business on the date on which the Board of Directors adopts the resolution relating thereto. A determination of stockholders shall apply to any adjournment of the meeting; provided, however, that the Board of Directors may fix a new record date for the adjourned meeting.

Section 4. Registered Stockholders. The Corporation shall be entitled to recognize the exclusive right of a person registered on its books as the owner of shares to receive dividends, and to vote as such owner, and to hold liable for calls and assessments a person registered on its books as the owner of shares, and shall not be bound to recognize any equitable or other claim to or interest in such share or shares on the part of the other person, whether or not it shall have express or other notice thereof, except as otherwise provided by the laws of Delaware.

Section 5. Stock Certificates and Legend. If the Corporation shall be authorized to issue more than one class of stock or more than one series of any

class, the powers, designations, preferences and relative, participating, optional or other special rights of each class of stock or

series thereof and the qualifications, limitations or restrictions of such preferences and/or rights shall be set forth in full or summarized on the face or back of the certificate which the Corporation shall issue to represent such class or series of stock, provided that, except as otherwise provided in Section 202 of the General Corporation Law of Delaware, in lieu of the foregoing requirements, there may be set forth on the face or back of the certificate which the Corporation shall issue to represent such class or series of stock, a statement that the Corporation will furnish without charge to each stockholder who so requests the powers, designations, preferences and relative, participating, optional or other special rights of each class of stock or series thereof and the qualifications, limitations or restrictions of such preferences and/or rights.

ARTICLE VI.

GENERAL PROVISIONS

Section 1. Dividends. Dividends upon the capital stock of the Corporation, subject to the provisions of the Certificate of Incorporation, if any, may be declared by the Board of Directors at any regular or special meeting, pursuant to law. Dividends may be paid in cash, in property, or in shares of the capital stock, subject to the provisions of the Certificate of Incorporation. Before payment of any dividend, there may be set aside out of any funds of the Corporation available for dividends such sum or sums as the directors from time to time, in their absolute discretion, think proper as a reserve or reserves to meet contingencies or for equalizing dividends, or for repairing or maintaining any property of the Corporation, or for such other purpose as the directors shall think in the best interest of the Corporation, and the directors may modify or abolish any such reserve in the manner in which it was created.

Section 2. Checks. All checks or demands for money and notes of the Corporation shall be signed by such officer or officers or such other person or persons as the Board of Directors may from time to time designate.

Section 3. Fiscal Year. The fiscal year of the Corporation shall be fixed by resolution of the Board of Directors.

Section 4. Seal. The Corporation shall not have a corporate seal.

Section 5. Securities Owned by Corporation. Voting securities in any other corporation held by the Corporation shall be voted by the Chief Executive Officer, unless the Board of Directors specifically confers authority to vote

with respect thereto, which may be general or confined to specific instances, upon some other person or officer. Any person authorized to vote securities shall have the power to appoint proxies, with general power of substitution.

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ARTICLE VII.

AMENDMENTS

These Bylaws may be adopted, amended, altered or repealed at any meeting of the Board of Directors by majority vote. The fact that the power to adopt, amend, alter or repeal the Bylaws has been conferred upon the Board of Directors shall not divest the stockholders of the same powers.

Dated: September 9, 1998

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OPTICAL SENSORS INCORPORATED

1993 STOCK OPTION PLAN

(AS AMENDED THROUGH NOVEMBER 6, 1998)

ARTICLE

1.

ESTABLISHMENT AND PURPOSE.

1.1. Establishment. Optical Sensors Incorporated (the "Company") hereby

establishes a plan providing for stock-based compensation incentive awards for the performance by certain eligible employees of services for the Company. This plan shall be known as the Optical Sensors Incorporated 1993 Stock Option Plan (the "Plan").

1.2. Purpose. The purpose of the Plan is to advance the interests of the

Company and its shareholders by enabling the Company to attract and retain persons of ability to perform services for the Company, by providing an incentive to such persons through equity participation in the Company and by rewarding such persons who contribute to the achievement by the Company of its economic objectives.

ARTICLE

2.

DEFINITIONS.

The following terms shall have the meanings set forth below, unless the context clearly otherwise requires:

2.1. "Board" means the Board of Directors of the Company.

2.2. "Broker Exercise Notice" means the written notice described in

Section 6.6(b) of the Plan.

2.3. "Change in Control" means an event described in Section 9.1 of the

Plan.

2.4. "Code" means the Internal Revenue Code of 1986, as amended.

2.5. "Committee" means the group of individuals administering the Plan, as

provided in Article 3 of the Plan.

2.6. "Common Stock" means the common stock of the Company, par value \$.01

per share, or the number and kind of shares of stock or other securities into
which such Common Stock may be changed in accordance with Section 4.3 of the
Plan.

2.7. "Disability" means the disability of the Participant as defined in

the long-term disability plan of the Company then covering the Participant or,
if no such plan exists, the

permanent and total disability of the Participant within the meaning of Section
22(e) (3) of the Code.

2.8. "Eligible Recipient" means all employees (including, without

limitation, officers and directors who are also employees) and Non-Employee
Directors, consultants and independent contractors of the Company or any
Subsidiary.

2.9. "Exchange Act" means the Securities Exchange Act of 1934, as amended.

2.10. "Fair Market Value" means, with respect to the Common Stock, the

following:

(a) If the Common Stock is listed or admitted to unlisted trading
privileges on any national securities exchange or is not so listed or
admitted but transactions in the Common Stock are reported on the NASDAQ
National Market System, the reported closing sale price of the Common Stock
on such exchange or by the NASDAQ National Market System as of such date
(or, if no shares were traded on such day, as of the next preceding day on
which there was such a trade).

(b) If the Common Stock is not so listed or admitted to unlisted trading
privileges or reported on the NASDAQ National Market System, and bid and
asked prices therefor in the over-the-counter market are reported by the
NASDAQ System or the National Quotation Bureau, Inc. (or any comparable
reporting service), the mean of the closing bid and asked prices as of such
date, as so reported by the NASDAQ System, or, if not so reported thereon,
as reported by the National Quotation Bureau, Inc. (or such comparable
reporting service).

(c) If the Common Stock is not so listed or admitted to unlisted trading
privileges, or reported on the NASDAQ National Market System, and such bid
and asked prices are not so reported, such price as the Committee

determines in good faith in the exercise of its reasonable discretion.

2.11. "Incentive Stock Option" means a right to purchase Common Stock

granted to an Eligible Recipient pursuant to Article 6 of the Plan that qualifies as an "incentive stock option" within the meaning of Section 422 of the Code.

2.12. "Non-Employee Director" means any member of the Board who is not an

employee of the Company or any subsidiary.

2.13. "Non-Statutory Stock Option" means a right to purchase Common Stock

granted to an Eligible Recipient pursuant to Article 6 of the Plan that does not qualify as an Incentive Stock Option.

2.14. "Option" means an Incentive Stock Option or a Non-Statutory Stock

Option.

2.15. "Participant" means an Eligible Recipient who receives one or more

Options under the Plan.

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2.16. "Person" means any individual, corporation, partnership, group,

association or other "person" (as such term is used in Section 14(d) of the Exchange Act), other than the Company, a wholly owned subsidiary of the Company or any employee benefit plan sponsored by the Company or a wholly owned subsidiary of the Company.

2.17. "Previously Acquired Shares" mean shares of Common Stock that are

already owned by the Participant and shares of Common Stock that are to be acquired by the Participant pursuant to the exercise of an Option.

2.18. "Retirement" means the retirement of a Participant pursuant to and

in accordance with the regular or, if approved by the Board for purposes of the Plan, early retirement/pension plan or practice of the Company or Subsidiary then covering the Participant.

2.19. "Securities Act" means the Securities Act of 1933, as amended.

2.20. "Subsidiary" means any subsidiary corporation of the Company within

the meaning of Section 424(f) of the Code.

2.21. "Tax Date" means the date any withholding tax obligation arises

under the Code for a Participant with respect to an Option.

ARTICLE

3.

PLAN ADMINISTRATION.

3.1. The Committee. The Plan will be administered by the Board or by a

committee of the Board consisting of not less than two persons; provided, however, that from and after the date on which the Company first registers a class of its equity securities under Section 12 of the Exchange Act, the Plan will be administered by the Board, all of whom will be "disinterested persons" within the meaning of Rule 16b-3 under the Exchange Act, or by a committee consisting solely of not fewer than two members of the Board who are such "disinterested persons." As used in the Plan, the term "Committee" will refer to the Board or to such a committee, if established. To the extent consistent with corporate law, the Committee may delegate to any officers of the Company the duties, power and authority of the Committee under the Plan pursuant to such conditions or limitations as the Committee may establish; provided, however, that only the Committee may exercise such duties, power and authority with respect to Eligible Recipients who are subject to Section 16 of the Exchange Act. Each determination, interpretation or other action made or taken by the Committee pursuant to the provisions of the Plan will be conclusive and binding for all purposes and on all persons, and no member of the Committee will be liable for any action or determination made in good faith with respect to the Plan or any Incentive Award granted under the Plan.

3.2. Authority of the Committee.

(a) In accordance with and subject to the provisions of the Plan, the Committee shall have the authority to determine (i) the Eligible Recipients who shall be selected as Participants,

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(ii) the nature and extent of the Options to be made to each Participant (including the number of shares of Common Stock to be subject to each Option, the exercise price and the manner in which Options will vest or become exercisable), (iii) the time or times when Options will be granted, (iv) the duration of each Option, (v) the restrictions and other conditions to which the exercisability or vesting of Options may be subject, and (vi) such other provisions of the Options as the Committee may deem necessary or desirable and as consistent with the terms of the Plan. The Committee shall determine the form or forms of the agreements with Participants which shall evidence the particular terms, conditions, rights and duties of the Company and the Participants with

respect to Options granted pursuant to the Plan, which agreements shall be consistent with the provisions of the Plan.

(b) With the consent of the Participant affected thereby, the Committee may amend or modify the terms of any outstanding Option in any manner, provided that the amended or modified terms are permitted by the Plan as then in effect. Without limiting the generality of the foregoing sentence, the Committee may, with the consent of the Participant affected thereby, modify the exercise price, number of shares or other terms and conditions of an Option, extend the term of an Option, accelerate the exercisability or vesting or otherwise terminate any restrictions relating to an Option, accept the surrender of any outstanding Option, or, to the extent not previously exercised or vested, authorize the grant of new Options in substitution for surrendered Options.

(c) The Committee shall have the authority, subject to the provisions of the Plan, to establish, adopt and revise such rules and regulations relating to the Plan as it may deem necessary or advisable for the administration of the Plan. The Committee's decisions and determinations under the Plan need not be uniform and may be made selectively among Participants, whether or not such Participants are similarly situated. Each determination, interpretation or other action made or taken by the Committee pursuant to the provisions of the Plan shall be conclusive and binding for all purposes and on all persons, including, without limitation, the Company and its Subsidiaries, the shareholders of the Company, the Committee and each of its members, the directors, officers and employees of the Company and its Subsidiaries, and the Participants and their respective successors in interest. No member of the Committee shall be liable for any action or determination made in good faith with respect to the Plan or any Option granted under the Plan.

ARTICLE

4.

STOCK SUBJECT TO THE PLAN.

4.1. Number of Shares. Subject to adjustment as provided in Section 4.3

below, the maximum number of shares of Common Stock that shall be authorized and reserved for issuance under the Plan shall be 1,727,240 shares of Common Stock or such greater number as may be approved by the Board pursuant to this Section 4.1. The Board may increase the number of shares of Common Stock that will be available for issuance under the Plan, without the approval of the Company's shareholders; provided, however, that the aggregate number of shares reserved for issuance under the Plan and the Company's 1989 Omnibus Stock Option Plan, 1991 Stock Option Plan and any similar stock option plan that the Company may adopt in the future may not

exceed 20.0% of the number of shares of Common Stock outstanding as of the end of the calendar quarter immediately preceding the date on which the Board increases the number of shares available for issuance under the Plan (assuming the exercise or conversion of all options, warrants, securities or other rights to acquire Common Stock) without approval of the Company's shareholders. Notwithstanding any other provision of the Plan to the contrary, (a) no more than 944,444 shares of Common Stock may be cumulatively available for issuance under the Plan pursuant to the exercise of Incentive Stock Options, and (b) no Participant in the Plan may be granted, during any calendar year, Options relating to more than an aggregate of 277,777 shares of Common Stock, in each case subject to adjustment as provided in Section 4.3 of the Plan. To the extent permitted by applicable corporate law, the shares available for issuance under the Plan may, at the election of the Committee, be either treasury shares or shares authorized but unissued, and, if treasury shares are used, all references in the Plan to the issuance of shares will, for corporate law purposes, be deemed to mean the transfer of shares from treasury.

4.2. Shares Available for Use. Shares of Common Stock that may be issued

upon exercise of Options shall be applied to reduce the maximum number of shares of Common Stock remaining available for use under the Plan. Any shares of Common Stock that are subject to an Option (or any portion thereof) that lapses, expires or for any reason is terminated unexercised shall automatically again become available for use under the Plan.

4.3. Adjustments to Shares. In the event of any reorganization, merger,

consolidation, recapitalization, liquidation, reclassification, stock dividend, stock split, combination of shares, rights offering, extraordinary dividend or divestiture (including a spin-off) or any other change in the corporate structure or shares of the Company, the Committee (or, if the Company is not the surviving corporation in any such transaction, the board of directors of the surviving corporation) shall make appropriate adjustment (which determination shall be conclusive) as to the number and kind of securities subject to and reserved under the Plan and, in order to prevent dilution or enlargement of the rights of Participants, the number, kind and exercise price of securities subject to outstanding Options. Without limiting the generality of the foregoing, in the event that any of such transactions are effected in such a way that holders of Common Stock shall be entitled to receive stock, securities or assets, including cash, with respect to or in exchange for such Common Stock, all Participants holding outstanding Options shall upon the exercise of such Options receive, in lieu of any shares of Common Stock they may be entitled to receive, such stock, securities or assets, including cash, as would have been issued to such Participants if their Options had been exercised and such Participants had received Common Stock prior to such transaction.

5.
PARTICIPATION.

Participants in the Plan shall be those Eligible Recipients who, in the judgment of the Committee, have performed, are performing, or during the term of an Option will perform, services in the management, operation and development of the Company or any Subsidiary, and significantly contributed, are significantly contributing or are expected to significantly contribute to the achievement of corporate economic objectives. Eligible Recipients may be granted from time to time one or more Options, as may be determined by the Committee in its sole discretion. The number, type, terms and conditions of Options granted to various Eligible Recipients need not be uniform, consistent or in accordance with any plan, regardless of whether such Eligible Recipients are similarly situated. Upon determination by the Committee that an Option is to be granted to an Eligible Recipient, written notice shall be given such person, specifying the terms, conditions, rights and duties related thereto. Each Eligible Recipient to whom an Option is to be granted shall, if requested by the Committee, enter into an agreement with the Company, in such form as the Committee shall determine and which is consistent with the provisions of the Plan, specifying such terms, conditions, rights and duties. Options shall be deemed to be granted as of the date specified in the grant resolution of the Committee, which date shall be the date of the related agreement with the Participant.

ARTICLE

6.
STOCK OPTIONS.

6.1. Grant. An Eligible Recipient may be granted one or more Options

under the Plan, and such Options shall be subject to such terms and conditions, consistent with the other provisions of the Plan, as shall be determined by the Committee in its sole discretion. The Committee may designate whether an Option is to be considered an Incentive Stock Option or a Non-Statutory Stock Option; provided, however, that an Incentive Stock Option shall be granted only to an Eligible Recipient who is an employee of the Company or a Subsidiary. The terms of the agreement relating to a Non-Statutory Stock Option shall expressly provide that such Option shall not be treated as an Incentive Stock Option.

6.2. Exercise. An Option shall become exercisable at such times and in

such installments (which may be cumulative) as shall be determined by the Committee in its sole discretion at the time the Option is granted. Upon the completion of its exercise period, an Option, to the extent not then exercised, shall expire.

