1

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 September 30, 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 Number: 0-22175

EMCORE CORPORATION
(Exact name of registrant as specified in its charter)

NEW JERSEY	22-2746503
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)

394 ELIZABETH AVENUE, SOMERSET, NJ 08873
(Address of principal executive offices) (zip code)

Registrant's telephone number, including area code:	(732) 271-9090
Securities registered pursuant to Section 12(b) of the Act:	NONE
Securities registered pursuant to Section 12(g) of the Act:	COMMON STOCK, NO PAR VALUE

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 the 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. [ ]

The aggregate market value of common stock held by non-affiliates of the registrant as of December 23, 1998 was approximately $100,427,286 (based on the closing sale price of $18.25 per share).

The number of shares outstanding of the registrant's no par value common stock as of December 23, 1998 was 9,385,618.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the registrant's definitive Proxy Statement for the 1999 Annual Meeting of Shareholders (to be filed with the Securities and Exchange Commission on or before January 28, 1999) are incorporated by reference in Part III of this Form 10-K.

CAUTIONARY STATEMENT IDENTIFYING IMPORTANT FACTORS
THAT COULD CAUSE THE COMPANY'S ACTUAL RESULTS TO DIFFER
FROM THOSE PROJECTED IN FORWARD LOOKING STATEMENTS:

In connection with the safe harbor provisions of the Private Securities Litigation Reform Act of 1995, readers of this document are advised that it contains both statements of historical facts and forward looking statements.

This report includes forward-looking statements that reflect current expectations or beliefs of EMCORE Corporation concerning future results and events. The words "expects," "intends," "believes," "anticipates," "likely," "will," and similar expressions identify forward-looking statements. These forward-looking statements are subject to certain risks and uncertainties which could cause actual results and events to differ materially from those anticipated in the forward-looking statements. Factors that might cause such a difference include, but are not limited to, statements about future financial performance of the Company and the effect of the acquisition of MicroOptical Devices, Inc. ("MODE") on the Company's business; the uncertainty of additional funding; continued acceptance of the Company's MOCVD technologies, as well as the market success of microlaser VCSEL technologies; the Company's ability to achieve and implement the planned enhancements of products and services on a timely and cost effective basis and customer acceptance of those product introductions; product obsolescence due to advances in technology and shifts in market demand; competition and resulting price pressures; business conditions; economic and stock market conditions, particularly in the U.S., Europe and Japan, and their impact on sales of the company's products and services; risks associated with foreign operations, including currency and political risks; and such other risk factors as may have been or may be included from time to time in the Company's reports filed with the Securities and Exchange Commission.

PART I

ITEM 1. BUSINESS

COMPANY OVERVIEW

EMCORE Corporation (together with its subsidiary, "EMCORE" or the "Company"), founded in 1984, designs and develops compound semiconductor materials and process technology and is a leading manufacturer of production systems used to fabricate compound semiconductor wafers. The Company provides its customers, both in the U.S. and internationally, with materials science expertise, process technology and compound semiconductor production systems that enable the manufacture of commercial volumes of high-performance electronic and optoelectronic devices. In 1996, in response to the growing need of its customers to cost effectively get to market faster with high volumes of new and improved high-performance products, the Company expanded its product offerings to include the design, development and production of compound semiconductor wafers and package-ready devices.

INDUSTRY OVERVIEW

Recent advances in information technologies have created a growing need for power efficient, high-performance electronic systems that operate at very high frequencies, have increased storage capacity and computational and display capabilities, and can be produced cost-effectively in commercial volumes. In the past, electronic systems manufacturers have relied on advances in silicon semiconductor technology to meet many of these demands. However, the newest generation of high-performance electronic and optoelectronic applications require certain functions which are generally not achievable using silicon-based components. To address these market demands, electronic system manufacturers are increasingly incorporating new electronic and optoelectronic devices into their products in order to improve performance or enable new applications.

Compound semiconductors have emerged as an enabling technology to meet the complex requirements of today's advanced information systems. Compound semiconductor devices can be used to perform individual functions as discrete devices, such as high-brightness light-emitting diodes ("HB LEDs"), lasers and solar cells, or can be combined into integrated circuits, such as transmitters, receivers and alpha-numeric displays. Many compound semiconductor materials have unique physical properties that allow electrons to move at least four times faster than through silicon-based devices. This higher electron mobility

enables a compound semiconductor device to operate at much higher speeds than silicon devices with lower power consumption and less noise and distortion. In addition, unlike silicon-based devices, compound semiconductor devices have optoelectronic capabilities that enable them to emit and detect light. As a result, electronics manufacturers are increasingly integrating compound semiconductor

devices into their products in order to achieve higher performance in a wide variety of applications, including satellite, fiberoptic and wireless communications, telecommunications, computers, and consumer and automotive electronics.

Historically, developers of compound semiconductor devices have met capacity needs with in-house systems and technologies. However, the requirements for the production of commercial volumes of high-performance compound semiconductor devices have often exceeded the capabilities of such in-house solutions. The Company believes that wafers fabricated using metal organic chemical vapor deposition ("MOCVD") possess better uniformity, as well as better optical and electronic properties, than wafers fabricated by traditional methods. The Company believes that its proprietary TurboDiscTM MOCVD system provides a low cost of ownership and is the critical enabling process step in the volume manufacture of high-performance electronic and optoelectronic devices. The Company works closely with its customers in designing and developing materials processes to be used in production systems for its customers' end-use applications. The Company has sold more than 225 systems worldwide to a broad base of leading electronics manufacturers, including: Spectrolab, Inc. (a subsidiary of Hughes Electronics Company, "Hughes-Spectrolab"), General Motors Corp. ("General Motors"), Hewlett Packard Co., Honeywell, Inc., Lucent Technologies, Inc., Rockwell International Corp. ("Rockwell"), Samsung Co., Siemens AG, L.M. Ericsson AB, Texas Instruments Inc. and 13 of the largest electronics manufacturers in Japan.

SATELLITE COMMUNICATIONS. Compound semiconductor solar cells are used to power satellites because they are more tolerant to radiation levels in space and have higher power-to-weight ratios than silicon-based solar cells, thereby increasing satellite life and payload capacity. Compound semiconductor devices are also used in ultra-high frequency satellite up-converters and down-converters to cost-effectively deliver information to fixed and mobile users over wide geographic areas. The Company is developing high efficiency gallium arsenide solar cells to increase satellite payload capacity and reduce launch weight.