6.3. Exercise Price.

(a) Incentive Stock Options. The per share price to be paid by the

Participant at the time an Incentive Stock Option is exercised shall be determined by the Committee, in its discretion, at the date of its grant; provided, however, that such price shall not be less than (i) 100% of the Fair Market Value of one share of Common Stock on the date the Incentive Stock Option is granted, or (ii) 110% of the Fair Market Value of one share of Common Stock on the

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date the Incentive Stock Option is granted if, at that time the Incentive Stock Option is granted, the Participant owns, directly or indirectly (as determined pursuant to Section 424(d) of the Code), more than 10% of the total combined voting power of all classes of stock of the Company or any subsidiary or parent corporation of the Company (within the meaning of Sections 424(f) and 424(e), respectively, of the Code).

6.4. Non-Statutory Stock Options. The per share price to be paid by the

Participant at the time a Non-Statutory Stock Option is exercised shall be determined by the Committee in its sole discretion at the time the Option is granted; provided, however, that such price shall not be less than 85% of the Fair Market Value of one share of Common Stock on the date the Non-Statutory Stock Option is granted.

6.5. Duration.

(a) Incentive Stock Options. The period during which an Incentive

Stock Option may be exercised shall be fixed by the Committee in its sole discretion at the time such Option is granted; provided, however, that in no event shall such period exceed 10 years from its date of grant or, in the case of a Participant who owns, directly or indirectly (as determined pursuant to Section 424(d) of the Code), more than 10% of the total combined voting power of all classes of stock of the Company or any subsidiary or parent corporation of the Company (within the meaning of Sections 424(f) and 424(e), respectively, of the Code), five years from its date of grant.

(b) Non-Statutory Stock Options. The period during which a Non-

Statutory Stock Option may be exercised shall be fixed by the Committee in its sole discretion at its date of grant.

(c) Effect of Termination of Employment or Other Service.

Notwithstanding this Section 6.4, except as provided in Articles 8 and 9 of

the Plan, all Options granted to a Participant shall terminate and may no longer be exercised if the Participant's employment or other service with the Company and all Subsidiaries ceases.

6.6. Manner of Exercise. An Option may be exercised by a Participant in

whole or in part from time to time, subject to the conditions contained herein and in the agreement evidencing such Option, by delivery, in person or through certified or registered mail, of written notice of exercise to the Company at its principal executive office in Minneapolis, Minnesota (Attention: Chief Financial Officer), and by paying in full the total Option exercise price for the shares of Common Stock purchased. Such notice shall be in a form satisfactory to the Committee and shall specify the particular Option (or portion thereof) that is being exercised and the number of shares with respect to which the Option is being exercised. Subject to compliance with Section 12.1 of the Plan, the exercise of the Option shall be deemed effective upon receipt of such notice and payment complying with the terms of the Plan and the agreement evidencing such Option. As soon as practicable after the effective exercise of the Option, the Participant shall be recorded on the stock transfer books of the Company as the owner of the shares purchased, and the Company shall deliver to the Participant one or more duly issued stock certificates evidencing such ownership. If a Participant exercises any Option with respect to some, but not all, of the shares of

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Common Stock subject to such Option, the right to exercise such Option with respect to the remaining shares shall continue until it expires or terminates in accordance with its terms. An Option shall only be exercisable with respect to whole shares.

6.7. Payment of Exercise Price.

(a) The total purchase price of the shares to be purchased upon exercise of an Option shall be paid entirely in cash (including check, bank draft or money order); provided, however, that the Committee, in its sole discretion, may allow such payments to be made, in whole or in part, by delivery of a Broker Exercise Notice or a promissory note (containing such terms and conditions as the Committee may in its discretion determine), by transfer from the Participant to the Company of Previously Acquired Shares, or by a combination thereof. In determining whether or upon what terms and conditions a Participant will be permitted to pay the purchase price of an Option in a form other than cash, the Committee may consider all relevant facts and circumstances, including, without limitation, the tax and securities law consequences to the Participant and the Company, the financial accounting consequences to the Company and any contractual restrictions applicable to the Company. In the event the Participant is permitted to pay the total purchase price of an Option in whole or in part with Previously Acquired Shares, the value of such shares shall be equal to their Fair Market Value on the date of exercise of the Option.

(b) For purposes of this Section 6.6, a "Broker Exercise Notice" shall mean a written notice from a Participant to the Company at its principal executive office in Minneapolis, Minnesota (Attention: Chief Financial Officer), made on a form and in the manner as the Committee may from time to time determine, pursuant to which the Participant irrevocably elects to exercise all or any portion of an Option and irrevocably directs the Company to deliver the Participant's stock certificates to be issued to such Participant upon such Option exercise directly to a broker or dealer. A Broker Exercise Notice must be accompanied by or contain irrevocable instructions to the broker or dealer (i) to promptly sell a sufficient number of shares of such Common Stock or to loan the Participant a sufficient amount of money to pay the exercise price for the Options and, if not otherwise satisfied by the Participant, to fund any related employment and withholding tax obligations due upon such exercise, and (ii) to promptly remit such sums to the Company upon the broker's or dealer's receipt of the stock certificates.

6.8. Rights as a Shareholder. The Participant shall have no rights as a

shareholder with respect to any shares of Common Stock covered by an Option until the Participant shall have become the holder of record of such shares, and no adjustments shall be made for dividends or other distributions or other rights as to which there is a record date preceding the date the Participant becomes the holder of record of such shares, except as the Committee may determine pursuant to Section 4.3 of the Plan.

6.9. Disposition of Common Stock Acquired Pursuant to the Exercise of

Incentive Stock Options. Prior to making a disposition (as defined in Section

424(c) of the Code) of any shares of Common Stock acquired pursuant to the exercise of an Incentive Stock Option granted

under the Plan before the expiration of two years after its date of grant or before the expiration of one year after its date of exercise and the date on which such shares of Common Stock were transferred to the Participant pursuant to exercise of the Option, the Participant shall send written notice to the Company of the proposed date of such disposition, the number of shares to be disposed of, the amount of proceeds to be received from such disposition and any other information relating to such disposition that the Company may reasonably request. The right of a Participant to make any such disposition shall be conditioned on the receipt by the Company of all amounts necessary to satisfy any federal, state or local withholding and employment-related tax requirements attributable to such disposition. The Committee shall have the right, in its sole discretion, to endorse the certificates representing such shares with a legend restricting transfer and to cause a stop transfer order to be entered with the Company's transfer agent until such time as the Company receives the

amounts necessary to satisfy such withholding and employment-related tax requirements or until the later of the expiration of two years from its date of grant or one year from its date of exercise and the date on which such shares were transferred to the Participant pursuant to the exercise of the Option.

6.10. Aggregate Limitation of Stock Subject to Incentive Stock Options. To

the extent that the aggregate Fair Market Value (determined as of the date an Incentive Stock Option is granted) of the shares of Common Stock with respect to which incentive stock options (within the meaning of Section 422 of the Code) are exercisable for the first time by a Participant during any calendar year (under the Plan and any other incentive stock option plans of the Company or any subsidiary or any parent corporation of the Company (within the meaning of Sections 424(f) and 424(e), respectively, of the Code)) exceeds \$100,000 (or such other amount as may be prescribed by the Code from time to time), such excess Options shall be treated as Non-Statutory Stock Options. The determination shall be made by taking incentive stock options into account in the order in which they were granted. If such excess only applies to a portion of an Incentive Stock Option, the Committee, in its discretion, shall designate which shares shall be treated as shares to be acquired upon exercise of an Incentive Stock Option.

ARTICLE

7.

CASH BONUSES.

In connection with any grant of Options or at any time thereafter, the Committee may, in its sole discretion, grant a cash bonus to a Participant in connection with the grant or vesting or exercise of an Option. The determination of whether to grant such a cash bonus, the nature and amount of any such cash bonus and the terms and conditions of such cash bonus shall be within the sole discretion of the Committee.

ARTICLE

8.

EFFECT OF TERMINATION OF EMPLOYMENT OR OTHER SERVICE

8.1. Termination of Employment or Other Service Due to Death, Disability

or Retirement. Except as otherwise provided in Article 9 of the Plan, in the

event a Participant's employment or other service with the Company and all Subsidiaries is terminated by reason of

such Participant's death, Disability or Retirement, all outstanding Options then held by the Participant shall remain exercisable to the extent exercisable as of such termination for a period of one year after such termination in the case of death or Disability and three months in the case of Retirement (but in no event after the expiration date of any such Option).

8.2. Termination of Employment or Other Service for Reasons Other than

Death, Disability or Retirement. Except as otherwise provided in Article 9 of

the Plan, in the event a Participant's employment or other service is terminated with the Company and all Subsidiaries for any reason other than death, Disability or Retirement, all rights of the Participant under the Plan shall immediately terminate without notice of any kind, and no Options then held by the Participant shall thereafter be exercisable; provided, however, that if such termination is due to any reason other than termination by the Company or any Subsidiary for "cause," all outstanding Options then held by such Participant shall remain exercisable to the extent exercisable as of such termination for a period of three months after such termination (but in no event after the expiration date of any such Option). For purposes of this Article 8, "cause" shall be as defined in any employment or other agreement or policy applicable to the Participant or, if no such agreement or policy exists, shall mean (a) dishonesty, fraud, misrepresentation, embezzlement or material or deliberate injury or attempted injury, in each case related to the Company or any Subsidiary, (b) any unlawful or criminal activity of a serious nature, (c) any willful breach of duty, habitual neglect of duty or unreasonable job performance, or (d) any material breach of a confidentiality or noncompete agreement entered into with the Company or any Subsidiary.

8.3. Death Following Termination. If a Participant dies within three

months following termination of employment or other service to the Company for any reason other than cause, as defined above, all outstanding Options held by the Participant at the time of termination shall remain exercisable to the extent exercisable as of such termination for a period of one year after such termination.

8.4. Modification of Effect of Termination. Notwithstanding the

provisions of this Article 8, upon a Participant's termination of employment or other service with the Company and all Subsidiaries, the Committee may, in its sole discretion (which may be exercised before or following such termination), cause Options, or any portions thereof, then held by such Participant to become exercisable and remain exercisable following such termination in the manner determined by the Committee; provided, however, that no Option shall be exercisable after the expiration date thereof and any Incentive Stock Option that remains unexercised more than three months following employment termination by reason of Retirement or more than one year following employment termination by reason of Disability shall thereafter be deemed to be a Non-Statutory Stock Option.

8.5. Breach of Confidentiality or Non-Compete Agreements. Notwithstanding

anything in the Plan to the contrary, in the event that a Participant materially breaches the terms of any confidentiality or non-compete agreement entered into with the Company or any Subsidiary, whether such breach occurs before or after termination of such Participant's employment or other service with the Company or any Subsidiary, the Committee in its sole discretion may immediately terminate all rights of the Participant under the Plan and any agreements evidencing an Option then held by the Participant without notice of any kind.

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8.6. Date of Termination. Unless the Committee shall otherwise determine

in its sole discretion, a Participant's employment or other service shall, for purposes of the Plan, be deemed to have terminated on the date such Participant ceases to perform services for the Company and all Subsidiaries, as determined in good faith by the Committee.

ARTICLE

9.

CHANGE OF CONTROL.

9.1. Change in Control. For purposes of this Article 9, a "Change in

Control" of the Company shall mean (a) the sale, lease, exchange or other transfer of all or substantially all of the assets of the Company (in one transaction or in a series of related transactions) to a corporation that is not controlled by the Company, (b) the approval by the shareholders of the Company of any plan or proposal for the liquidation or dissolution of the Company, or (c) a change in control of the Company of a nature that would be required to be reported (assuming such event has not been "previously reported") in response to Item 1(a) of the Current Report on Form 8-K, as in effect on the effective date of the Plan, pursuant to Section 13 or 15(d) of the Exchange Act, whether or not the Company is then subject to such reporting requirement; provided, however, that, without limitation, such a Change in Control shall be deemed to have occurred at such time as (x) any Person becomes after the effective date of the Plan the "beneficial owner" (as defined in Rule 13d-3 under the Exchange Act), directly or indirectly, of 50% or more of the combined voting power of the Company's outstanding securities ordinarily having the right to vote at elections of directors, or (y) individuals who constitute the board of directors of the Company on the effective date of the Plan cease for any reason to constitute at least a majority thereof, provided that any person becoming a director subsequent to the effective date of the Plan whose election, or nomination for election by the Company's shareholders, was approved by a vote of at least a majority of the directors comprising the board of directors of the Company on the effective date of the Plan (either by a specific vote or by

approval of the proxy statement of the Company in which such person is named as a nominee for director, without objection to such nomination) shall be, for purposes of this clause (y), considered as though such person were a member of the board of directors of the Company on the effective date of the Plan.

9.2. Acceleration of Vesting. If a Change of Control of the Company shall

occur, then, without any action by the Committee or the Board, all outstanding Options shall become immediately exercisable in full and shall remain exercisable during the remaining term thereof, regardless of whether the employment or other status of the Participants with respect to which Options have been granted shall continue with the Company or any subsidiary.

9.3. Cash Payment. If a Change in Control of the Company shall occur,

then the Committee, in its discretion, and with the consent of any Participant effected thereby, may determine that some or all Participants holding outstanding Options shall receive, with respect to some or all of the shares of Common Stock subject to such Options, as of the effective date of any such Change in Control of the Company, cash in an amount equal to the excess of the Fair Market Value of such shares immediately prior to the effective date of such Change in Control of the Company over the exercise price per share of such Options.

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9.4. Limitation on Acceleration of Vesting. Notwithstanding anything in

Sections 9.2 or 9.3 above to the contrary, if, with respect to a Participant, acceleration of the vesting of Options as provided in Section 9.2 or the payment of cash in exchange for all or part of an Option and as provided in Section 9.3 above (which acceleration or payment could be deemed a "payment" within the meaning of Section 280G(b) (2) of the Code), together with any other payments which such Participant has the right to receive from the Company or any corporation which is a member of an "affiliated group" (as defined in Section 1504(a) of the Code without regard to Section 1504(b) of the Code) of which the Company is a member, would constitute a "parachute payment" (as defined in Section 280G(b) (2) of the Code), then the acceleration of exercisability and the payments to such Participant pursuant to Sections 9.2 and 9.3 above shall be reduced to the largest amount as, in the sole judgment of the Committee, will result in no portion of such payments being subject to the excise tax imposed by Section 4999 of the Code.

ARTICLE

10.

RIGHT TO WITHHOLD; PAYMENT OF WITHHOLDING TAXES.

10.1. General Rules. The Company is entitled to (a) withhold and deduct

from future wages of the Participant (or from other amounts that may be due and owing to the Participant from the Company or a Subsidiary), or make other arrangements for the collection of, all legally required amounts necessary to satisfy any and all federal, state and local withholding and employment-related tax requirements attributable to an Option, including, without limitation, the grant, exercise or vesting of an Option or a disqualifying disposition of stock received upon exercise of an Incentive Stock Option, or (b) require the Participant promptly to remit the amount of such withholding to the Company before taking any action, including issuing any shares of Common Stock, with respect to an Option.

10.2. Special Rules. The Committee may, in its sole discretion and upon -----
terms and conditions established by the Committee, permit or require a Participant to satisfy, in whole or in part, any withholding or employment-related tax obligation described in Section 10.1 of the Plan by electing to tender Previously Acquired Shares, a Broker Exercise Notice or a promissory note (on terms acceptable to the Committee in its sole discretion), or by a combination of such methods.

ARTICLE

11.

RIGHTS OF ELIGIBLE RECIPIENTS AND PARTICIPANTS; TRANSFERABILITY.

11.1. .Employment or Service. Nothing in the Plan shall interfere with or -----
limit in any way the right of the Company or any Subsidiary to terminate the employment or service of any Eligible Recipient or Participant at any time, nor confer upon any Eligible Recipient or Participant any right to continue in the employ or service of the Company or any Subsidiary.

11.2. Restrictions on Transfer. Other than pursuant to a qualified -----
domestic relations order (as defined by the Code), no right or interest of any Participant in an Option prior to the exercise of such Option shall be assignable or transferrable, or subjected to any lien, during the

lifetime of the Participant, either voluntarily or involuntarily, directly or indirectly, by operation of law or otherwise, including execution, levy, garnishment, attachment, pledge, divorce or bankruptcy. A Participant shall, however, be entitled to designate a beneficiary to receive an Option upon such Participant's death. In the event of a Participant's death, such Participant's rights and interest in Options shall be transferrable by testamentary will or the laws of descent and distribution, and payment of any amounts due under the Plan shall be made to, and exercise of any Options (to the extent permitted

pursuant to Article 8 of the Plan) may be made by, the Participant's legal representatives, heirs or legatees. If in the opinion of the Committee a Participant holding an Option is disabled from caring for his or her affairs because of mental condition, physical condition or age, any payments due the Participant may be made to, and any rights of the Participant under the Plan shall be exercised by, such Participant's guardian, conservator or other legal personal representative upon furnishing the Committee with evidence satisfactory to the Committee of such status.

11.3. Non-Exclusivity of the Plan. Nothing contained in the Plan is

intended to amend, modify or rescind any previously approved compensation plans or programs entered into by the Company. The Plan will be construed to be in addition to any and all such other plans or programs. Neither the adoption of the Plan nor the submission of the Plan to the shareholders of the Company for approval will be construed as creating any limitations on the power or authority of the Board to adopt such additional or other compensation arrangements as the Board may deem necessary or desirable.

ARTICLE

12.

SECURITIES LAW RESTRICTIONS.

12.1. Share Issuances. Notwithstanding any other provision of the Plan or

any agreements entered into pursuant hereto, the Company shall not be required to issue or deliver any certificate for shares of Common Stock under this Plan, and an Option shall not be considered to be exercised notwithstanding the tender by the Participant of any consideration therefor, unless and until each of the following conditions has been fulfilled:

(a) (i) There shall be in effect with respect to such shares a registration statement under the Securities Act and any applicable state securities laws if the Committee, in its sole discretion, shall have determined to file, cause to become effective and maintain the effectiveness of such registration statement; or (ii) if the Committee has determined not to so register the shares of Common Stock to be issued under the Plan, (A) exemptions from registration under the Securities Act and applicable state securities laws shall be available for such issuance (as determined by counsel to the Company) and (B) there shall have been received from the Participant (or, in the event of death or disability, the Participant's heir(s) or legal representative(s)) any representations or agreements requested by the Company in order to permit such issuance to be made pursuant to such exemptions; and

(b) There shall have been obtained any other consent, approval or

permit from any state or federal governmental agency which the Committee shall, in its sole discretion upon the advice of counsel, deem necessary or advisable.

12.2. Share Transfers. Shares of Common Stock issued pursuant to Options

granted under the Plan may not be sold, assigned, transferred, pledged, encumbered or otherwise disposed of, whether voluntarily or involuntarily, directly or indirectly, by operation of law or otherwise, except pursuant to registration under the Securities Act and applicable state securities laws or pursuant to exemptions from such registrations. The Company may condition the sale, assignment, transfer, pledge, encumbrance or other disposition of such shares not issued pursuant to an effective and current registration statement under the Securities Act and all applicable state securities laws on the receipt from the party to whom the shares of Common Stock are to be so transferred of any representations or agreements requested by the Company in order to permit such transfer to be made pursuant to exemptions from registration under the Securities Act and applicable state securities laws.

12.3. Legends.

(a) Unless a registration statement under the Securities Act is in effect with respect to the issuance or Transfer of shares of Common Stock under the Plan, each certificate representing any such shares shall be endorsed with a legend in substantially the following form, unless counsel for the Company is of the opinion as to any such certificate that such legend is unnecessary:

THE SECURITIES EVIDENCED HEREBY HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED ("THE ACT"), OR UNDER APPLICABLE STATE SECURITIES LAWS. THESE SECURITIES HAVE BEEN ACQUIRED FOR INVESTMENT AND MAY NOT BE OFFERED FOR SALE, SOLD, ASSIGNED, TRANSFERRED, PLEDGED, ENCUMBERED OR OTHERWISE DISPOSED OF EXCEPT PURSUANT TO AN EFFECTIVE REGISTRATION STATEMENT UNDER THE ACT AND SUCH STATE LAWS OR PURSUANT TO AN EXEMPTION FROM REGISTRATION UNDER THE ACT AND SUCH STATE LAWS, THE AVAILABILITY OF WHICH IS TO BE ESTABLISHED TO THE SATISFACTION OF THE COMPANY.

(b) The Committee, in its sole discretion, may endorse certificates representing shares issued pursuant to the exercise of Incentive Stock Options with a legend in substantially the following form:

THE SHARES REPRESENTED BY THIS CERTIFICATE MAY NOT BE SOLD, TRANSFERRED, ENCUMBERED, HYPOTHECATED OR OTHERWISE DISPOSED OF ON OR BEFORE [THE LATER OF THE ONE-YEAR OR TWO-YEAR INCENTIVE STOCK OPTION

HOLDING PERIODS], WITHOUT THE PRIOR WRITTEN CONSENT OF THE COMPANY.

ARTICLE

13.

PLAN AMENDMENT, MODIFICATION AND TERMINATION.

The Board may suspend or terminate the Plan or any portion thereof at any time, and may amend the Plan from time to time in such respects as the Board may deem advisable in order that Options under the Plan shall conform to any change in applicable laws or regulations or in any other respect the Board may deem to be in the best interests of the Company; provided, however, that no such amendment shall be effective, without approval of the shareholders of the Company, if shareholder approval of the amendment is then required pursuant to Rule 16b-3 under the Exchange Act or any successor rule or Section 422 of the Code or under the applicable rules or regulations of any securities exchange or the NASD. No termination, suspension or amendment of the Plan shall alter or impair any outstanding Option without the consent of the Participant affected thereby; provided, however, that this sentence shall not impair the right of the Committee to take whatever action it deems appropriate under Section 4.3 or Article 9 of the Plan.

ARTICLE

14.

EFFECTIVE DATE OF THE PLAN.

14.1. Effective Date. The Plan is effective as of October 5, 1993, the

date it was adopted by the Board.

14.2. Duration of the Plan. The Plan shall terminate at midnight on

October 4, 2003, and may be terminated prior thereto by Board action, and no Option shall be granted after such termination. Options outstanding upon termination of the Plan may continue to be exercised in accordance with their terms.

ARTICLE

15.

MISCELLANEOUS.

15.1. Construction and Headings. The use of the masculine gender shall

also include within its meaning the feminine, and the singular may include the plural and the plural may include the singular, unless the context clearly indicates to the contrary. The headings of the Articles, Sections and subparts of the Plan are for convenience of reading only and are not meant to be of substantive significance and shall not add or detract from the meaning of such

15.2. Public Policy. No person shall have any claim or right to receipt

of an Option if, in the opinion of counsel to the Company, such receipt conflicts with law or is opposed to governmental or public policy.

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15.3. Governing Law. The place of administration of the Plan shall be

conclusively deemed to be within the State of Minnesota, and the rights and obligations of any and all persons having or claiming to have had an interest under the Plan or under any agreements evidencing Options shall be governed by and construed exclusively and solely in accordance with the laws of the State of Minnesota without regard to the conflict of laws provisions of any jurisdictions. All parties agree to submit to the jurisdiction of the state and federal courts of Minnesota with respect to matters relating to the Plan and agree not to raise or assert the defense that such forum is not convenient for such party.

15.4. Successors and Assigns. This Plan shall be binding upon and inure

to the benefit of the successors and permitted assigns of the Company, including, without limitation, whether by way of merger, consolidation, operation of law, assignment, purchase or other acquisition of substantially all of the assets or business of the Company, and any and all such successors and assigns shall absolutely and unconditionally assume all of the Company's obligations under the Plan.

15.5. Survival of Provisions. The rights, remedies, agreements,

obligations and covenants contained in or made pursuant to the Plan, any agreement evidencing an Option and any other notices or agreements in connection therewith, including, without limitation, any notice of exercise of an Option, shall survive the execution and delivery of such notices and agreements and the delivery and receipt of shares of Common Stock and shall remain in full force and effect.

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BOARD ADVISORY AGREEMENT

PARTIES:

Optical Sensors Incorporated
7615 Golden Triangle Drive
Technology Park V
Minneapolis, Minnesota 55344 ("OSI")

Sam B. Humphries
7913 Wyoming Court
Bloomington, Minnesota 55438 ("Advisor")

EFFECTIVE DATE: September 11, 1998

RECITALS:

- A. Advisor has resigned as President and Chief Executive Officer of the Company effective as of the effective date of this Agreement.
- B. Advisor will continue to serve as a member of the Board of Directors of the Company, and the parties wish to provide for the engagement of Advisor to provide advice and counsel to the Board of Directors and new President of OSI.
- C. Advisor wishes to receive compensation from OSI for Advisor's services, and OSI desires reasonable protection of its confidential business and technical information that has been acquired and is being developed by OSI at substantial expense.

AGREEMENT:

The parties, each intending to be legally bound, agree as follows:

- 1. Engagement and Term. Subject to all of the terms and conditions of this -----
Agreement, OSI agrees to engage the Advisor for the term of this Agreement, and the Advisor accepts such engagement. This Agreement shall commence as of the effective date set forth above and shall remain in force until the earlier of (a) OSI's 1999 Annual Meeting of Shareholder or (b) May 31, 1999, unless sooner terminated pursuant to the provisions of Section 9 below.
- 2. Advisor's Duties and Obligations.

 - (a) Duties. Advisor will provide advice and counsel to the Board of -----

Directors and President of OSI, as may be reasonably requested from time to time, regarding OSI's management transition and financing activities during the term of this Agreement. OSI understands that Advisor is assuming the full-time position of President and Chief Executive Officer of American Medical Systems, Inc. and that Advisor's duties under this Agreement shall not interfere in any material respect with Advisor's responsibilities as President and Chief Executive Officer of American Medical Systems, Inc.

(b) OSI Policies. Advisor shall abide by all policies of OSI as such

policies may be amended from time to time by OSI.

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(c) Use of OSI's Name. Advisor shall not use the name of OSI or any other

similar name or any trademark, tradename or service mark of OSI without the prior written consent of OSI.

(d) Laws and Regulations. Advisor shall comply with all applicable laws

and regulations and adhere to the highest business ethics in performing his/her obligations in accordance with the terms of this Agreement.

3. Advisor's Compensation. OSI will pay Advisor, as Advisor's sole

compensation hereunder, the sum of Fifty Thousand Dollars (\$50,000) for services performed under this Agreement, payable on April 1, 1999. OSI will reimburse Advisor for any reasonable out of pocket expenses incurred by Advisor, but only if OSI has approved such expenses in writing in advance.

4. Nondisclosure of Confidential Information.

(a) Definition. For purposes of this Agreement "Confidential Information"

means any information or compilation of information, not generally known, which is proprietary to OSI and relates to OSI's existing or reasonably foreseeable business, including but not limited to, trade secrets, Inventions, (as hereinafter defined) and information contained in or relating to OSI's product designs, tolerances, manufacturing methods, processes, techniques, treatment or chemical composition of material, plant layout, tooling, marketing plans or proposals, and customer information. All information which OSI identifies as being "confidential" or "trade secret" shall be presumed to be Confidential Information. Confidential Information shall also include any confidential information of a parent, subsidiary, or sister corporation of OSI and any information disclosed by a third party under contract with OSI which contract requires such disclosed information be kept confidential. Confidential Information shall not include information that (i) is in or enters the public domain other than through a breach of confidentiality owed to OSI, (ii) was known to Advisor

prior to disclosure by OSI as demonstrated by Advisor's written records or (iii) is disclosed to Advisor by a third party other than through a breach of confidentiality owed to OSI.

(b) Nondisclosure. During the term of this Agreement and at all times

thereafter, Advisor shall hold in strictest confidence and will never disclose, furnish, transfer, communicate, make accessible to any person or use in any way Confidential Information for Advisor's own or another's benefit or permit the same to be used in competition with OSI, nor will Advisor accept any employment or consulting position which would, by the nature of the position, inherently involve the use or disclosure by Advisor of Confidential Information. The term "any person" as used above includes any individual who does not have written authorization from OSI to have access to Confidential Information, including OSI employees and other OSI Advisors. Advisor will refrain from such acts and omissions which would reduce the value of the Confidential Information to OSI.

5. Inventions.

(a) Definition. For purposes of this Agreement "Invention" means any

invention, enhancement, alteration, modification, improvement, discovery, new idea, formula, process, design, trade secret, or other useful technical information or know-how, whether or not shown or described in writing or whether or not copyrightable or patentable, relating to the existing or reasonably foreseeable business of OSI.

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(b) Disclosure and Assignment. Advisor agrees to promptly disclose to OSI

in writing complete information concerning all Inventions and Confidential Information made, generated, discovered, developed, conceived, perfected or first reduced to practice by Advisor alone or in conjunction with others, during the term of this Agreement that:

(i) Relate to any subject matter pertaining to projects assigned to Advisor hereunder;

(ii) Relate to or is directly or indirectly connected with the business, products, projects or Confidential Information of OSI;

(iii) Involve the use of any time, material or facility of OSI; or

(iv) Advisor develops during the time Advisor is performing consulting duties for OSI.

To the extent that any Invention or Confidential information qualifies

as "work made for hire" as defined in 17 U.S.C. Section 101 (1976), as amended, such Inventions and Confidential Information shall constitute "work made for hire" and, as such, shall be the exclusive property of OSI. Advisor hereby assigns to OSI all of his/her right, title and interest in all Inventions and Confidential Information.

(c) Limitation of Section 5(b). The provisions of Section 5(b) above shall not apply to any Invention meeting all of the following conditions:

(i) Such Invention was developed entirely on Advisor's own time; and

(ii) Such Invention was made without the use of any of OSI's equipment, supplies, facility, or trade secret information; and

(iii) Such Invention does not relate (A) directly to the business of OSI or (B) to OSI's actual or demonstrably anticipated research and development; and

(iv) Such Invention does not result from any work performed by Advisor for OSI.

(d) Assistance of Advisor. Advisor agrees, at OSI's expense, to give OSI

all assistance it reasonably requires to perfect, protect, and use its rights to Inventions and Confidential Information. In particular, but without limitation, Advisor agrees to sign all documents, do all things, and supply all information that OSI may deem necessary or desirable to (i) transfer or record the transfer of Advisor's entire right, title, and interest in Inventions and Confidential Information; and (ii) enable OSI to obtain patent, copyright, or trademark protection for Inventions anywhere in the world.

(e) Continuing Obligation after Termination of Agreement. The obligations

of this Section 5 shall continue beyond the termination of this Agreement with respect to Inventions conceived or made by Advisor during the term hereof and shall be binding upon Advisor's assigns, executors, administrators, and other legal representatives. In the event Advisor is called upon to render assistance to OSI pursuant to Section 5(d) after termination of this Agreement, OSI shall pay Advisor the compensation set forth in Section 3 above and shall call upon Advisor for assistance at such reasonable times so as not to interfere with Advisor's employment or business.

For purposes of this Agreement, any Invention or discovery relating to the business of OSI upon which Advisor files a patent application within one (1) year after termination of this Agreement shall be presumed to have been made during the term of this Agreement, subject to proof to the contrary by

good faith, written and duly corroborated records establishing that such Invention or discovery was conceived and made by Advisor following termination of this Agreement.

(f) Records. Advisor shall keep complete, accurate and authentic accounts,

notes, data, and records of all Inventions in the manner and form requested by OSI. Such accounts, notes, data, and records shall be the property of OSI, and upon its request Advisor shall promptly surrender the same to OSI.