DATA COMMUNICATIONS. To accommodate the exponential growth in voice, data and video traffic resulting from the Internet and networking generally, telecommunications companies, data communications, switch and router companies and Internet service providers are relying on fiber optic networks utilizing high-speed switching technologies to increase transmission rates. New and emerging standards, including Gigabit Ethernet, asynchronous transfer mode ("ATM") and FibreChannel, provide a solid infrastructure for bringing fiber optics into these networks. As these standards are rapidly deployed in networks worldwide, the need for high-speed fiber optic technologies to support them grows proportionally. The Company supports these standards through its recently announced high speed vertical cavity surface-emitting laser ("VCSEL") components, arrays, and subassemblies developed to meet the needs of these and other demanding applications.

TELECOMMUNICATIONS. The most common deployment of fiber optic equipment is currently in high capacity trunk lines for long distance and inter-exchange telecommunications. Long distance carriers continue to upgrade their networks to incorporate more and more fiber optic technology. The market for telecommunications will continue to expand as carriers convert copper interconnections to higher capacity fiber optic cable. In addition to extending and expanding the existing infrastructure, the trend is moving to higher and higher bit rate connections - from 2.5Gbs to 10Gbs, driving the need for greater sophistication in laser and compound semiconductor technology. The Company's in-depth material science expertise and its recently announced achievements in high speed microlasers allow the Company to offer fully integrated VCSEL component and array solutions in the industry and enable the development of

1300nm VCSELs, which will help make low cost, high performance broadband access and fiber-in-the-loop possible.

WIRELESS COMMUNICATIONS. Compound semiconductor devices have multiple applications in wireless communication products, including cellular telephones, pagers, personal communication systems ("PCS") handsets, direct broadcast systems ("DBS") and global positioning systems. Compound semiconductor devices are used in high frequency transmitters, receivers and power amplifiers to increase capacity, improve signal to noise performance and lower power consumption, which in turn reduces network congestion, increases roaming range and extends battery life. In addition, HB LEDs are used in electronic displays on these products in order to reduce size, weight and power consumption and to improve display visibility.

COMPUTERS AND PERIPHERALS. As computer manufacturers continue to integrate faster and faster microprocessors into their systems designs, the gap between the internal central processing unit ("CPU") speed and the external bus continues to grow. As this gap increases, computer suppliers are concerned less with processor speed, and more with overall system performance. Computer manufacturers are increasingly looking to compound semiconductor products and specifically to on board photonic interconnects to greatly enhance system performance. Several major computer and microprocessor manufacturers have expressed interest in integrating the Company's VCSEL technology into their next generation products.

CONSUMER ELECTRONICS. Consumer electronics manufacturers are using compound semiconductor devices to improve the performance of many existing products and to develop new applications. For example, next generation compact disc players are utilizing shorter wavelength compound semiconductor lasers to read and record information on high density digital videodiscs ("DVDs") which store at least four times more information than a conventional compact disc. In addition, compound semiconductor devices are increasingly being used in advanced display technologies. Ultra-thin LED flat panel displays are being used in a variety of applications, including point-of-purchase displays and outdoor advertising with live-action billboards, and are being developed for use in laptop computers and flat panel television screens. Gallium nitride based HB LEDs are being developed for lighting applications that in the future may replace incandescent light bulbs.

AUTOMOTIVE ELECTRONICS. Compound semiconductor devices are increasingly being used by automotive manufacturers to improve vehicle performance while reducing weight and costs through lower power consumption. These devices are utilized in a wide variety of applications, including dashboard displays, indicator lights, engine sensors, anti-lock braking systems and other electronic systems. In addition, the Company believes that the use of electronic components within automobiles is likely to increase as manufacturers design vehicles to comply with state and federal environmental and safety regulations. Automotive production cycles generally last three to five years, providing a relatively predictable source of demand for compound semiconductor devices once an electronic component is designed into a specific vehicle model.

The high-performance characteristics of compound semiconductors, combined with the requirements of advanced information systems, have led to the widespread deployment of compound semiconductor devices within a broad range of electronic systems. The Company believes that the following factors have resulted in an increased demand for compound semiconductor production systems, wafers and devices which enable electronic systems manufacturers to reach the market faster with high volumes of high-performance products and applications:

- Launch of new wireless services such as PCS and wireless high speed data systems;
- Rapid build-out of satellite communications systems;
- Widespread deployment of fiber optic networks and the increasing use of optical systems;
- Increasing use of infrared emitters and optical detectors in

computer systems;

- Emergence of advanced consumer electronics applications, such as DVDs, flat panel displays and lighting; and,

- Increasing use of high-performance electronic devices in automobiles.

THE EMCORE SOLUTION

EMCORE provides its customers with materials science expertise, process technology and MOCVD production systems that enable the manufacture of commercial volumes of high-performance compound semiconductor wafers and devices. EMCORE believes that its proprietary TurboDiscTM deposition technology makes possible one of the most cost-effective production systems for the commercial volume manufacture of high-performance compound semiconductor wafers and devices. EMCORE is capitalizing on its technology base to address the critical need of electronics manufacturers to cost-effectively get to market faster with high volumes of new and improved high-performance products. EMCORE offers its customers a broad range of products and services and a vertically integrated product line which includes device design, materials and process development, MOCVD production systems, epitaxial wafers and package-ready devices. The Company believes that its knowledge base and materials

science expertise uniquely position the Company to become a valuable source for a broad array of solutions for the compound semiconductor industry.

STRATEGY

The Company believes that its close collaborations with its customers over the past fourteen years have contributed to its position in the MOCVD process technology and production systems market. The Company's objective is to capitalize on this position to become a leading supplier of compound semiconductor wafers and package-ready devices. The key elements of the Company's strategy include:

PROVIDE COMPLETE COMPOUND SEMICONDUCTOR SOLUTIONS. The Company's vertically-integrated product offerings allow it to provide complete compound semiconductor solutions to a broad range of electronics manufacturers in order to meet their diverse technology requirements. The Company plans to capitalize on the growing need of electronics manufacturers to reach the market faster and more cost-efficiently with high volumes of end products. The Company assists its customers with device design, process development and optimal configuration of production systems. Moreover, the Company can also serve its customers as a reliable source for high-volume production of wafers or devices. Through its materials science expertise, process technology and commercial production systems, the Company intends to become an integral part of its customers' compound semiconductor product life cycle.