6. Documents and Tangible Property. All tangible evidence of Confidential

Information or Inventions, including, without limitation, working models, records, drawings, manuals, books, blank forms, documents, letters, memoranda, notes, notebooks, reports, data, tables, calculations or copies thereof which are conceived or generated by Advisor or come into Advisor's possession during the term of this Agreement shall be and remain the exclusive property of OSI, and Advisor agrees to return all such tangible evidence of Confidential Information and Inventions to OSI upon termination of this Agreement or at such earlier time as OSI may request.

7. Independent Contractor. Advisor acknowledges that he/she is an independent

contractor and is not and shall not be deemed to be an employee, joint venturer, partner, franchisee or legal representative of OSI for any purpose whatsoever. Accordingly, Advisor shall be exclusively responsible for the manner in which he/she performs, and for the profitability or lack thereof, of his/her activities under this Agreement. Advisor does not have, and shall not represent him/herself as having, any right or authority to obligate or bind OSI in any manner whatsoever.

8. Indemnification. OSI agrees to indemnify and hold Advisor and any employer

of Advisor harmless with respect to any claim made against Advisor, including the reasonable cost of defense thereof, which is based upon any activities of Advisor under this Agreement, except to the extent any such claim is the result of any negligent or actionable conduct of Advisor. In the event any such claim is made, Advisor shall promptly notify OSI in writing and OSI may, at its option, assume the defense of such claim.

9. Termination. This Agreement may be terminated prior to the end of its term

pursuant to any of the following provisions:

(a) Mutual Agreement. By mutual written agreement executed by both

parties.

(b) Default. By either party, effective immediately upon delivery of

written notice to the other party, if the other party breaches any of its

obligations under this Agreement; provided that if such breach is curable, such notice shall not be effective until the breaching party fails to correct such breach or default within a period of thirty (30) days after delivery of such written notice. If such breach is not curable, the Agreement shall terminate immediately upon delivery of such notice of breach.

(c) Adverse Activity. By OSI effective immediately upon delivery of -----
written notice if (i) Advisor is convicted of or enters a plea of guilty or no contest to a charge of violating any law relating to Advisor's business, or (ii) Advisor takes any action which impairs the goodwill associated with OSI's trademark, trade name or service mark, or makes any unauthorized use or disclosure of any Confidential Information.

10. Obligations Upon Termination. Following termination of this Agreement for -----
any reason, the following provisions shall apply:

(a) Documents and Tangible Property. All documents containing any -----
Confidential Information or Inventions or copies thereof which are conceived or generated by Advisor or which come into Advisor's possession during the term of this Agreement shall be returned to OSI.

(b) Payment of Compensation. OSI's sole obligation to Advisor upon -----
expiration or proper termination of this Agreement shall be to pay compensation determined in accordance with the provisions of Section 3 hereof for services rendered prior to the expiration or termination of this Agreement. Advisor hereby acknowledges that he/she has no right to and waives any such implied rights to any reimbursement for lost profits or income or any other loss, cost or expense resulting from expiration or termination of this Agreement in accordance with its terms.

(c) Continuing Obligations. The obligations of Advisor under Sections 4, 5 -----
and 6 herein shall survive the termination of this Agreement and shall continue in full force and effect.

11. General Provisions.

(a) Severability and Interpretation. In the event that a provision of this -----
Agreement is held invalid, the remaining provisions shall nonetheless be enforced in accordance with their terms. Further, in the event that any provision is held to be overbroad as written, such provision shall be

deemed amended to narrow its application to the extent necessary to make the provision enforceable according to applicable law and shall be enforced as amended.

(b) Notices. Any notice required or permitted to be given under this

Agreement shall be deemed effective when received if delivered by hand, telecopy, telex or telegram or three (3) days after depositing if placed in the U.S. mails for delivery by registered or certified mail, return receipt requested, postage prepaid and addressed to the appropriate party at the address set forth on the first page of this Agreement. Such addresses may be changed by giving written notice to the other party of such different address pursuant to the provisions of this section 11(b).

(c) Nonassignment. Advisor shall not assign, transfer, or sell any or any

part of his/her rights or obligations hereunder without the prior written consent of OSI. This Agreement shall be binding upon and inure to the benefit of any successor or assignee of OSI and of any permitted successors and assignees of Advisor as provided above.

(d) Governing Law. This Agreement shall be deemed to have been made in the

State of Minnesota and shall be governed by and construed in accordance with the laws of the State of Minnesota.

(e) Mediation and Arbitration. If any dispute, controversy or claim arises

under this Agreement, the parties shall negotiate in good faith to settle the matter. If the parties are unable to resolve the matter within a reasonable time, the parties shall submit the matter to mediation by a trained mediator approved by both parties, the cost of which shall be shared equally by the parties. Any dispute, controversy or claim arising under this Agreement not resolved through mediation shall be finally settled by arbitration in accordance with the Commercial Arbitration Rules of the American Arbitration Association in effect on the date of this Agreement by a single arbitrator appointed in accordance with said Rules; provided, however, that any dispute,

controversy or claim arising under Sections 4, 5 or 6 of this Agreement need not be submitted to arbitration. The appointing authority shall be the American Arbitration Association. In any such arbitration, each party shall be limited to taking two depositions each and a total of 25 interrogatories or document requests. The costs of any arbitration shall be shared equally by the parties, unless the award of the arbitrator provides otherwise. The arbitrator's award shall be non-appealable and enforceable in any court of competent jurisdiction. The place of mediation or arbitration shall be Minneapolis, Minnesota.

(f) No Adequate Remedy. Advisor understands that if the Advisor fails to

fulfill Advisor's obligations under Sections 4, 5 or 6 of this Agreement,
the damages to OSI would be very difficult to determine. Therefore, in
addition to any other rights or remedies available to OSI at law, in
equity, or by statute, Advisor hereby consents to the specific enforcement
of Sections 4, 5 or 6 of this Agreement by OSI through an injunction or
restraining order issued by an appropriate court.

(g) Entire Agreement. This Agreement, together with the exhibits hereto,

constitutes the entire Agreement between the parties and supersedes any and
all prior and contemporaneous oral or written understandings between the
parties relating to the subject matter hereof.

(h) No Conflicts. Advisor represents and warrants to OSI that neither the

entering into of this Agreement nor the performance of any of Advisor's
obligations hereunder will conflict with or constitute a breach under any
obligation of Advisor under any agreement or contract to which Advisor is
bound. Without limiting the foregoing, Advisor agrees that at no time will
Advisor utilize any trade secrets or intellectual property rights of any
third party.

The parties have executed this Agreement in the manner appropriate to each to be
effective the day and year entered on the first page hereof.

OPTICAL SENSORS INCORPORATED

By: /s/ Paulita LaPlante

Paulita LaPlante, President

/s/ Sam B. Humphries

Sam B. Humphries

[OSI LETTERHEAD]

September 15, 1998

Mr. Sam B. Humphries
7913 Wyoming Court
Bloomington, MN 55438

Dear Sam:

This letter will confirm the agreement between Optical Sensors Incorporated ("OSI") and you regarding the Non-Recourse Promissory Note, dated September 1, 1995, in the original principal amount of \$245,000 executed by you in favor of OSI (the "Note"). OSI hereby forgives \$36,750 principal amount of the Note. Accordingly, the new principal balance due under the Note is \$208,250. On or before September 30, 1998, you will pay in full the new principal amount of the Note of \$208,250, plus accrued interest. As of August 31, 1998, accrued interest under the Note was \$9,639.81, and interest will accrue thereafter at the rate of \$39.76 per day. Upon receipt of such payment, OSI will deliver to you the original Note.

As you know, the forgiveness of \$36,750 of indebtedness under the Note will constitute income to you and will be reported by OSI on your 1998 Form W-2. On or before September 30, 1998, the Company will make a cash payment to you equal to an amount such that after payment by you of all taxes owed by you with respect to such debt forgiveness, including any tax imposed on such gross-up payment, you would retain an amount equal to the tax imposed upon such debt forgiveness. For purposes of the foregoing determination, your tax rate will be deemed to be the highest statutory marginal state and federal tax rate (on a combined basis) currently in effect. We have calculated the amount of the gross-up payment to be \$33,250.

As you are also aware, an aggregate of 40,833 shares of Common Stock purchased by you pursuant to the Non-Statutory Stock Option Agreement, dated August 2, 1995 between OSI and you, will be automatically forfeited and returned to the Company due to the fact that you resigned your position as an employee of the Company prior to August 2, 1999. On or before September 30, 1998, you will surrender to OSI one or more stock certificates representing an aggregate of 40,833 shares of Common Stock.

This letter will also confirm that you have resigned as President and Chief Executive Officer of OSI effective September 11, 1998.

Mr. Sam B. Humphries
September 14, 1998
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On behalf of OSI, I look forward to continuing to work with you as a member of the Board of Directors.

Very truly yours,

/s/ Paulita M. LaPlante

Paulita M. LaPlante
President

ACKNOWLEDGED AND AGREED TO
AS OF SEPTEMBER 22, 1998

/s/ Sam B. Humphries

Sam B. Humphries

OPTICAL SENSORS INCORPORATED
EXECUTIVE MANAGEMENT
CHANGE IN CONTROL SEVERANCE PAY PLAN

As Adopted Effective January 18, 1999

OPTICAL SENSORS INCORPORATED
EXECUTIVE MANAGEMENT
CHANGE IN CONTROL SEVERANCE PAY PLAN

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OPTICAL SENSORS INCORPORATED
EXECUTIVE MANAGEMENT
CHANGE IN CONTROL SEVERANCE PAY PLAN

ARTICLE

1.

Introduction

- 1.1. Plan Name. The name of the Plan is the "Optical Sensors Incorporated

Executive Management Change in Control Severance Pay Plan."
- 1.2. Plan Type. The Plan is an unfunded plan maintained by the Company

primarily for the purpose of providing benefits for a select group of management or highly compensated employees and, as such, is intended to be exempt from the provisions of Parts 2, 3 and 4 of Subtitle B of Title I of ERISA, to the extent such provisions would otherwise be applicable, by operation of sections 201(2), 301(a)(3) and 401(a)(1) thereof, respectively. The Plan is also intended to be unfunded for tax purposes. The Plan will be construed in a manner that gives effect to such intent.
- 1.3. Plan Purpose. The purpose of the Plan is to provide benefits to Qualified

Employees whose employment is terminated in connection with a Change in Control.

ARTICLE

2.

Definitions, Construction and Interpretations

The definitions and rules of construction and interpretation set forth in this Article 2 apply in construing the Plan unless the context otherwise indicates.

- 2.1. Affiliate. An "Affiliate" is:

- (A) any corporation at least a majority of whose outstanding securities ordinarily having the right to vote at elections of directors is owned directly or indirectly by the Parent Corporation; or
- (B) any other form of business entity in which the Parent Corporation, by virtue of a direct or indirect ownership interest, has the right to elect a majority of the members of such entity's governing body.

- 2.2. Base Pay. The "Base Pay" of a Participant is his or her base salary from

the Company at the annual rate in effect immediately prior to the Change in Control or at the time Notice of Termination is given, whichever is greater, disregarding any decrease which constitutes Good Reason for the Participant's termination of employment. Base Pay includes only regular cash salary, wages or commissions and is determined before any reduction for deferrals pursuant to any nonqualified deferred compensation plan or arrangement, qualified cash or deferred arrangement or cafeteria plan.

2.3. Benefit Plan. A "Benefit Plan" is any:

- (A) employee benefit plan as defined in ERISA section 3(3),
- (B) cafeteria plan described in Code section 125,
- (C) plan, policy or practice providing for paid vacation, other paid time off or short- or long-term profit sharing, bonus or incentive payments, or
- (D) stock option, stock purchase, restricted stock, phantom stock, stock appreciation right or other equity-based compensation plan

that is sponsored, maintained or contributed to by the Company for the benefit of employees (and/or their families and dependents) generally or a Participant (and/or a Participant's family and dependents) in particular.

2.4. Board. The "Board" is the board of directors of the Parent Corporation

duly qualified and acting at the time in question. On and after the date of a Change in Control, any duty of the Board in connection with the Plan is nondelegable and any attempt by the Board to delegate any such duty is ineffective.

2.5. Cause.

- (A) Subject to Subsection (B), "Cause" with respect to a particular Participant is any of the following:

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- (1) the Participant's gross misconduct which is materially and demonstrably injurious to the Company;
- (2) the Participant's willful and continued failure to perform substantially his or her duties with the Company (other than a failure resulting from the Participant's incapacity due to bodily injury or physical or mental illness) after a demand for substantial performance is delivered to the Participant by the Board which specifically identifies the manner in which the Board

believes that the Participant has not substantially performed his or her duties and provides for a reasonable period of time within which the Participant may take corrective measures; or

- (3) the Participant's conviction (including a plea of nolo contendere) of willfully engaging in illegal conduct constituting a felony or gross misdemeanor under federal or state law (or comparable illegal conduct under the laws of any foreign jurisdiction) which is materially and demonstrably injurious to the Company or which impairs the Participant's ability to perform substantially his or her duties with the Company.

An act or failure to act will be considered "gross" or "willful" for this purpose only if done, or omitted to be done, by the Participant in bad faith and without reasonable belief that it was in, or not opposed to, the best interests of the Company. Any act, or failure to act, based upon authority given pursuant to a resolution duly adopted by the board of directors or governing body of any Company (or a committee thereof) or based upon the advice of counsel for the Company will be conclusively presumed to be done, or omitted to be done, by the Participant in good faith and in the best interests of the Company. A Participant's attention to matters not directly related to the business of the Company will not provide a basis for termination for Cause so long as the Board did not expressly disapprove in writing of his or her engagement in such activities either before or within a reasonable period of time after the Board knew or could reasonably have known that the Participant engaged in those activities.

- (B) Notwithstanding Subsection (A), a Participant may not be terminated for Cause unless and until there has been delivered to such Participant a copy of a resolution duly adopted by the affirmative vote of not less than a majority of the entire membership of the Board at a meeting of the Board called and held for such purpose (after reasonable notice to such Participant and an opportunity for such Participant, together with his or her counsel, to be heard before the Board), finding that in the good faith opinion of the Board such Participant was guilty of the conduct set forth in clause (1), (2) or (3) of Subsection (A) and specifying the particulars thereof in detail.

2.6. Change in Control. A "Change in Control" is a Full Change in Control or a -----
Partial Change in Control.

2.7. Code. The "Code" is the Internal Revenue Code of 1986, as amended. Any ----
reference to a specific provision of the Code includes a reference to such provision as it may be amended from time to time and to any successor provision.

2.8. Company. The "Company" is the Parent Corporation, any Successor and any

Affiliate.

2.9. Date of Termination. The "Date of Termination" with respect to a

Participant following a Change in Control (or prior to a Change in Control if the Participant's termination was either a

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condition of the Change in Control or was at the request or insistence of any Person related to the Change in Control) means:

- (A) if the Participant's employment is to be terminated by the Participant for Good Reason, the date specified in the Notice of Termination which in no event may be a date more than 15 days after the date on which Notice of Termination is given unless the Company agrees in writing to a later date;
- (B) if the Participant's employment is to be terminated by the Company for Cause, the date specified in the Notice of Termination;
- (C) if the Participant's employment is terminated by reason of his or her death, the date of his or her death; or
- (D) if the Participant's employment is to be terminated by the Company for any reason other than Cause or his or her death, the date specified in the Notice of Termination, which in no event may be a date earlier than 15 days after the date on which a Notice of Termination is given, unless the Participant expressly agrees in writing to an earlier date.

If the Company terminates a Participant's employment for Cause and the Participant has not previously expressly agreed in writing to the termination, then within the 30-day period after the Participant's receipt of the Notice of Termination, the Participant may notify the Company that a dispute exists concerning the termination, in which event the Date of Termination will be the date set either by mutual written agreement of the parties or by the arbitrators or a court in a proceeding as provided in Section 5.4. During the pendency of any such dispute, the Participant will continue to make himself or herself available to provide services to the Company and the Company will continue to pay the Participant his or her full compensation and benefits in effect immediately prior to the date on which the Notice of Termination is given (without regard to any changes to such compensation or benefits which constitute Good Reason) and until the dispute is resolved in accordance with Section 5.4. The Participant will be entitled to retain the full amount of any such compensation and benefits without regard to the resolution of the dispute unless the arbitrators or judge decide(s) that the Participant's claim of a dispute was frivolous or advanced by the Participant in bad faith.