FORM STRATEGIC RELATIONSHIPS WITH CUSTOMERS. By developing enabling technologies, the Company seeks to form strategic alliances with its customers in order to obtain long-term development and high volume production contracts. For example, the Company currently has a strategic relationship with General Motors under which it has developed and enhanced the device structure and production process for, and is manufacturing and shipping Magneto Resistive Sensors ("MR Sensors") products for use in General Motors' automotive applications. During fiscal 1998, the Company formed a joint venture with Uniroyal Technology Corporation ("UTC"), and in November 1998, it also formed joint ventures with Optek Technology, Inc. and Union Miniere Inc. Additionally, the Company has entered into strategic agreements with AMP Incorporated, Space Systems/Loral ("Loral") and Lockheed Martin Corporation. The Company intends to actively seek similar strategic relationships with other key customers in order to further expand its technological and production base.

EXPAND TECHNOLOGY LEADERSHIP. The Company has developed and optimized its compound semiconductor processes and has developed higher performance production systems through substantial investments in research and development. The Company works closely with its customers to identify specific performance

criteria in its production systems, wafers and package-ready devices. The Company intends to continue to expend substantial resources in research and development in order to enhance the performance of its production systems and to further expand its process and materials science expertise, including the development of new low cost, high volume wafers and package-ready devices for its customers.

STRATEGIC INITIATIVES

Throughout fiscal 1998, the Company has taken steps or formed strategic relationships to take advantage of market opportunities. In December 1997, the Company acquired MicroOptical Devices, Inc. ("MODE"). At the date of acquisition, MODE (a development stage company) was substantially dedicated to the research and development of enabling compound semiconductor technologies. In February 1998, MODE announced its first commercial high speed laser (Gigalase(TM)) and thereafter commenced commercial volume shipments. Having achieved commercial product development, MODE now designs, develops and markets high-quality VCSEL optical components and subassemblies. The Company's technology is expected to enable significant performance and cost improvements in optoelectronic systems. VCSELs offer significant advantages over traditional, edge-emitting laser diodes, including: ultra high modulation rates, low power consumption, high coupling efficiencies and reduced complexity and cost of packaging. VCSELs represent a revolutionary approach to the fabrication of semiconductor lasers and enhance the performance and cost-effectiveness of communications equipment, computer systems and many other electronic systems using lasers. As a result, leading electronics systems manufacturers are integrating VCSELs into a broad array of end-market applications including Internet access, digital cross connect telecommunications switches, DVD, fiberoptic switching and routing, such as Gigabit Ethernet. In addition, VCSEL technology is being evaluated for incorporation into multi-layered printed circuit boards in order to greatly increase the speed at which on-board components interface. The Company believes that utilizing VCSELs for chip-to-chip and board-to-board data transfer

will significantly reduce the performance gap between the frequency of the microprocessor and other components within computer systems.

In addition to the MODE acquisition, the Company launched three joint ventures during the past twelve months. In July 1998, the Company formed and is a minority investor in Uniroyal Optoelectronics, LLC, a joint venture with UTC to manufacture, sell and distribute HB LEDs. The global demand for HB LEDs is experiencing rapid growth because LEDs have a long useful life (ten years) and consume far less power than incandescent/fluorescent lighting.

In November 1998, the Company formed a joint venture with Optek Technology, Inc., a packager and distributor of optoelectronic devices including sensors, to market an expanded line of MR Sensors to the automotive and related industries. The "Emtek" joint venture combines the Company's strength in producing a package-ready die with Optek's strength in packaging and distribution thus enabling the Company to offer off-the-shelf products which should enhance market penetration.

Also in November 1998, the Company formed a joint venture ("Umcore") in a partnership with Union Miniere Inc. to explore and develop alternate uses of germanium using the Company's material science and production platform expertise.

In November 1998, the Company signed a four year Long Term Purchase Agreement (the "Long Term Purchase Agreement") with Loral, a wholly owned subsidiary of Loral Space & Communications. Under the Long Term Purchase Agreement, once EMCORE completes Loral's space qualification and test procedures, the Company will supply Loral with compound semiconductor high efficiency gallium arsenide solar cells for Loral's satellite requirements. Subject to the foregoing requirements, the Company received an initial purchase order for $5.25 million of solar cells.

In September 1998, the Company entered into an agreement with Lockheed Martin Missiles and Space ("LMMS"), a strategic business unit of Lockheed

Martin Corporation, for the technical management and support of a LMMS and Sandia National Laboratory ("Sandia") Cooperative Research and Development Agreement ("CRADA") for the advancement, transfer and commercialization of a new compound semiconductor high efficiency solar cell. Pursuant to this strategic agreement, (i) LMMS will grant the Company a sub-license for all CRADA related intellectual property developed on behalf of and in conjunction with LMMS and (ii) the Company and LMMS will jointly qualify and validate the high efficiency solar cells for operational satellite use. The Company has also received a $2.5 million contract under the U.S. Air Force's Broad Agency Announcement ("BAA") Program for the development of high efficiency advanced solar cells.

In September 1998, the Company signed a four year purchase agreement with AMP Incorporated to provide high speed VCSELs. AMP Incorporated presently uses the Company's VCSEL's in transceivers for Gigabit Ethernet applications.

In October 1998, the Company opened a new facility, EMCOREwest, in Sandia Science and Technology Park, Albuquerque, New Mexico. The Company plans a three-phase construction project which will allow the facility to expand from an initial 50,000 square feet in October 1998 to 70,000 square feet by 2002. Production of wafers and devices at EMCOREwest is scheduled to begin in the second calendar quarter of 1999. In connection with the construction of this facility, the City of Albuquerque has issued a $55 million Industrial Revenue Bond (the "IRB") to the Company, which provides the Company with New Mexico tax-exempt status on the property and the purchase of equipment and supplies. The Company estimates that total tax savings over the 20-year life of the bond will exceed $10.0 million. MODE also completed the build-out of its fabrications space in Albuquerque, New Mexico with an additional 20,000 square feet of cleanroom and test facilities.

RECENT DEVELOPMENTS

On June 22, 1998, the Company entered into an $8.0 million revolving loan agreement (the "1998 Agreement") with First Union National Bank (the "Bank") which expires December 31, 1999. The 1998 Agreement bears interest at a rate equal to one-month LIBOR plus three quarters of one percent per annum (6.4% at September 30, 1998). The 1998 Agreement is guaranteed by the Company's Chairman and Chief Executive Officer. In exchange for guaranteeing the facility, the Chairman and the Chief Executive Officer were granted an aggregate of 284,684 common stock purchase warrants exercisable at $11.375 per share until May 1,

2001. These warrants are callable at the Company's option at $0.85 per warrant at such time as the Company's Common Stock has traded at or above 150% of the exercise price for a period of 30 days. The Company borrowed $5.0 million on June 22, 1998 and the remaining $3.0 million on July 10, 1998.

On September 17, 1998, the Company borrowed $7.0 million from its Chairman. The loan bears interest at 9.75% per annum. In addition, on October 22, 1998 the Company borrowed an additional $1.5 million from its Chairman on identical terms. The entire sum of $8.5 million borrowed from the Chairman plus interest was repaid from the proceeds of the Private Placement (defined below).

On November 30, 1998, the Company completed a private placement (the "Private Placement") of an aggregate of 1,550,000 shares of Series I Redeemable Convertible Preferred Stock (the "Series I Preferred Stock") to Hakuto Co., Ltd. ("Hakuto"), Union Miniere Inc. ("UMI") and UTC. The net proceeds to the Company from the Private Placement were approximately $21.2 million which has been used (i) to repay $8.5 million of debt, plus interest, to the Company's Chairman of the Board, Dr. Thomas Russell, (ii) to fund the Company's $5.0 million portion of a joint venture between the Company and UTC to develop and manufacture HB LEDs and (iii) to fund the Company's $600,000 portion of a research and development joint venture with UMI to develop alternative applications for germanium substrates. The remaining net proceeds from the Private Placement will be used to acquire capital equipment for the Company's new Albuquerque, New Mexico manufacturing facility and for working capital.

Effective as of November 30, 1998, the Company and the Bank have

renewed the Company's $10.0 million credit facility (the "1997 Agreement") with the Bank, which, as amended, will expire on October 1, 1999. In connection with the amendment of the 1997 Agreement, Thomas Russell agreed to provide a guarantee in the event the Company does not meet certain financial covenants by May 15, 1999.

The Company has recorded a net loss in each of the third and fourth quarters of fiscal 1998 due primarily to the adverse effect of work-stoppage strikes at General Motors, a decline in systems sales particularly in Asia related to the Asian financial crisis as well as a general slowdown in the semiconductor market overall, a slower than expected ramp-up in production at MODE and increased research and development spending. The Company expects to post losses for the next two fiscal quarters.

PRODUCTS

PRODUCTION SYSTEMS AND MATERIALS PROCESSES. The Company is a leading supplier of MOCVD compound semiconductor production systems, and, in 1996, had a 23% share of this market according to VLSI Research Inc. which regularly publishes research on this market. The Company has shipped more than 225 systems to date and believes that its TurboDiscTM systems offer significant cost advantages over competing systems. The Company believes that its MOCVD production systems produce materials with superior uniformity of thickness, electrical properties and material composition. EMCORE has a variety of models that are optimized for the application and throughput of the customer. The Company believes that the high throughput capabilities of its TurboDiscTM systems enhances the low cost manufacture of compound semiconductor materials as well as superior reproducibility of thickness, composition, electrical profiles and layer accuracy required for electronic and optoelectronic devices. The Company's production systems also achieve a high degree of reliability with an average time available for production, based on customer data, of approximately 95%.

WAFER AND DEVICE FABRICATION. Since its inception, the Company has worked closely with its customers in designing and developing materials processes to be used in production systems for its customers' end-use applications. Recently, the Company has begun to leverage its process and materials science knowledge base to manufacture wafers and package-ready devices in its own facility. The Company's expansion into wafer and package-ready device production was spurred almost entirely by requests from customers whose epitaxial wafer needs exceed their available in-house production capabilities. The Company fabricates wafers and package-ready devices at its facilities in Somerset, New Jersey and Albuquerque, New Mexico and has a combined clean room area totaling approximately 12,000 square feet.

The Company is working with its customers to design, engineer and manufacture commercial quantities of wafers and/or package-ready compound semiconductor devices such as MR Sensors, HBTs, HEMTs, FETs, HB LEDs, VCSELs, solar cells and other electronic and optoelectronic devices.

MR SENSORS. In January 1997, the Company initiated shipments of compound semiconductor MR Sensors using indium antimonide-based epi-materials. The technology is licensed to the Company from General Motors. The primary user of the product has to date been General Motors Powertrain with over five million devices delivered as of September 30, 1998 for crank and cam speed and position sensing applications for three engine builds. In November 1998, the Company formed a joint venture with Optek Technology, Inc. to market an expanded line of MR Sensors to the automotive and related industries.

HIGH EFFICIENCY SOLAR CELLS. The Company is working closely with several large telecommunications concerns to assist these customers in developing solar cell and other process technology for use on their communications satellites. After extensive working collaborations, the Company has developed the materials process and a production system for solar cell materials with efficient performance characteristics. As a result of this collaboration, the Company's technology has produced gallium arsenide solar cells that are not only approximately 50% more efficient in light-to-power conversion than silicon-based solar cells but also are more

radiation-resistant. The resulting advance allows a satellite manufacturer to increase the useful life and payload capacity of its satellites. Over the last two years, the Company's customers have purchased several MOCVD production systems for this purpose. In December 1998, the Company signed the Long Term Purchase Agreement with Loral under which the Company will supply Loral with compound semiconductor high-efficiency gallium arsenide solar cells for Loral's satellites.

VCSELS. In February 1998, the Company, through its wholly-owned subsidiary MODE, annouced its first commercial high speed laser and has commenced commercial volume customer shipments. The Company now designs, develops and markets optical VCSEL components, arrays and subassemblies, which utilize compound semiconductor microlaser diodes that emit light vertically from the surface of a fabricated wafer. The Company believes the advantage of its VCSELs include ultra high modulation rates for advanced information processing, low power consumption, high fiber optic coupling efficiencies, circular output beams and photolithographically defined geometrics. The Company works closely with original equipment manufacturers ("OEMs") to incorporate their design requirements into the Company's VCSEL technology and test methodologies. In September 1998, MODE formed a strategic alliance with AMP Incorporated to develop and market a family of optical transceivers for the Gigabit Ethernet, FibreChannel and ATM markets. These transceivers incorporate specific design requirements into the processes and test methodologies of the Company's VCSEL components.