2.10. Eligible Participant. An "Eligible Participant" is a Participant who has

become eligible to receive benefits pursuant to Section 3.3.

2.11. ERISA. "ERISA" is the Employee Retirement Income Security Act of 1974,

as amended. Any reference to a specific provision of ERISA includes a
reference to such provision as it may be amended from time to time and to
any successor provision.

2.12. Exchange Act. The "Exchange Act" is the Securities Exchange Act of 1934,

as amended. Any reference to a specific provision of the Exchange Act or
to any rule or regulation thereunder includes a reference to such
provision as it may be amended from time to time and to any successor
provision.

2.13. Full Change in Control.

(A) "Full Change in Control" is the occurrence of any of the following on
or after January 18, 1999:

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- (1) the sale, lease, exchange or other transfer, directly or indirectly, of all or substantially all of the assets of the Parent Corporation, in one transaction or in a series of related transactions, to any Person;
- (2) the approval by the shareholders of the Parent Corporation of any plan or proposal for the liquidation or dissolution of the Parent Corporation;
- (3) any Person, other than a "bona fide underwriter," is or becomes the "beneficial owner" (as defined in Rule 13d-3 under the Exchange Act), directly or indirectly, of (a) 20 percent or more, but not more than 50 percent, of the combined voting power of the Parent Corporation's outstanding securities ordinarily having the right to vote at elections of directors, unless the transaction resulting in such ownership has been approved in advance by the "continuity directors," as defined at Subsection (B), or (b) more than 50 percent of the combined voting power of the Parent Corporation's outstanding securities ordinarily having the right to vote at elections of directors (regardless of any approval by the continuity directors);
- (4) a merger or consolidation to which the Parent Corporation is a party if the shareholders of the Parent Corporation immediately prior to the effective date of such merger or consolidation have,

solely on account of ownership of securities of the Parent Corporation at such time, "beneficial ownership" (as defined in Rule 13d-3 under the Exchange Act) immediately following the effective date of such merger or consolidation of securities of the surviving company representing (a) 50 percent or more, but not more than 80 percent, of the combined voting power of the surviving corporation's then outstanding securities ordinarily having the right to vote at elections of directors, unless such merger or consolidation has been approved in advance by the continuity directors, or (b) less than 50 percent of the combined voting power of the surviving corporation's then outstanding securities ordinarily having the right to vote at elections of directors (regardless of any approval by the continuity directors);

- (5) the continuity directors cease for any reason to constitute at least a majority the Board; or
- (6) a change in control of a nature that is determined by outside legal counsel to the Parent Corporation, in a written opinion specifically referencing this provision of the Plan, to be required to be reported (assuming such event has not been "previously reported") pursuant to section 13 or 15(d) of the Exchange Act, whether or not the Parent Corporation is then subject to such reporting requirement, as of the effective date of such change in control.

(B) For purposes of this section:

- (1) "continuity director" means any individual who is a member of the Board on January 18, 1999, while he or she is a member of the Board, and any individual who subsequently becomes a member of the Board whose election or nomination for election by the Parent Corporation's shareholders was approved by a vote of at least a majority of the directors who are continuity directors (either by a specific vote or by approval of the proxy statement of the Parent Corporation in which such individual is named as a nominee for director without objection to such nomination). For example, if a majority of the six individuals constituting

the Board on January 18, 1999, approved a proxy statement in which two different individuals were nominated to replace two of the individuals who were members of the Board on January 18, 1999, upon their election by the Parent Corporations shareholders, the two newly elected directors would join the four remaining directors who were members of the Board on January 18, 1999 as continuity directors. Similarly if a majority of those six directors approved a proxy statement in which three different

individuals were nominated to replace three other directors who were members of the Board on January 18, 1999, upon their election by the Parent Corporation's shareholders, the three newly elected directors would also become, along with the three other directors, continuity directors. Individuals subsequently joining the Board could become continuity directors under the principles reflected in this example.

- (2) "bona fide underwriter" means a Person engaged in business as an underwriter of securities that acquires securities of the Parent Corporation through such Person's participation in good faith in a firm commitment underwriting until the expiration of 40 days after the date of such acquisition.

2.14. Good Reason.

- (A) Subject to Subsection (B), "Good Reason" with respect to a Participant is any of the following:
 - (1) a change in the Participant's status, position(s), duties or responsibilities as an executive of the Company as in effect at any time during the 90-day period ending on the date of the Change in Control which, in the Participant's reasonable judgment, is adverse (other than, if applicable, any such change directly attributable to the fact that the Parent Corporation is no longer publicly owned); provided, however, that Good Reason does not include a change in a Participant's status, position(s), duties or responsibilities caused by an insubstantial and inadvertent action that is remedied by the Company promptly after receipt of notice of such change is given by the Participant;
 - (2) a reduction by the Company in the Participant's Base Pay, or an adverse change in the form or timing of the payment thereof, as in effect immediately prior to the Change in Control or as thereafter increased;
 - (3) the failure by the Company to cover the Participant under Benefit Plans that, in the aggregate, provide substantially similar benefits to the Participant and/or his or her family and dependents at a substantially similar total cost to the Participant (e.g., premiums, deductibles, co-pays, out of pocket maximums, required contributions, taxes and the like) relative to the benefits and total costs under the Benefit Plans in which the Participant (and/or his or her family or dependents) is participating at any time during the 90-day period immediately preceding the Change in Control;
 - (4) the Company's requiring a Participant to be based more than 30 miles from where his or her office is located immediately prior

to the Change in Control, except for required travel on the Company's business, and then only to the extent substantially consistent with the business travel obligations which the Participant undertook on behalf of the Company during the 90-day period ending on the date

of the Change in Control (without regard to travel related to or in anticipation of the Change in Control);

- (5) the failure of the Parent Company to obtain from any Successor the assent to this Plan contemplated by Section 6.1;
- (6) any purported termination by the Company of a Participant's employment which is not properly effected pursuant to a Notice of Termination and pursuant to any other requirements of this Plan, and for purposes of this Plan, no such purported termination will be effective; or
- (7) any refusal by the Company to continue to allow a Participant to attend to matters or engage in activities not directly related to the business of the Company which, at any time prior to the Change in Control, the Participant was not expressly prohibited by the Company from attending to or engaging in.

(B) A Participant's continued employment does not constitute consent to, or waiver of any rights arising in connection with, any circumstance constituting Good Reason. Termination by a Participant of his or her employment for Good Reason as defined in this section will constitute Good Reason for all purposes of this Plan, notwithstanding that the Participant may also thereby be deemed to have "retired" under any applicable retirement programs of the Company.

2.15. Governing Law. To the extent that state law is not preempted by

provisions of ERISA or any other laws of the United States, all questions pertaining to the construction, validity, effect and enforcement of this Plan will be determined in accordance with the internal, substantive laws of the State of Minnesota, without regard to the conflict of laws principles of the State of Minnesota or of any other jurisdiction.

2.16. Headings. The headings of articles and sections are included solely for

convenience. If there is a conflict between the headings and the text of the Plan, the text will control.

2.17. Notice of Termination. A "Notice of Termination" is a written notice

given on or after the date of a Change in Control (unless the termination

before the date of the Change in Control was either a condition of the Change in Control or was at the request or insistence of any Person related to the Change in Control) which indicates the specific termination provision in this Plan pursuant to which the notice is given. Any purported termination by the Company or by a Participant for Good Reason on or after the date of a Change in Control (or before the date of the Change in Control if the termination was either a condition of the Change in Control or was at the request or insistence of any Person related to the Change in Control) must be communicated by written Notice of Termination to be effective; provided, that a Participant's failure to provide Notice of Termination will not limit any of his or her rights under the Plan except to the extent the Company demonstrates that it suffered material actual damages by reason of such failure.

2.18. Number and Gender. Wherever appropriate, the singular number may be read -----
as the plural, the plural number may be read as the singular and a reference to one gender may be read as a reference to the other.

2.19. Parent Corporation. The "Parent Corporation" is Optical Sensors -----
Incorporated and any Successor.

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2.20. Partial Change in Control. A "Partial Change in Control" is the -----
occurrence of any of the following on or after January 18, 1999:

- (A) the sale, lease, exchange or other transfer, directly or indirectly, of the assets of the Parent Corporation comprising either (i) the SensiCath Arterial Blood Gas Monitoring Product Line or (ii) the CapnoProbe Product Line, but not both, in one transaction or in a series of related transactions, to any Person; or
- (B) the approval by the Board of any plan or proposal for the cessation of commercial activity relating to or the liquidation of the Parent Corporation's SensiCath Arterial Blood Gas Monitoring Product Line.

In no event shall a transaction, or series of related transactions, that constitutes a Full Change in Control be deemed to be a Partial Change in Control.

2.21. Participant. A "Participant" is a Qualified Employee who is -----
participating in the Plan pursuant to Article 3.

2.22. Plan. The "Plan" is that set forth in this instrument as it may be ----
amended from time to time.

- 2.23. Person. A "Person" includes any individual, corporation, partnership,

group, association or other "person," as such term is used in section
14(d) of the Exchange Act, other than the Parent Corporation, any
Affiliate or any benefit plan sponsored by the Parent Corporation or an
Affiliate.
- 2.24. Qualified Employee. A "Qualified Employee" is an individual who (a) at

any time during the 90-day period ending on the date of a Change in
Control, is employed by the Parent Corporation as Chief Executive Officer,
President, Vice President, General Manager or Chief Technical Officer -
Systems and (b) is not a party to a separate written agreement with the
Company which by its express terms specifically provides that the
individual is not eligible to participate in the Plan.
- 2.25. Successor. A "Successor" is any Person that succeeds to, or has the

practical ability to control (either immediately or solely with the
passage of time), the Parent Corporation's business directly, by merger,
consolidation or other form of business combination, or indirectly, by
purchase of the Parent Corporation's outstanding securities ordinarily
having the right to vote at the election of directors, all or
substantially all of its assets or otherwise.
- 2.26. Trust. "Trust" means the trust or trusts, if any, established by the

Company pursuant to Section 5.5.
- 2.27. Trustee. "Trustee" means the one or more banks or trust companies who at

the relevant time has or have been appointed by the Company to act as
Trustee of the Trust.

ARTICLE

3.

Participation and Eligibility for Benefits

- 3.1. Commencement of Participation. An individual who is hired as a Qualified

Employee prior to the date of a Change in Control will commence
participation in the Plan on January 18, 1999. An individual who is hired
as a Qualified Employee on or after the date of a Change in Control is not
eligible to participate in the Plan.
- 3.2. Ceasing to be a Qualified Employee.

-
- (A) A Participant who ceases for any reason to be a Qualified Employee will, except with respect to any current or future benefit to which he or she is then entitled, thereupon cease his or her participation in the Plan.
 - (B) Notwithstanding any other provision of the Plan to the contrary, a Participant will cease to be a Qualified Employee if, prior to the date of a Change in Control: (1) an Affiliate is sold, merged, transferred or in any other manner or for any other reason ceases to be an Affiliate or all or any portion of the business or assets of an Affiliate are sold, transferred or otherwise disposed of and no Change in Control occurs in connection therewith; (2) the Participant's primary employment duties are with the Affiliate at the time of the occurrence of such event; and (3) such Participant does not, in conjunction therewith, transfer employment directly to the Parent Corporation or another affiliate as a Qualified Employee.

3.3. Eligibility for Benefits.

- (A) A Participant will become eligible for the benefits provided in Article 4 if and only if
 - (1) (i) the Company terminates his or her employment for any reason other than his or her death or Cause, (ii) the termination occurs within the period beginning on the date of a Partial Change in Control and ending on the last day of the sixth month that begins after the month in which the Partial Change in Control occurs or prior to a Partial Change in Control if the termination was either a condition of the Partial Change in Control or at the request or insistence of a Person related to the Partial Change in Control and (iii) the Participant provides service to the Company on a part-time basis during the sixty-day period following termination as may be reasonably requested by the Company, provided that such request does not interfere with the Participant's activities in seeking new employment or actual employment by another employer, in order to assist with the transition of the Participant's job responsibilities; or
 - (2) (i) (a) the Company terminates his or her employment for any reason other than his or her death or Cause or (b) the Participant terminates employment with the Company for Good Reason and (ii) the termination occurs within the period beginning on the date of a Full Change in Control and ending on the last day of the twelfth month that begins after the month in which the Full Change in Control occurs or prior to a Full Change in Control if the termination was either a condition of the Full Change in Control or at the request or insistence of a Person related to the Full Change in Control.

(B) If, on or after the date of a Change in Control, an Affiliate is sold, merged, transferred or in any other manner or for any other reason ceases to be an Affiliate or all or any portion of the business or assets of an Affiliate are sold, transferred or otherwise disposed of and the acquiror is not the Parent Corporation or an Affiliate (a "Disposition"), any individual who was a Qualified Employee immediately prior to the Disposition and who remains or becomes employed by the acquiror or an affiliate of the acquiror (as defined in Section 2.1 but substituting "acquiror" for "Parent Corporation") in connection with the Disposition will be deemed to have terminated employment on the effective date of the Disposition for purposes of Subsection (A) unless (1) the acquiror and its affiliates jointly and severally expressly assume and agree, in a manner that is enforceable by the individual, to perform the obligations of this Plan to the same extent that the Company would be required to perform if the Disposition had not occurred and (2) the Successor guarantees, in a manner that is enforceable by the individual, payment and performance by the acquiror.

ARTICLE
4.
Benefits

4.1. Compensation and Benefits Before Date of Termination. During the period

beginning on the date a Participant or the Company, as the case may be, receives Notice of Termination and ending on the Date of Termination, the Company will continue to pay the Participant his or her Base Pay and cause his or her continued participation in all Benefit Plans in accordance with the terms of such Benefit Plans.

4.2. Cash Payment.

(A) The Company will make a cash payment to an Eligible Participant in an amount equal to one hundred percent (100%) of the Eligible Participant's Base Pay.

(B) If the Participant's employment is terminated in connection with a Partial Change in Control, and the Participant becomes eligible to receive benefits pursuant to Section 3.3(A)(1), the amount determined under Subsection (A) will be paid in periodic installments made on the same basis as the Participant's Base Pay; provided that if a Full Change in Control occurs before such amount is paid in full, any

remaining unpaid balance will be paid in a single lump sum within ten business days following the date of the Full Change in Control. If the Participant's employment is terminated in connection with a Full Change in Control, and the Participant becomes eligible to receive benefits pursuant to Section 3.3(A)(2), the amount determined under Subsection (A) will be paid in a single lump sum within ten days after the Eligible Participant's Date of Termination or, if later, within ten business days following the date of the Change in Control.

4.3. Continuation of Certain Welfare Benefits.

(A) During the period described in Subsection (B), the Company will maintain, or continue to reimburse or pay on behalf of the executive, as the case may be, medical, dental and life insurance plans which by their terms cover each Eligible Participant (and his or her family members and dependents who were eligible to be covered at any time during the 90-day period ending on the date of a Change in Control for the period after the Change in Control in which such family members and dependents would otherwise continue to be covered under the terms of the plan in effect immediately prior to the Change in Control) under the same terms and at the same cost to the Eligible Participant and his or her family members and dependents as similarly situated executives who continue to be employed by the Company (without regard to any reduction in such benefits that constitutes Good Reason). The continuation period under applicable federal and state continuation laws will begin to run from the date on which coverage pursuant to this Section 4.3 ends.

(B) For purposes of Subsection (A), the continuation period with respect to any particular plan is the period beginning on an Eligible Participant's Date of Termination and ending on the earlier of (1) the last day of the twelfth month that begins after the Eligible Participant's Date of Termination, (2) the date after the Eligible Participant's Date of Termination on which the Eligible Participant first becomes eligible to participate as an employee in a plan of another employer providing benefits to the Eligible Participant and his or her eligible family members and dependents which plan does not contain any exclusion or limitation with respect to any pre-existing condition of the Eligible Participant or any eligible family member or dependent who would otherwise be covered

under the Company's plan but for this clause (2), or (3) the date of the Eligible Participant's death.