HB LEDS. Early in 1998 the Company formed a joint venture with UTC to manufacture, sell and distribute HB LEDs. The global demand for HB LEDs is experiencing rapid growth because LEDs have a long useful life (ten years) and consume far less power than incandescent/ fluorescent lighting. The Company believes it is the leading supplier of gallium nitride based MOCVD systems used to produce blue and green HB LEDs.

CUSTOMERS

The Company's customers include several of the largest semiconductor, telecommunications and computer manufacturing companies in the world. In fiscal year 1996, only one customer accounted for more than 10% of the Company's revenues; sales to this customer accounted for 23.6% of the Company's revenues in fiscal 1996. For the fiscal year 1997, two customers each accounted for more than 10% of the Company's revenues; sales to these customers each accounted for 15.0% and 10.2% of the Company's revenues during fiscal year 1997. For fiscal year 1998, two customers accounted for more than 10% of the Company's revenues; sales to these customers accounted for 17.3% and 12.8% of the Company's revenues during fiscal year 1998.

SALES AND MARKETING

The Company markets and sells its products through its direct sales force in Europe, North America, Taiwan and through representatives and distributors in the rest of Asia. To market and service its systems in China, Japan and Singapore, the Company relies on a single marketing, distribution and service provider, Hakuto. The Company's agreements with Hakuto have a term of ten years, expiring March 2008. Hakuto has exclusive distribution rights for the Company's products in Japan. Hakuto has marketed and serviced the Company's products since 1988, is a minority shareholder in the Company, and the President of Hakuto is a member of the Company's Board of Directors.

International sales as a percentage of total sales in fiscal 1996, 1997 and 1998 were 42.5%, 42.0% and 39.1%, respectively. Sales to customers in the U.S. in fiscal 1996, 1997 and 1998 were approximately, $16.0 million, $27.7 million and $26.6 million, respectively, while the Company's sales in Asia for the same time periods were $8.2

million, $14.6 million and $15.5 million, respectively, and sales in Europe were $3.6 million, $5.5 million and $1.6 million, respectively. The Company receives all payments for all products and services in U.S. dollars.

SERVICE AND SUPPORT

The Company maintains an international service and support network responsible for on-site maintenance and process monitoring on either a contractual or time-and-materials basis. Customers may purchase annual service contracts under which the Company is required to maintain an inventory of replacement parts and to service the equipment upon the request of the customer. The Company also sells replacement parts from inventory for customer needs. The Company pursues a program of system upgrades for customers to increase the performance of older systems. The Company generally does not offer extended payment terms to its customers and generally adheres to a warranty policy of up to one year. Consistent with industry practice, the Company maintains an inventory of components for servicing systems in the field and it believes that its inventory is sufficient to satisfy foreseeable short-term customer requirements.

RESEARCH AND DEVELOPMENT

To maintain and improve its competitive position, the Company's research and development efforts are focused on designing new proprietary products, improving the performance of existing systems, wafers and package-ready devices and reducing costs in the product manufacturing process. The Company has dedicated 16 EMCORE TurboDiscTM systems for both research and production which are capable of processing virtually all compound semiconductor materials. The research and development staff utilizes x-ray, optical and electrical characterization equipment which provide instant data allowing for shortened development cycles and rapid customer response. The Company's recurring research and development expenses in fiscal 1996, 1997 and 1998 were approximately $5.4 million, $9.0 million and $16.5 million, respectively. The Company also incurred a one-time, non-cash research and development expense in fiscal 1998 in the amount of $29.3 million in connection with the acquisition of MODE. The Company expects that it will continue to expend substantial resources on research and development.

The Company also competes for research and development funds. In view of the high cost of development, the Company solicits research contracts that provide opportunities to enhance its core technology base or promote the commercialization of targeted products. The Company presently has three such contracts in process. The contracts fall under the Small Business Innovative Research programs or similar government sponsored programs. From inception until September 30, 1998, government and other external research contracts have provided approximately $13.2 million to support the Company's research and development efforts. The Company is also positioned to market technology and process development expertise directly to customers who require it for their own product development efforts.

INTELLECTUAL PROPERTY AND LICENSING

The Company's success and competitive position both for production systems, wafers and package-ready devices depend significantly on its ability to maintain trade secrets, patents and other intellectual property protections. Trade secrets are routinely employed in the Company's manufacturing processes. A "trade secret" is information that has value to the extent it is not generally known, not readily ascertainable by others through legitimate means, and protected in a way that maintains its secrecy. In order to protect its trade secrets, the Company takes certain measures to ensure their secrecy, such as executing non-disclosure agreements with its employees, customers and suppliers.

To date, the Company has been issued eleven U.S. patents and seven are either pending or under review. These U.S. patents will expire between 2005 and 2013. None of these U.S. patents claim any material aspect of the current or planned commercial versions of the Company's systems, wafers or devices.

MODE is a licensee of certain VCSEL technology and associated patent rights owned by Sandia pursuant to a License Agreement dated September 18, 1997, between MODE and Sandia (the "Sandia License"). The Sandia License grants MODE (i) exclusive rights (subject to certain rights granted to Department of Energy ("DOE") and AT&T Corporation ("AT&T")) to develop, manufacture and sell products containing Sandia VCSEL technologies for barcode scanning and plastic fiber communications applications under five U.S. patents that expire between 2007 and 2015, and (ii) nonexclusive rights with respect to all other applications of these patents. The Sandia License also grants MODE a nonexclusive right to employ a proprietary oxidation fabrication method in the

manufacture of VCSEL products under a sixth U.S. patent that expires in 2014. The Company's success and competitive position as a producer of VCSEL products depends on the continuation of its rights under the Sandia License, the scope and duration of those rights and the ability of Sandia to protect its proprietary interests in the underlying technology and patents. MODE's rights under the Sandia License are subject to termination by Sandia prior to expiration of the underlying patents in the event that MODE breaches certain terms specified therein, including failure by MODE to make minimum royalty payments.

ENVIRONMENTAL REGULATIONS

The Company is subject to federal, state and local laws and regulations concerning the use, storage, handling, generation, treatment, emission, release, discharge and disposal of certain materials used in its research and development and production operations, as well as laws and regulations concerning environmental remediation and employee health and safety. The Company has retained an environmental consultant to advise it in complying with applicable environmental and health and safety laws and regulations, and believes that it is currently, and in the past has been, in substantial compliance with all such laws and regulations.

BACKLOG

As of September 30, 1998, the Company had an order backlog of approximately $22.6 million compared to backlog of $24.4 million as of September 30, 1997. The Company includes in backlog only customer purchase orders which have been accepted by the Company and for which shipment dates have been assigned within the twelve months to follow and research contracts that are in process or awarded. Wafer and device agreements extending longer than one year in duration are included in backlog only for the ensuing 12 months. Some of these agreements currently extend over three years. The Company receives partial advance payments or irrevocable letters of credit on most production system orders. The Company recognizes revenue upon shipment. For research contracts with the U.S. government and commercial enterprises with durations greater than six months, the Company recognizes revenue to the extent of costs incurred plus a portion of estimated gross profit, as stipulated in such contracts, based on contract performance. Subsequent to year end, the Company's backlog has increased significantly. As of December 15, 1998, the Company's order backlog exceeded $41.0 million, an increase of 81.4% since September 30, 1998.

MANUFACTURING

In May 1998, the Company received ISO 9001 and QS 9002 quality certification. The Company's manufacturing operations are located at the Company's headquarters in Somerset, New Jersey and in Albuquerque, New Mexico and include systems engineering and production, wafer fabrication, and design and production of devices. Many of the Company's manufacturing operations are computer monitored or controlled, therefore enhancing reliability and yield. The Company manufactures its own systems and outsources some components and sub-assemblies, but performs all final system integration, assembly and testing. The Company fabricates wafers and devices at its facilities in Somerset, New Jersey and Albuquerque, New Mexico and has a combined clean room area totaling approximately 12,000 square feet.

Outside contractors and suppliers are used to supply raw materials and standard components and to assemble portions of end systems from Company specifications. The Company depends on sole, or a limited number of, suppliers of components and raw materials. The Company generally purchases these single or limited source products through standard purchase orders. The Company also seeks to maintain ongoing communications with its suppliers to guard against interruptions in supply and has, to date, generally been able to obtain sufficient supplies in a timely manner and maintains inventories it believes are sufficient to meet its near term needs. The Company has recently implemented a vendor program through which it inspects quality and reviews supplies and prices in order to standardize purchasing efficiencies and design requirements to maintain as low a cost of sales as possible. However, operating results could be materially adversely affected by a stoppage or delay of

supply, receipt of defective parts or contaminated materials, and increase in the pricing of such parts or the Company's inability to obtain reduced pricing from its suppliers in response to competitive pressures.

COMPETITION

The markets in which the Company competes are highly competitive. The Company competes with several companies for sales of MOCVD systems including Aixtron, Nippon-Sanso and Thomas Swann. The primary

competitors for the Company's wafer foundry include Epitaxial Products Inc., Kopin Corporation and Quantum Epitaxial Designs, Inc. The Company's principal competitors for sales of VCSEL-related products include Honeywell, Inc. and Mitel Corporation. The Company also faces competition from manufacturers that implement in-house systems for their own use. In addition, the Company competes with many research institutions and universities for research contract funding. The Company also sells its products to current competitors and companies with the capability of becoming competitors. As the markets for the Company's products grow, new competitors are likely to emerge, and present competitors may increase their market share.

The Company believes that the primary competitive factors in the markets in which the Company's products compete are yield, throughput, capital and direct costs, system performance, size of installed base, breadth of product line and customer satisfaction, as well as customer commitment to competing technologies. The Company believes that in order to remain competitive, it must invest significant financial resources in developing new product features and enhancements and in maintaining customer satisfaction worldwide.

EMPLOYEES

At September 30, 1998, the Company employed 308 full-time employees, up 13.7% from 271 as of September 30, 1997 and up 66.5% from the 185 employees at September 30, 1996. The increase in the number of employees since the end of fiscal 1996 is a direct result of the Company's increased manufacturing operation needs to meet the demand for its compound semiconductor production systems, wafers and package-ready devices. None of the Company's employees are covered by a collective bargaining agreement. The Company considers its relationship with its employees to be good.

ITEM 2. PROPERTIES

The Company's executive office and manufacturing facility are located in Somerset, New Jersey, where the Company leases a 75,000 square foot facility. This facility lease expires on February 2000. The Company has two five-year renewal options. MODE's office and manufacturing facility are located in Albuquerque, New Mexico, where MODE leases an aggregate of approximately 27,500 square feet in two adjacent buildings. One of these leases expires in July 1999 and the other in April 2001, each with two three-year renewal options. The Company has another office and manufacturing facility in Albuquerque, New Mexico where it has recently completed building its own 50,000 square foot facility, of which 25,000 square feet is currently occupied.

ITEM 3. LEGAL PROCEEDINGS

Neither the Company nor its subsidiary is aware of any pending or threatened litigation against it which would have a material adverse effect on its business, financial condition and results of operations.

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

Not applicable.

PART II.

ITEM 5.

MARKET FOR THE REGISTRANT'S COMMON EQUITY AND RELATED SHAREHOLDER MATTERS

The Company's Common Stock is quoted on the NASDAQ National Market under the symbol "EMKR". The following table sets forth the quarterly high and low sales prices for the Company's Common Stock since its initial public offering in March 6, 1997.

FISCAL 1997		
Second Quarter	$12 3/4	$ 9 1/4
Third Quarter	$19 1/2	$11

Fourth Quarter	$25 1/4	$16
FISCAL 1998		
First Quarter	$23 3/8	$15 1/2
Second Quarter	$19 5/8	$11
Third Quarter	$16 3/4	$ 9
Fourth Quarter	$13 1/2	$ 6
FISCAL 1999		
First Quarter (through December 23, 1998)	$18 1/4	$ 7 1/4

As of December 23, 1998 date there were 1,595 shareholders of record.