(C) To the extent an Eligible Participant incurs a tax liability (including federal, state and local taxes and any interest and penalties with respect thereto) in connection with a benefit provided

pursuant to Subsection (A) which he or she would not have incurred had he or she been an active employee of the Company participating in the Company's Benefit Plan, the Company will make a payment to the Eligible Participant in an amount equal to such tax liability plus an additional amount sufficient to permit the Eligible Participant to retain a net amount after all taxes (including penalties and interest) equal the initial tax liability in connection with the benefit. For purposes of applying the foregoing, an Eligible Participant's tax rate will be deemed to be the highest statutory marginal state and federal tax rate (on a combined basis) then in effect. The payment pursuant to this subsection will be made within ten days after the Eligible Participant's remittal of a written request therefor accompanied by a statement indicating the basis for and amount of the liability.

4.4. Gross-Up Payments. Following a Change in Control, the Company will cause

its independent auditors promptly to review, at the Company's sole expense, the applicability of Code section 4999 to any payment or distribution of any type by the Company to or for the benefit of an Eligible Participant, whether paid or payable or distributed or distributable pursuant to the terms of the Plan, any Benefit Plan or otherwise (the "Total Payments"). If the auditor determines that the Total Payments result in an excise tax imposed by Code section 4999 or any comparable state or local law, or any interest or penalties with respect to such excise tax (such excise tax, together with any such interest and penalties, are collectively referred to as the "Excise Tax"), the Company will make an additional cash payment (a "Gross-Up Payment") to the Eligible Participant within ten days after such determination equal to an amount such that after payment by the Eligible Participant of all taxes (including any interest or penalties imposed with respect to such taxes), including any Excise Tax, imposed upon the Gross-Up Payment, the Eligible Participant would retain an amount of the Gross-Up Payment equal to the Excise Tax imposed upon the Total Payments. For purposes of the foregoing determination, an Eligible Participant's tax rate will be deemed to be the highest statutory marginal state and federal tax rate (on a combined basis) then in effect. If no determination by the Company's auditors is made prior to the time a tax return reflecting the Total Payments is required to be filed by the Eligible Participant, he or she will be entitled to receive from the Company a Gross-Up Payment calculated on the basis of the Excise Tax he or she reported in such tax return, within ten days after the later of the date on which he or she files such tax return or the date on which he or she provides a copy thereof to the Company. In all events, if any tax authority determines that a greater Excise Tax should be imposed upon the Total Payments than is determined by the Company's independent auditors or reflected in the Eligible Participants' tax return pursuant to this Section 4.4, the Eligible Participant is entitled to receive from the Company the full Gross-Up Payment calculated on the basis of the amount of Excise Tax determined to be payable by such tax authority within ten days after he or she notifies the Company of such determination.

4.5. Indemnification. Following a Change in Control, the Company will indemnify

and advance expenses to an Eligible Participant to the full extent permitted by law for damages, costs and expenses (including, without limitation, judgments, fines, penalties, settlements and reasonable fees and expenses of the Participant's counsel) incurred in connection with all matters, events and transactions relating to such Eligible Participant's service to or status with the Company or any

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other corporation, employee benefit plan or other entity with whom the Eligible Participant served at the request of the Company.

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ARTICLE

5.

Administration and Enforcement of Rights

5.1. Plan Administration. The Board has the power and authority to construe,

interpret and administer the Plan. Prior to the date of a Change in Control, the Board may delegate such power and authority to any committee or individual but such delegation will automatically cease to be effective on the date of a Change in Control. Prior to (but not after) the date of a Change in Control, the power and authority of the Board and any individual or committee to whom such power and authority is in whole or in part delegated is discretionary as to all matters.

5.2. Amendment and Termination.

(A) Prior to the date of a Change in Control, the Board may amend the Plan from time to time in such respects as the Board may deem advisable; provided, that the effective date of any amendment that adversely affects a Qualified Employee may not be less than one year after the date on which the amendment is approved by the Board and, if a Change in Control occurs prior to the date on which the amendment would otherwise be effective, the amendment automatically will be null and void. On and after the date of a Change in Control, the Plan may be amended with respect to a Participant only if he or she consents to the amendment in a written instrument signed by the Participant.

(B) The Board may terminate the Plan at any time; provided, first, that prior to the date of a Change in Control, the effective date of the termination may not be less than one year after the date on which the termination is approved by the Board; and, second, that the Plan cannot be terminated, and no termination will become effective, within the period beginning on the date of a Change in Control and ending on

the last day of the twelfth month that begins after the month in which the Change in Control occurs.

- (C) Any amendment or termination of the Plan must be set forth in a written instrument approved by the Board and signed by at least two officers of the Parent Corporation.

5.3. Benefit Claims. A person whose employment relationship with the Company -----

has terminated and who has not been awarded benefits under the Plan or who objects to the amount of the benefits so awarded may, within 90 days after his or her employment has terminated, file a written request for benefits with the Board. The Board will review such request and will notify the claimant of its decision within 60 days after such request is filed. If the Board denies the claim for benefits, the notice of the denial will contain

- (A) the specific reason for the denial,
- (B) a specific reference to the provision of the Plan on which denial is based,
- (C) a description of any additional information or material necessary for the person to perfect his or her claim (and an explanation of why such information is material or necessary), and
- (D) an explanation of the Plan's claim review procedure.

If the Board determines that a claimant is not eligible for benefits, or if the claimant believes that he or she is entitled to greater or different benefits, the claimant may file a petition for review with the Board within 60 days after the claimant receives the notice issued by the Board. Within

60 days after the Board receives the petition, the Board will give the claimant (and his or her counsel, if any) an opportunity to present his or her position to the Board orally or in writing, and the claimant (or his or her counsel) will have the right to review the pertinent documents. Within 60 days after the hearing (or the date of receipt of the petition if the claimant presents his or her position in writing) the Board will notify the claimant of its decision in writing, stating the decision and the specific provisions of the Plan on which the decision is based.

5.4. Disputes. -----

- (A) If a Participant so elects, any dispute, controversy or claim arising under or in connection with this Plan will be settled exclusively by binding arbitration in Minneapolis, Minnesota in accordance with the

Employee Benefit Plan Claims Arbitration Rules of the American Arbitration Association, incorporated by referenced herein. Judgment may be entered on the arbitrator's award in any court having jurisdiction; provided, that a Participant may seek specific performance of his or her right to receive benefits until the Date of Termination during the pendency of any dispute or controversy arising under or in connection with the Plan. If any dispute, controversy or claim for damages arising under or in connection with this Plan is settled by arbitration, the Company will pay, or if elected by the Participant, reimburse, all fees, costs and expenses incurred by a Participant related to such arbitration.

- (B) If a Participant does not elect arbitration, he or she may pursue all available legal remedies. The Company will pay, or if elected by the Participant, reimburse each Participant for, all fees, costs and expenses incurred by such Participant in connection with any actual, threatened or contemplated litigation relating to this Plan to which the Participant is or reasonably expects to become a party, whether or not initiated by the Participant, if the Participant is successful in recovering any benefit under this Plan as a result of such action.
- (C) The Company will not assert in any dispute or controversy with any Participant arising under or in connection with this Plan the Participant's failure to exhaust administrative remedies.

5.5. Funding and Payment.

-
- (A) The Company may establish a Trust with an independent corporate trustee. The Trust must (1) be a grantor trust with respect to which the Company is treated as grantor for purposes of Code section 677, (2) not cause the Plan to be funded for purposes of Title I of ERISA and (3) provide that Trust assets will, upon the insolvency of the Company, be used to satisfy claims of the Company's general creditors. The Company may from time to time transfer to the Trust cash, marketable securities or other property acceptable to the Trustee.
 - (B) The Trustee will make distributions to Participants and Beneficiaries from the Trust in satisfaction of the Company's obligations under the Plan in accordance with the terms of the Trust. The Company is responsible for paying any benefits that are not paid from the Trust.
 - (C) Nothing contained in the Plan or Trust is to be construed as providing for assets to be held for the benefit of any Participant or any other person or persons to whom benefits are to be paid pursuant to the terms of this Plan, the Participant's or other person's only interest under the Plan being the right to receive the benefits set forth herein. The Trust

is established only for the convenience of the Company and no Participant has any interest in the assets of the Trust. To the extent the Participant or any other person acquires a right to receive benefits under this Plan or the Trust, such right is no greater than the right of any unsecured general creditor of the Company.

ARTICLE

6.

Miscellaneous

6.1. Successors. The Parent Corporation will require any Successor to expressly

assume and agree to perform the obligations of this Plan in the same manner and to the same extent that the Parent Corporation would be required to perform if no such succession had taken place. Failure of the Parent Corporation to obtain such assumption and agreement at least three business days prior to the time a Person becomes a Successor (or where the Parent Corporation does not have at least three business days' advance notice that a Person may become a Successor, within one business day after having notice that such Person may become or has become a Successor) will constitute Good Reason for termination of a Participant's employment. The date on which any such succession becomes effective will be deemed the Date of Termination and Notice of Termination will be deemed to have been given on such date. A Successor has no rights, authority or power with respect to the Plan prior to a Change in Control.

6.2. Binding Plan. This Plan is for the benefit of, and is enforceable by, each

Participant, each Participant's personal and legal representatives, executors, administrators, successors, heirs, distributees, devisees and legatees, but each Participant may not otherwise assign any of his or her rights or delegate any of his or her obligations under this Plan. If a Participant dies after becoming entitled to, but before receiving, any amounts payable under this Plan, all such amounts, unless otherwise provided in this Plan, will be paid in accordance with the terms of this Plan to such Participant's devisee, legatee or other designee or, if there be no such designee, to such Participant's estate.

6.3. Validity. The invalidity or unenforceability of any provision of the Plan

does not affect the validity or enforceability of any other provision of the Plan, which will remain in full force and effect.

6.4. No Mitigation. No Eligible Participant will be required to mitigate the

amount of any benefits the Company becomes obligated to provide in

connection with this Plan by seeking other employment or otherwise and the benefits to be provided in connection with this Plan may not be reduced, offset or subject to recovery by the Company by any benefits an Eligible Participant may receive from other sources.

6.5. No Set-off. The Company has no right to set-off benefits owed under this -----
Plan against amounts owed or claimed to be owed by an Eligible Participant to the Company under this Plan or otherwise.

6.6. Taxes. All benefits to be provided to each Eligible Participant in -----
connection with this Plan will be subject to required withholding of federal, state and local income, excise and employment-related taxes.

6.7. Notices. For the purposes of this Plan, notices and all other -----
communications provided for in, or required under, this Plan must be in writing and will be deemed to have been duly given when personally delivered or when mailed by United States registered or certified mail, return receipt requested, postage prepaid and addressed to each Participant's or the Company's (as the case may be) respective address (provided that all notices to the Company must be directed to the attention of the chair of the Board, or if no such chair has been designated, to a member of the Compensation Committee of the Board). For purposes of any such notice requirement, the Company will use the Participant's most current address on file in the Company's personnel

records. Any notice of a Participant's change of address will be effective only upon receipt by the Company.

6.8. Effect of Plan Benefits on Other Severance Plans. A Participant who -----
receives any payment under the terms of this Plan will not be eligible to receive benefits under any other severance pay plan sponsored or maintained by the Company.

6.9. Related Plans. To the extent that any provision of any other Benefit Plan -----
or agreement between the Company and a Participant limits, qualifies or is inconsistent with any provision of this Plan, then for purposes of this Plan, while such other Benefit Plan or agreement remains in force, the provision of this Plan will control and such provision of such other Benefit Plan or agreement will be deemed to have been superseded, and to be of no force or effect, as if such other agreement had been formally amended to the extent necessary to accomplish such purpose. Nothing in this Plan prevents or limits a Participant's continuing or future participation in any Benefit Plan provided by the Company, and nothing in

this Plan limits or otherwise affects the rights Participants may have under any Benefit Plans or other agreements with the Company. Amounts which are vested benefits or which Participants are otherwise entitled to receive under any Benefit Plan or other agreement with the Company at or subsequent to the Date of Termination will be payable in accordance with such Benefit Plan or other agreement.

6.10. No Employment or Service Contract. Nothing in this Plan is intended to -----
provide any Participant with any right to continue in the employ of the Company for any period of specific duration or interfere with or otherwise restrict in any way Participants' rights or the rights of the Company, which rights are hereby expressly reserved, to terminate a Participant's employment at any time for any reason or no reason whatsoever, with or without cause.

6.11. Survival. The respective obligations of, and benefits afforded to, the -----
Company and the Participants which by their express terms or clear intent survive termination of a Participant's employment with the Company or termination of this Plan, as the case may be, will remain in full force and effect according to their terms notwithstanding the termination of a Participant's employment with the Company or termination of this Plan, as the case may be.

6.12. Effect on Other Plans. Unless otherwise expressly provided therein, -----
benefits paid or payable under the Plan will not be deemed to be salary or compensation for purposes of determining the benefits to which a Participant may be entitled under any other Benefit Plan sponsored, maintained or contributed to by the Company.

6.13. Prohibition of Alienation. No Participant will have the right to -----
alienate, assign, encumber, hypothecate or pledge his or her interest in any benefit provided under the Plan, voluntarily or involuntarily, and any attempt to so dispose of any interest will be void.

AMENDMENT NO. 1 TO THE
OPTICAL SENSORS INCORPORATED
EXECUTIVE MANAGEMENT CHANGE-IN-CONTROL
SEVERANCE PAY PLAN

This Amendment No. 1 to the Optical Sensors Incorporated Executive Management Change-in-Control Severance Pay Plan is made effective as of February 16, 1999.

RECITALS

WHEREAS, the Board of Directors of Optical Sensors Incorporated (the "Company") approved an amendment to the Optical Sensors Incorporated Executive Management Change-in-Control Severance Pay Plan (the "Change in Control Plan") at a meeting held on February 16, 1999; and

WHEREAS, this Amendment is entered into to give effect to such action of the Board of Directors of the Company;

NOW, THEREFORE, the Change in Control Plan is hereby amended as follows effective as February 16, 1999:

1. Section 3.3(A)(1) of the Change in Control Plan is hereby amended in its entirety to read as follows:

- (1) (i) the Company terminates his or her employment for any reason other than his or her death or Cause, (ii) the termination occurs within the period beginning on the date of a Partial Change in Control and ending on the last day of the twelfth month that begins after the month in which the Partial Change in Control occurs or prior to a Partial Change in Control if the termination was either a condition of the Partial Change in Control or at the request or insistence of a Person related to the Partial Change in Control and (iii) the Participant provides service to the Company on a part-time basis during the sixty-day period following termination as may be reasonably requested by the Company, provided that such request does not interfere with the Participant's activities in seeking new employment or actual employment by another employer, in order to assist with the transition of the Participant's job responsibilities; or

2. To record this Amendment to the Change in Control Plan as set forth above, the Company has caused this Amendment to be signed on its behalf by its Chief Executive Officer as of the date first set forth above.

OPTICAL SENSORS INCORPORATED

By: /s/ Paulita M. LaPlante

Paulita M. LaPlante
President and Chief Executive Officer

OPTICAL SENSORS INCORPORATED
KEY EMPLOYEE
CHANGE IN CONTROL SEVERANCE PAY PLAN

OPTICAL SENSORS INCORPORATED
KEY EMPLOYEE
CHANGE IN CONTROL SEVERANCE PAY PLAN

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OPTICAL SENSORS INCORPORATED
KEY EMPLOYEE
CHANGE IN CONTROL SEVERANCE PAY PLAN

ARTICLE

1.