The Company has never declared or paid dividends on its Common Stock since its formation. The Company currently does not intend to pay dividends on its Common Stock in the foreseeable future so that it may reinvest its earnings in the development of its business. The payment of dividends, if any, in the future will be at the discretion of the Board of Directors.

RECENT SALES OF UNREGISTERED SECURITIES

On November 30, 1998, the Company sold an aggregate of 1,550,000 shares of Series I Preferred Stock to Hakuto, UMI and UTC for an aggregate consideration of $21.7 million before deducting costs and expenses of the offering of approximately $500,000. The shares of Series I Preferred Stock are convertible, at any time, at the option of the holders thereof, unless previously redeemed, into shares of Common Stock at an initial conversion price of $14.00 per share of Common Stock, subject to adjustment in certain cases. The Series I Preferred Stock is redeemable, in whole or in part, at the option of the Company at any time the Company's stock has traded at or above $28.00 per share for 30 consecutive trading days, at a price of $14.00 per share, plus accrued and unpaid dividends, if any, to the redemption date. In addition, the Series I Preferred Stock is subject to mandatory redemption by the Company on November 17, 2003. The Company believes the sale of the shares of Series I Preferred Stock is exempt from registration pursuant to Section 4(2) of the Securities Act of 1933, as amended (the "Securities Act").

On June 22, 1998 the Company issued 227,747 warrants to purchase common stock of the Company to Thomas Russell, Chairman of the Board of Directors of the Company and 56,937 warrants to purchase common stock of the Company to Reuben Richards, President, Chief Executive Officer and a director of the Company. The warrants are exercisable at a price of $11.375 and expire on May 1, 2001. These warrants are callable at the Company's option at $.85 per warrant at such time as the Company's Common Stock has traded at or above 150% of the exercise price for a period of 30 days. These warrants were granted in exchange for the guarantee by these executives of the 1998 Agreement entered into by the Company on June 22, 1998 with the Bank. The credit facility is being used to finance general corporate purposes, including, but not limited to, the construction of a facility in Albuquerque, New Mexico. The term of the credit facility is 18 months and the interest rate is at LIBOR plus 0.75%. The Company received a fairness opinion from its investment bank, Hempstead & Company, that this transaction was fair from a financial point of view to the Company's non-participating shareholders. The Company believes the issuance of the warrants is exempt from registration pursuant to Section 4(2) of the Securities Act.

On December 5, 1997, the Company issued 1,461,866 shares of Common

Stock, 200,966 common stock purchase options and 47,118 common stock purchase warrants in exchange for all of the outstanding capital stock of MODE. The purchase price was approximately $32.8 million and was recorded under the purchase method of accounting. The Company believes the issuance of Common Stock, options and warrants in connection with the acquisition of MODE is exempt from registration pursuant to Section 4(2) of the Securities Act.

ITEM 6. SELECTED FINANCIAL DATA

The selected financial data set forth below should be read in conjunction with "Management's Discussion and Analysis of Financial Condition and Results of Operations" and the consolidated financial statements and notes thereto included elsewhere in this report. The following table shows selected financial data for the most recent five years:

(IN THOUSANDS, EXCEPT PER SHARE AMOUNTS)	YEARS ENDED SEPTEMBER 30,				
	1994	1995	1996	1997	1998
STATEMENT OF INCOME DATA:					
Revenue	$ 9,038	$ 18,137	$ 27,779	$ 47,753	$ 43,760
Cost of sales	5,213	9,927	18,607	30,094	24,675
Gross profit	3,825	8,210	9,172	17,659	19,085
Operating expenses:					
Selling, general and administrative	2,645	4,452	6,524	9,347	14,082
Goodwill	--	--	--	--	922
Research and development					
Recurring	1,064	1,852	5,401	9,001	16,495
One-time acquired in-process, non-cash	--	--	--	--	29,294
Operating income (loss)	116	1,906	(2,753)	(689)	(41,708)
Stated interest expenses, net	286	255	297	519	974
Imputed warrant interest, non-cash	--	--	126	3,988	601
Equity in net loss of unconsolidated affiliate	--	--	--	--	198
Other expense	--	10	--	--	--
(Loss) income before income taxes and extraordinary item	(170)	1,641	(3,176)	(5,196)	(43,481)
Provision for income taxes	--	125	--	137	--
Extraordinary loss	--	--	--	286	--
Net (loss) income	$ (170)	$ 1,516	$ (3,176)	$ (5,619)	$(43,481)
Net (loss) income per share	$ (2.91)	$ 0.89	$ (1.06)	$ (1.20)	$ (4.95)
Shares used in computing net (loss) income per share	58	1,701	2,994	4,669	8,775

(IN THOUSANDS)	AS OF SEPTEMBER 30,				
	1994	1995	1996	1997	1998
BALANCE SHEET DATA:					
Working capital	$ 1,041	$ 2,208	$ 1,151	$ 12,156	$ (2,017)
Total assets	5,415	10,143	20,434	39,463	66,158
Long-term obligations	3,000	3,000	8,947	7,577	26,513
Redeemable preferred stock	16,274	--	--	--	--
Shareholders' equity (deficit)	(96)	1,509	522	21,831	12,518

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

OVERVIEW

The compound semiconductor industry is experiencing dramatic growth with

increasing demands for higher performance and functionality in applications for products as diverse as electronic displays, advanced automotive and aircraft engines, wireless communications, telecommunications, CDs, DVDs, CATV, fiber optic transmitters, bar code scanners, satellites, cellular phones, laser printers, and holographic memories.

EMCORE, founded in 1984, designs and develops compound semiconductor materials and process technology and is a leading manufacturer of production systems used to fabricate compound semiconductor wafers. The Company provides its customers, both in the U.S. and internationally, with materials science expertise, process technology and compound semiconductor production systems that enable the manufacture of commercial volumes of high-performance electronic and optoelectronic devices. In response to the growing need of its customers to cost effectively get to market faster with higher volumes of new and improved high performance products, the Company expanded its product offerings to include the design, development and production of compound semiconductor wafers, package-ready devices and discreet components and now offers its customers a broad range of products and services and a vertically integrated product line. EMCORE believes that its proprietary TurboDisc(TM) deposition technology makes possible one of the most cost-effective production systems for the commercial volume manufacture of high-performance compound semiconductor wafers and devices. The Company is a leading manufacturer of MOCVD systems, the enabling technology behind compound semiconductor products and the resulting dramatic improvements in speed, capacity and functionality. MOCVD is the means by which chemicals are deposited in atomic layers on a substrate, and many compound semiconductor products are produced on MOCVD equipment. The Company's MOCVD technology and fifteen years of material science knowledge and know how, position the Company to capitalize on market opportunities.