Introduction

- 1.1. Plan Name. The name of the Plan is the "Optical Sensors Incorporated Key

Employee Change in Control Severance Pay Plan."
- 1.2. Plan Type. The Plan is intended to be a "welfare plan" within the meaning

of section 3(1) of ERISA pursuant to Department of Labor Regulation
section 2510.3-2(b) and will be administered and construed accordingly.
- 1.3. Plan Purpose. The purpose of the Plan is to provide benefits to Qualified

Employees whose employment is terminated in connection with a Change in
Control.

ARTICLE

2.

Definitions, Construction and Interpretations

The definitions and rules of construction and interpretation set forth in this Article 2 apply in construing the Plan unless the context otherwise indicates.

- 2.1. Affiliate. An "Affiliate" is:

- (A) any corporation at least a majority of whose outstanding securities ordinarily having the right to vote at elections of directors is owned directly or indirectly by the Parent Corporation; or
 - (B) any other form of business entity in which the Parent Corporation, by virtue of a direct or indirect ownership interest, has the right to elect a majority of the members of such entity's governing body.
- 2.2. Base Pay. The "Base Pay" of a Participant is his or her base salary from the Company at the annual rate in effect immediately prior to the Change

in Control or at the time Notice of Termination is given, whichever is greater. Base Pay includes only regular cash salary, wages or commissions and is determined before any reduction for deferrals pursuant to any nonqualified deferred compensation plan or arrangement, qualified cash or deferred arrangement or cafeteria plan.

2.3. Benefit Plan. A "Benefit Plan" is any:

- (A) employee benefit plan as defined in ERISA section 3(3),
- (B) cafeteria plan described in Code section 125,
- (C) plan, policy or practice providing for paid vacation, other paid time off or short- or long-term profit sharing, bonus or incentive payments, or
- (D) stock option, stock purchase, restricted stock, phantom stock, stock appreciation right or other equity-based compensation plan

that is sponsored, maintained or contributed to by the Company for the benefit of employees (and/or their families and dependents) generally or a Participant (and/or a Participant's family and dependents) in particular.

2.4. Board. The "Board" is the board of directors of the Parent Corporation

duly qualified and acting at the time in question. On and after the date of a Change in Control, any duty of the Board in connection with the Plan is nondelegable and any attempt by the Board to delegate any such duty is ineffective.

2.5. Cause.

(A) Subject to Subsection (B), "Cause" with respect to a particular Participant is any of the following:

(1) the Participant's gross misconduct which is materially and demonstrably injurious to the Company;

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(2) the Participant's willful and continued failure to perform substantially his or her duties with the Company (other than a failure resulting from the Participant's incapacity due to bodily injury or physical or mental illness) after a demand for substantial performance is delivered to the Participant by the Board which specifically identifies the manner in which the Board believes that the Participant has not substantially performed his or her duties and provides for a reasonable period of time within which the Participant may take corrective

measures; or

- (3) the Participant's conviction (including a plea of nolo contendere) of willfully engaging in illegal conduct constituting a felony or gross misdemeanor under federal or state law (or comparable illegal conduct under the laws of any foreign jurisdiction) which is materially and demonstrably injurious to the Company or which impairs the Participant's ability to perform substantially his or her duties with the Company.

An act or failure to act will be considered "gross" or "willful" for this purpose only if done, or omitted to be done, by the Participant in bad faith and without reasonable belief that it was in, or not opposed to, the best interests of the Company. Any act, or failure to act, based upon authority given pursuant to a resolution duly adopted by the board of directors or governing body of any Company (or a committee thereof) or based upon the advice of counsel for the Company will be conclusively presumed to be done, or omitted to be done, by the Participant in good faith and in the best interests of the Company. A Participant's attention to matters not directly related to the business of the Company will not provide a basis for termination for Cause so long as the Board did not expressly disapprove in writing of his or her engagement in such activities either before or within a reasonable period of time after the Board knew or could reasonably have known that the Participant engaged in those activities.

- (B) Notwithstanding Subsection (A), a Participant may not be terminated for Cause unless and until there has been delivered to such Participant a copy of a resolution duly adopted by the affirmative vote of not less than a majority of the entire membership of the Board at a meeting of the Board called and held for such purpose (after reasonable notice to such Participant and an opportunity for such Participant, together with his or her counsel, to be heard before the Board), finding that in the good faith opinion of the Board such Participant was guilty of the conduct set forth in clause (1), (2) or (3) of Subsection (A) and specifying the particulars thereof in detail.

2.6. Change in Control. A "Change in Control" is a Full Change in Control or a -----
Partial Change in Control.

2.7. Code. The "Code" is the Internal Revenue Code of 1986, as amended. Any ----
reference to a specific provision of the Code includes a reference to such provision as it may be amended from time to time and to any successor provision.

2.8. Company. The "Company" is the Parent Corporation, any Successor and any

Affiliate.

2.9. Date of Termination. The "Date of Termination" with respect to a

Participant following a Change in Control (or prior to a Change in Control if the Participant's termination was either a condition of the Change in Control or was at the request or insistence of any Person related to the Change in Control) means:

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- (A) if the Participant's employment is to be terminated by the Company for Cause, the date specified in the Notice of Termination;
- (B) if the Participant's employment is terminated by reason of his or her death, the date of his or her death; or
- (C) if the Participant's employment is to be terminated by the Company for any reason other than Cause or his or her death, the date specified in the Notice of Termination, which in no event may be a date earlier than 15 days after the date on which a Notice of Termination is given, unless the Participant expressly agrees in writing to an earlier date.

If the Company terminates a Participant's employment for Cause and the Participant has not previously expressly agreed in writing to the termination, then within the 30-day period after the Participant's receipt of the Notice of Termination, the Participant may notify the Company that a dispute exists concerning the termination, in which event the Date of Termination will be the date set either by mutual written agreement of the parties or by the arbitrators or a court in a proceeding as provided in Section 5.4. During the pendency of any such dispute, the Participant will continue to make himself or herself available to provide services to the Company and the Company will continue to pay the Participant his or her full compensation and benefits in effect immediately prior to the date on which the Notice of Termination is given and until the dispute is resolved in accordance with Section 5.4. The Participant will be entitled to retain the full amount of any such compensation and benefits without regard to the resolution of the dispute unless the arbitrators or judge decide(s) that the Participant's claim of a dispute was frivolous or advanced by the Participant in bad faith.

2.10. Eligible Participant. An "Eligible Participant" is a Participant who has

become eligible to receive benefits pursuant to Section 3.3.

2.11. ERISA. "ERISA" is the Employee Retirement Income Security Act of 1974,

as amended. Any reference to a specific provision of ERISA includes a

reference to such provision as it may be amended from time to time and to any successor provision.

2.12. Exchange Act. The "Exchange Act" is the Securities Exchange Act of 1934,

as amended. Any reference to a specific provision of the Exchange Act or to any rule or regulation thereunder includes a reference to such provision as it may be amended from time to time and to any successor provision.

2.13. Full Change in Control.

- (A) "Full Change in Control" is the occurrence of any of the following on or after January 18, 1999:
- (1) the sale, lease, exchange or other transfer, directly or indirectly, of all or substantially all of the assets of the Parent Corporation, in one transaction or in a series of related transactions, to any Person;
 - (2) the approval by the shareholders of the Parent Corporation of any plan or proposal for the liquidation or dissolution of the Parent Corporation;
 - (3) any Person, other than a "bona fide underwriter," is or becomes the "beneficial owner" (as defined in Rule 13d-3 under the Exchange Act), directly or indirectly, of (a) 20 percent or more, but not more than 50 percent, of the combined voting

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power of the Parent Corporation's outstanding securities ordinarily having the right to vote at elections of directors, unless the transaction resulting in such ownership has been approved in advance by the "continuity directors," as defined at Subsection (B), or (b) more than 50 percent of the combined voting power of the Parent Corporation's outstanding securities ordinarily having the right to vote at elections of directors (regardless of any approval by the continuity directors);

- (4) a merger or consolidation to which the Parent Corporation is a party if the shareholders of the Parent Corporation immediately prior to the effective date of such merger or consolidation have, solely on account of ownership of securities of the Parent Corporation at such time, "beneficial ownership" (as defined in Rule 13d-3 under the Exchange Act) immediately following the effective date of such merger or consolidation of securities of the surviving company representing (a) 50 percent or more, but not more than 80 percent, of the combined voting

power of the surviving corporation's then outstanding securities ordinarily having the right to vote at elections of directors, unless such merger or consolidation has been approved in advance by the continuity directors, or (b) less than 50 percent of the combined voting power of the surviving corporation's then outstanding securities ordinarily having the right to vote at elections of directors (regardless of any approval by the continuity directors);

- (5) the continuity directors cease for any reason to constitute at least a majority the Board; or
- (6) a change in control of a nature that is determined by outside legal counsel to the Parent Corporation, in a written opinion specifically referencing this provision of the Plan, to be required to be reported (assuming such event has not been "previously reported") pursuant to section 13 or 15(d) of the Exchange Act, whether or not the Parent Corporation is then subject to such reporting requirement, as of the effective date of such change in control.

(B) For purposes of this section:

- (1) "continuity director" means any individual who is a member of the Board on January 18, 1999, while he or she is a member of the Board, and any individual who subsequently becomes a member of the Board whose election or nomination for election by the Parent Corporation's shareholders was approved by a vote of at least a majority of the directors who are continuity directors (either by a specific vote or by approval of the proxy statement of the Parent Corporation in which such individual is named as a nominee for director without objection to such nomination). For example, if a majority of the six individuals constituting the Board on January 18, 1999, approved a proxy statement in which two different individuals were nominated to replace two of the individuals who were members of the Board on January 18, 1999, upon their election by the Parent Corporations shareholders, the two newly elected directors would join the four remaining directors who were members of the Board on January 18, 1999 as continuity directors. Similarly if a majority of those six directors approved a proxy statement in which three different individuals were nominated to replace three other directors who were members of the Board on January 18, 1999, upon their election by the Parent Corporations shareholders, the three newly elected directors would also become, along with the three other directors, continuity

directors. Individuals subsequently joining the Board could

become continuity directors under the principles reflected in this example.

- (2) "bona fide underwriter" means a Person engaged in business as an underwriter of securities that acquires securities of the Parent Corporation through such Person's participation in good faith in a firm commitment underwriting until the expiration of 40 days after the date of such acquisition.

- 2.14. Governing Law. To the extent that state law is not preempted by -----
provisions of ERISA or any other laws of the United States, all questions pertaining to the construction, validity, effect and enforcement of this Plan will be determined in accordance with the internal, substantive laws of the State of Minnesota, without regard to the conflict of laws principles of the State of Minnesota or of any other jurisdiction.
- 2.15. Headings. The headings of articles and sections are included solely for -----
convenience. If there is a conflict between the headings and the text of the Plan, the text will control.
- 2.16. Notice of Termination. A "Notice of Termination" is a written notice -----
given on or after the date of a Change in Control (unless the termination before the date of the Change in Control was either a condition of the Change in Control or was at the request or insistence of any Person related to the Change in Control) which indicates the specific termination provision in this Plan pursuant to which the notice is given. Any purported termination by the Company on or after the date of a Change in Control (or before the date of the Change in Control if the termination was either a condition of the Change in Control or was at the request or insistence of any Person related to the Change in Control) must be communicated by written Notice of Termination to be effective; provided, that a Participant's failure to provide Notice of Termination will not limit any of his or her rights under the Plan except to the extent the Company demonstrates that it suffered material actual damages by reason of such failure.
- 2.17. Number and Gender. Wherever appropriate, the singular number may be read -----
as the plural, the plural number may be read as the singular and a reference to one gender may be read as a reference to the other.
- 2.18. Parent Corporation. The "Parent Corporation" is Optical Sensors -----
Incorporated and any Successor.
- 2.19. Partial Change in Control. A "Partial Change in Control" is the -----
occurrence of any of the following on or after January 18, 1999:

- (A) the sale, lease, exchange or other transfer, directly or indirectly, of the assets of the Parent Corporation comprising either (i) the SensiCath Arterial Blood Gas Monitoring Product Line or (ii) the CapnoProbe Product Line, but not both, in one transaction or in a series of related transactions, to any Person; or
- (B) the approval by the Board of any plan or proposal for the cessation of commercial activity relating to or the liquidation of the Parent Corporation's SensiCath Arterial Blood Gas Monitoring Product Line.

In no event shall a transaction, or series of related transactions, that constitutes a Full Change in Control be deemed to be a Partial Change in Control.

- 2.20. Participant. A "Participant" is a Qualified Employee who is

participating in the Plan pursuant to Article 3.
- 2.21. Plan. The "Plan" is that set forth in this instrument as it may be

amended from time to time.
- 2.22. Person. A "Person" includes any individual, corporation, partnership,

group, association or other "person," as such term is used in section 14(d) of the Exchange Act, other than the Parent Corporation, any Affiliate or any benefit plan sponsored by the Parent Corporation or an Affiliate.
- 2.23. Qualified Employee. A "Qualified Employee" is an individual who (a) at

any time during the 90-day period ending on the date of a Change in Control, is employed by the Parent Corporation as Chief Technical Officer - Chemistry, Director of Marketing, Director of Business Development for Non-Invasive Business or Manager of Engineering - Instruments and (b) is not a party to a separate written agreement with the Company which by its express terms specifically provides that the individual is not eligible to participate in the Plan.
- 2.24. Successor. A "Successor" is any Person that succeeds to, or has the

practical ability to control (either immediately or solely with the passage of time), the Parent Corporation's business directly, by merger, consolidation or other form of business combination, or indirectly, by purchase of the Parent Corporation's outstanding securities ordinarily having the right to vote at the election of directors, all or substantially all of its assets or otherwise.

2.25. Trust. "Trust" means the trust or trusts, if any, established by the

Company pursuant to Section 5.5.

2.26. Trustee. "Trustee" means the one or more banks or trust companies who at

the relevant time has or have been appointed by the Company to act as
Trustee of the Trust.

ARTICLE

3.

Participation and Eligibility for Benefits

3.1. Commencement of Participation. An individual who is hired as a Qualified

Employee prior to the date of a Change in Control will commence
participation in the Plan on January 18, 1999. An individual who is hired
as a Qualified Employee on or after the date of a Change in Control is not
eligible to participate in the Plan.

3.2. Ceasing to be a Qualified Employee.

(A) A Participant who ceases for any reason to be a Qualified Employee
will, except with respect to any current or future benefit to which
he or she is then entitled, thereupon cease his or her participation
in the Plan.

(B) Notwithstanding any other provision of the Plan to the contrary, a
Participant will cease to be a Qualified Employee if, prior to the
date of a Change in Control: (1) an Affiliate is sold, merged,
transferred or in any other manner or for any other reason ceases to
be an Affiliate or all or any portion of the business or assets of an
Affiliate are sold, transferred or otherwise disposed of and no
Change in Control occurs in connection therewith; (2) the
Participant's primary employment duties are with the Affiliate at the
time of the occurrence of such event; and (3) such Participant does
not, in conjunction therewith, transfer employment directly to the
Parent Corporation or another Affiliate as a Qualified Employee.

3.3. Eligibility for Benefits.

(A) A Participant will become eligible for the benefits provided in
Article 4 if and only if

- (1) (i) the Company terminates his or her employment for any reason other than his or her death or Cause, (ii) the termination occurs within the period beginning on the date of a Partial Change in Control and ending on the last day of the sixth month that begins after the month in which the Partial Change in Control occurs or prior to a Partial Change in Control if the termination was either a condition of the Partial Change in Control or at the request or insistence of a Person related to the Partial Change in Control and (iii) the Participant provides service to the Company on a part-time basis during the sixty-day period following termination as may be reasonably requested by the Company, provided that such request does not interfere with the Participant's activities in seeking new employment or actual employment by another employer, in order to assist with the transition of the Participant's job responsibilities; or
- (2) (i) the Company terminates his or her employment for any reason other than his or her death or Cause and (ii) the termination occurs within the period beginning on the date of a Full Change in Control and ending on the last day of the twelfth month that begins after the month in which the Full Change in Control occurs or prior to a Full Change in Control if the termination was either a condition of the Full Change in Control or at the request or insistence of a Person related to the Full Change in Control.
- (B) If, on or after the date of a Change in Control, an Affiliate is sold, merged, transferred or in any other manner or for any other reason ceases to be an Affiliate or all or any portion

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of the business or assets of an Affiliate are sold, transferred or otherwise disposed of and the acquiror is not the Parent Corporation or an Affiliate (a "Disposition"), any individual who was a Qualified Employee immediately prior to the Disposition and who remains or becomes employed by the acquiror or an affiliate of the acquiror (as defined in Section 2.1 but substituting "acquiror" for "Parent Corporation") in connection with the Disposition will be deemed to have terminated employment on the effective date of the Disposition for purposes of Subsection (A) unless (1) the acquiror and its affiliates jointly and severally expressly assume and agree, in a manner that is enforceable by the individual, to perform the obligations of this Plan to the same extent that the Company would be required to perform if the Disposition had not occurred and (2) the Successor guarantees, in a manner that is enforceable by the individual, payment and performance by the acquiror.

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ARTICLE

4.1. Compensation and Benefits Before Date of Termination. During the period

beginning on the date a Participant or the Company, as the case may be, receives Notice of Termination and ending on the Date of Termination, the Company will continue to pay the Participant his or her Base Pay and cause his or her continued participation in all Benefit Plans in accordance with the terms of such Benefit Plans.

4.2. Cash Payment.

(A) The Company will make a cash payment to an Eligible Participant in an amount equal to fifty percent (50%) of the Eligible Participant's Base Pay.

(B) If the Participant's employment is terminated in connection with a Partial Change in Control, and the Participant becomes eligible to receive benefits pursuant to Section 3.3(A) (1), the amount determined under Subsection (A) will be paid in periodic installments made on the same basis as the Participant's Base Pay; provided, that if a Full Change in Control occurs before such amount is paid in full, any remaining unpaid balance will be paid in a single lump sum within ten business days following the date of the Full Change in Control. If the Participant's employment is terminated in connection with a Full Change in Control, and the Participant becomes eligible to receive benefits pursuant to Section 3.3(A) (2), the amount determined under Subsection (A) will be paid in a single lump sum within ten days after the Eligible Participant's Date of Termination or, if later, within ten business days following the date of the Change in Control.

4.3. Continuation of Certain Welfare Benefits.

(A) During the period described in Subsection (B), the Company will maintain medical, dental and life insurance plans which by their terms cover each Eligible Participant (and his or her family members and dependents who were eligible to be covered at any time during the 90-day period ending on the date of a Change in Control for the period after the Change in Control in which such family members and dependents would otherwise continue to be covered under the terms of the plan in effect immediately prior to the Change in Control) under the same terms and at the same cost to the Eligible Participant and his or her family members and dependents as similarly situated employees who continue to be employed by the Company. The continuation period under applicable federal and state continuation laws will begin to run from the date on which coverage pursuant to this Section 4.3 ends.

(B) For purposes of Subsection (A), the continuation period with respect to any particular plan is the period beginning on an Eligible Participant's Date of Termination and ending on the earlier of (1) the last day of the sixth month that begins after the Eligible Participant's Date of Termination, (2) the date after the Eligible Participant's Date of Termination on which the Eligible Participant first becomes eligible to participate as an employee in a plan of another employer providing benefits to the Eligible Participant and his or her eligible family members and dependents which plan does not contain any exclusion or limitation with respect to any pre-existing condition of the Eligible Participant or any eligible family member or dependent who would otherwise be covered under the Company's plan but for this clause (2), or (3) the date of the Eligible Participant's death.

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(C) To the extent an Eligible Participant incurs a tax liability (including federal, state and local taxes and any interest and penalties with respect thereto) in connection with a benefit provided pursuant to Subsection (A) which he or she would not have incurred had he or she been an active employee of the Company participating in the Company's Benefit Plan, the Company will make a payment to the Eligible Participant in an amount equal to such tax liability plus an additional amount sufficient to permit the Eligible Participant to retain a net amount after all taxes (including penalties and interest) equal the initial tax liability in connection with the benefit. For purposes of applying the foregoing, an Eligible Participant's tax rate will be deemed to be the highest statutory marginal state and federal tax rate (on a combined basis) then in effect. The payment pursuant to this subsection will be made within ten days after the Eligible Participant's remittal of a written request therefor accompanied by a statement indicating the basis for and amount of the liability.

4.4. Limitation on Payments and Benefits. Notwithstanding anything in this

Plan to the contrary, if any payments or benefits to be made or provided by the Company to or for the benefit of an Eligible Participant constitute an "excess parachute payment" (as defined in Code section 280G(b)), the payments or benefits to be made or provided in connection with this Plan will be reduced to the extent necessary to prevent any portion of such payments or benefits from becoming subject to the excise tax imposed under Code section 4999. The determination as to whether any such decrease in the payments or benefits to be made or provided in connection with this Plan is necessary must be made in good faith by legal counsel or a certified public accountant selected by the Company, and such determination will be conclusive and binding. In the event that such a reduction is necessary, the Eligible Participant will have the right to

designate the particular payments or benefits that are to be reduced or eliminated so that no portion of the payments or benefits to be made or provided in connection with this Plan will be excess parachute payments subject to the excise tax under Code section 4999.

4.5. Indemnification. Following a Change in Control, the Company will

indemnify and advance expenses to an Eligible Participant to the full extent permitted by law for damages, costs and expenses (including, without limitation, judgments, fines, penalties, settlements and reasonable fees and expenses of the Participant's counsel) incurred in connection with all matters, events and transactions relating to such Eligible Participant's service to or status with the Company or any other corporation, employee benefit plan or other entity with whom the Eligible Participant served at the request of the Company.

ARTICLE

5.

Administration and Enforcement of Rights

5.1. Plan Administration. The Board has the power and authority to construe,

interpret and administer the Plan. Prior to the date of a Change in Control, the Board may delegate such power and authority to any committee or individual but such delegation will automatically cease to be effective on the date of a Change in Control. Prior to (but not after) the date of a Change in Control, the power and authority of the Board and any individual or committee to whom such power and authority is in whole or in part delegated is discretionary as to all matters.

5.2. Amendment and Termination.

(A) Prior to the date of a Change in Control, the Board may amend the Plan from time to time in such respects as the Board may deem advisable; provided, that the effective date of any amendment that adversely affects a Qualified Employee may not be less than one

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year after the date on which the amendment is approved by the Board and, if a Change in Control occurs prior to the date on which the amendment would otherwise be effective, the amendment automatically will be null and void. On and after the date of a Change in Control, the Plan may be amended with respect to a Participant only if he or she consents to the amendment in a written instrument signed by the Participant.

(B) The Board may terminate the Plan at any time; provided, first, that prior to the date of a Change in Control, the effective date of the

termination may not be less than one year after the date on which the termination is approved by the Board; and, second, that the Plan cannot be terminated, and no termination will become effective, within the period beginning on the date of a Change in Control and ending on the last day of the twelfth month that begins after the month in which the Change in Control occurs.

- (C) Any amendment or termination of the Plan must be set forth in a written instrument approved by the Board and signed by at least two officers of the Parent Corporation.

5.3. Benefit Claims. A person whose employment relationship with the Company -----

has terminated and who has not been awarded benefits under the Plan or who objects to the amount of the benefits so awarded may, within 90 days after his or her employment has terminated, file a written request for benefits with the Board. The Board will review such request and will notify the claimant of its decision within 60 days after such request is filed. If the Board denies the claim for benefits, the notice of the denial will contain

- (A) the specific reason for the denial,
- (B) a specific reference to the provision of the Plan on which denial is based,
- (C) a description of any additional information or material necessary for the person to perfect his or her claim (and an explanation of why such information is material or necessary), and
- (D) an explanation of the Plan's claim review procedure.

If the Board determines that a claimant is not eligible for benefits, or if the claimant believes that he or she is entitled to greater or different benefits, the claimant may file a petition for review with the Board within 60 days after the claimant receives the notice issued by the Board. Within 60 days after the Board receives the petition, the Board will give the claimant (and his or her counsel, if any) an opportunity to present his or her position to the Board orally or in writing, and the claimant (or his or her counsel) will have the right to review the pertinent documents. Within 60 days after the hearing (or the date of receipt of the petition if the claimant presents his or her position in writing) the Board will notify the claimant of its decision in writing, stating the decision and the specific provisions of the Plan on which the decision is based.

5.4. Disputes. -----

- (A) If a Participant so elects, any dispute, controversy or claim arising under or in connection with this Plan will be settled exclusively by

binding arbitration in Minneapolis, Minnesota in accordance with the Employee Benefit Plan Claims Arbitration Rules of the American Arbitration Association, incorporated by referenced herein. Judgment may be entered on the arbitrator's award in any court having jurisdiction; provided, that a Participant may seek specific performance of his or her right to receive benefits until the Date of Termination during the pendency of any dispute or controversy arising under or

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in connection with the Plan. If any dispute, controversy or claim for damages arising under or in connection with this Plan is settled by arbitration, the Company will pay, or if elected by the Participant, reimburse, all fees, costs and expenses incurred by a Participant related to such arbitration.

- (B) If a Participant does not elect arbitration, he or she may pursue all available legal remedies. The Company will pay, or if elected by the Participant, reimburse each Participant for, all fees, costs and expenses incurred by such Participant in connection with any actual, threatened or contemplated litigation relating to this Plan to which the Participant is or reasonably expects to become a party, whether or not initiated by the Participant, if the Participant is successful in recovering any benefit under this Plan as a result of such action.
- (C) The Company will not assert in any dispute or controversy with any Participant arising under or in connection with this Plan the Participant's failure to exhaust administrative remedies.

5.5. Funding and Payment.

- (A) The Company may establish a Trust with an independent corporate trustee. The Trust must (1) be a grantor trust with respect to which the Company is treated as grantor for purposes of Code section 677, (2) not cause the Plan to be funded for purposes of Title I of ERISA and (3) provide that Trust assets will, upon the insolvency of the Company, be used to satisfy claims of the Company's general creditors. The Company may from time to time transfer to the Trust cash, marketable securities or other property acceptable to the Trustee.
- (B) The Trustee will make distributions to Participants and Beneficiaries from the Trust in satisfaction of the Company's obligations under the Plan in accordance with the terms of the Trust. The Company is responsible for paying any benefits that are not paid from the Trust.
- (C) Nothing contained in the Plan or Trust is to be construed as

providing for assets to be held for the benefit of any Participant or any other person or persons to whom benefits are to be paid pursuant to the terms of this Plan, the Participant's or other person's only interest under the Plan being the right to receive the benefits set forth herein. The Trust is established only for the convenience of the Company and no Participant has any interest in the assets of the Trust. To the extent the Participant or any other person acquires a right to receive benefits under this Plan or the Trust, such right is no greater than the right of any unsecured general creditor of the Company.

ARTICLE

6.

Miscellaneous

6.1. Successors. The Parent Corporation will require any Successor to

expressly assume and agree to perform the obligations of this Plan in the same manner and to the same extent that the Parent Corporation would be required to perform if no such succession had taken place. The date on which any such succession becomes effective will be deemed the Date of Termination and Notice of Termination will be deemed to have been given on such date. A Successor has no rights, authority or power with respect to the Plan prior to a Change in Control.

6.2. Binding Plan. This Plan is for the benefit of, and is enforceable by,

each Participant, each Participant's personal and legal representatives, executors, administrators, successors, heirs, distributees, devisees and legatees, but each Participant may not otherwise assign any of his or her rights or delegate any of his or her obligations under this Plan. If a Participant dies after becoming entitled to, but before receiving, any amounts payable under this Plan, all such amounts, unless otherwise provided in this Plan, will be paid in accordance with the terms of this Plan to such Participant's devisee, legatee or other designee or, if there be no such designee, to such Participant's estate.

6.3. Validity. The invalidity or unenforceability of any provision of the Plan

does not affect the validity or enforceability of any other provision of the Plan, which will remain in full force and effect.

6.4. No Mitigation. No Eligible Participant will be required to mitigate the

amount of any benefits the Company becomes obligated to provide in connection with this Plan by seeking other employment or otherwise and the benefits to be provided in connection with this Plan may not be reduced,

offset or subject to recovery by the Company by any benefits an Eligible Participant may receive from other sources.

6.5. No Set-off. The Company has no right to set-off benefits owed under this -----
Plan against amounts owed or claimed to be owed by an Eligible Participant to the Company under this Plan or otherwise.

6.6. Taxes. All benefits to be provided to each Eligible Participant in -----
connection with this Plan will be subject to required withholding of federal, state and local income, excise and employment-related taxes.

6.7. Notices. For the purposes of this Plan, notices and all other -----
communications provided for in, or required under, this Plan must be in writing and will be deemed to have been duly given when personally delivered or when mailed by United States registered or certified mail, return receipt requested, postage prepaid and addressed to each Participant's or the Company's (as the case may be) respective address (provided that all notices to the Company must be directed to the attention of the chair of the Board, or if no such chair has been designated, to a member of the Compensation Committee of the Board). For purposes of any such notice requirement, the Company will use the Participant's most current address on file in the Company's personnel records. Any notice of a Participant's change of address will be effective only upon receipt by the Company.

6.8. Effect of Plan Benefits on Other Severance Plans. A Participant who -----
receives any payment under the terms of this Plan will not be eligible to receive benefits under any other severance pay plan sponsored or maintained by the Company.

6.9. Related Plans. To the extent that any provision of any other Benefit Plan -----
or agreement between the Company and a Participant limits, qualifies or is inconsistent with any provision of this Plan, then for purposes of this Plan, while such other Benefit Plan or agreement remains in force, the provision of this Plan will control and such provision of such other Benefit Plan or agreement will be deemed to have been superseded, and to be of no force or effect, as if such other agreement had been formally amended to the extent necessary to accomplish such purpose. Nothing in this Plan prevents or limits a Participant's continuing or future participation in any Benefit Plan provided by the Company, and nothing in this Plan limits or otherwise affects the rights Participants may have under any Benefit Plans or other agreements with the Company. Amounts which are vested benefits or which Participants are otherwise entitled to

receive under any Benefit Plan or other agreement with the Company at or subsequent to the Date of Termination will be payable in accordance with such Benefit Plan or other agreement.

6.10. No Employment or Service Contract. Nothing in this Plan is intended to

provide any Participant with any right to continue in the employ of the Company for any period of specific duration or interfere with or otherwise restrict in any way Participants' rights or the rights of the Company, which rights are hereby expressly reserved, to terminate a Participant's employment at any time for any reason or no reason whatsoever, with or without cause.

6.11. Survival. The respective obligations of, and benefits afforded to, the

Company and the Participants which by their express terms or clear intent survive termination of a Participant's employment with the Company or termination of this Plan, as the case may be, will remain in full force and effect according to their terms notwithstanding the termination of a Participant's employment with the Company or termination of this Plan, as the case may be.

6.12. Effect on Other Plans. Unless otherwise expressly provided therein,

benefits paid or payable under the Plan will not be deemed to be salary or compensation for purposes of determining the benefits to which a Participant may be entitled under any other Benefit Plan sponsored, maintained or contributed to by the Company.

6.13. Prohibition of Alienation. No Participant will have the right to

alienate, assign, encumber, hypothecate or pledge his or her interest in any benefit provided under the Plan, voluntarily or involuntarily, and any attempt to so dispose of any interest will be void.

Consent of Ernst & Young LLP

We consent to the incorporation by reference in the Registration Statement (Form S-8 No. 333-04373) pertaining to the Optical Sensors Incorporated 1989 Omnibus Stock Option Plan and the Optical Sensors Incorporated 1993 Stock Option Plan and, in the Registration Statement (Form S-8 No. 333-17493) pertaining to the Optical Sensors Incorporated Employee Stock Purchase Plan, of our report dated February 12, 1999, with respect to the financial statements of Optical Sensors Incorporated, included in this Annual Report (Form 10-K) for the year ended December 31, 1998.

/s/ Ernst & Young LLP

ERNST & YOUNG LLP

Minneapolis, Minnesota
March 23, 1999

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