To this extent, the Company has concentrated on several products serving large opto-electronics markets: HB LEDs, high efficiency solar cells, VCSELs, antimonide MR Sensors and epitaxial services. All of these products are based on the Company's TurboDisc(TM) production system, the enabling technology.

The Company's two product lines, systems and materials, differ significantly. Systems-related revenues include sales of Turbo-disc(TM) systems as well as spare parts and services. The book to ship time period on systems is approximately four to six months, while the average selling price is in excess of $1.0 million. Materials revenues include wafers, devices and process development technology. The materials sales cycle is generally shorter than systems and average selling prices vary significantly based on the products. Generally, the Company achieves a higher gross profit on its materials related products.

In conjunction with the vertical expansion of the Company's product lines, EMCORE began fiscal 1998 with a capital plan requiring $35.0 million. These funds were required to build the Company's manufacturing and development infrastructure and to take advantage of market windows for new products which the Company had under development. The Company believes it now has the majority of the infrastructure required to address the needs of the compound semiconductor industry.

To expand its technology base into the data communications and telecommunications markets, on December 5, 1997, the Company purchased MODE for a purchase price of $32.8 million. EMCORE's acquisition of MODE (a development stage company), constituted a significant and strategic investment for the Company to acquire and gain access to MODE's in-process research and development of micro-optical technology. The Company's over-riding investment consideration was that if MODE's research and development efforts (with continued research and development funding contemplated and acquired after acquisition) yielded commercial products for targeted applications EMCORE would possess a broader array of enabling technologies and would be better positioned for entry into certain existing large and/or high growth technology dependent markets. MODE is one of the market leaders in the design and development of high-quality optical components and subassemblies which offer superior performance at lower cost over conventional semiconductor laser technologies. MODE's microlasers and optical subassemblies are expected to provide design, performance and significant cost advantages over their technical predecessors such as edge-emitting solid state lasers. Through the integration of VCSELs with leading OEM systems design, VCSELs are expected to provide enhanced performance benefits to market applications such as Internet access, onboard photonics, gigabit ethernet, local area networks, microarea network, DVD and fiberoptic switching. On February 23, 1998, MODE announced the introduction of its first commercial product, a Gigalase VCSEL. Subsequent to such announcement, MODE's Gigalase product efforts were primarily directed toward engineering, testing and quality control

activities to facilitate commercial production which commenced in May 1998. On December 14, 1998, MODE announced its second commercial product a Gigarray VCSEL.

As part of the acquisition, the Company incurred a one-time in-process research and development write-off of $29.3 million which is reflected in the accompanying financial statements. The Company also recorded goodwill of approximately $3.4 million. This is being charged against operations over a three year period, and will therefore, impact financial performance through December 2000.

In addition to the MODE acquisition, the Company launched three joint ventures during the past year. In July 1998, the Company formed and is a minority investor in Uniroyal Optoelectronics, LLC a joint venture with UTC to manufacture, sell and distribute HB LEDs. In November 1998, the Company formed a joint venture with Optek Technology, Inc., a packager and distributor of optoelectronic devices including sensors, to market an expanded line of MR Sensors to the automotive and related industries. Combining the Company's strength in producing the package-ready die along with Optek's strength in packaging and distribution allows the Company to alter the shelf products which should allow for greater market penetration. Also in November 1998, the Company and Union Miniere Inc. formed UMCORE to explore and develop alternate uses of germanium using the Company's material science and production platform expertise.

In November 1998, the Company signed the Long Term Purchase Agreement with Loral, a wholly owned subsidiary of Loral Space & Communications. The Long Term Purchase Agreement, once EMCORE completes Loral's space qualification and test procedures, enlists EMCORE as a supplier of compound semiconductor high efficiency gallium arsenide solar cells for Loral's satellite requirements. Subject to the foregoing requirements, the Company received an initial purchase order for $5.25 million of solar cells.

In September 1998, the Company entered into an agreement with LMMS for the technical management and support of a LMMS and Sandia CRADA for the advancement, transfer and commercialization of a new compound semiconductor high efficiency solar cell. The Company also signed a four year purchase agreement with AMP Incorporated to provide high speed VCSELs. AMP Incorporated presently uses the Company's VCSELs in transceivers for Gigabit Ethernet applications.

The Company believes it possesses the technological "know how" to capitalize on all of these market opportunities. However, there can be no assurance that the Company will maintain sufficient growth in sales levels to support the associated labor, equipment and facility costs.

RESULTS OF OPERATIONS:

The following table sets forth the Statement of Income Data of the Company expressed as a percentage of total revenues for the fiscal years ended September 30, 1996, 1997 and 1998.

	YEARS ENDED SEPTEMBER 30,		
	1996	1997	1998
Revenues	100.0%	100.0%	100.0%
Cost of Sales	67.0	63.0	56.4
Gross profit	33.0	37.0	43.6
Operating expenses:			
Selling, general and administrative	23.5	19.6	32.2
Goodwill			2.1
Research and development	19.4	18.8	
One-time acquired in-process			37.7
Recurring			66.9

Operating loss	(9.9)	(1.4)	(95.3)
Stated interest expense, net	1.1	1.1	2.2
Imputed warrant interest expense, non-cash	0.4	8.4	1.4
Equity in net loss of associated companies	--	--	0.5
Loss before income taxes and extraordinary item	(11.4)	(10.9)	(99.4)
Provision for income taxes	--	0.3	--
Net loss before extraordinary item	(11.4)	(11.2)	(99.4)
Extraordinary item	--	(0.6)	--
Net loss before extraordinary item	(11.4)%	(11.8)%	(99.4)%

COMPARISON OF FISCAL YEARS ENDED SEPTEMBER 30, 1997 AND 1998

REVENUES

The Company's revenues decreased 8.4% from $47.8 million for the fiscal year ended September 30, 1997 to $43.8 million for the fiscal year ended September 30, 1998. The revenue decrease represented a shift in product mix during the year. Equipment related revenues decreased approximately 22.3% while materials related revenues increased approximately 26.5%. The decrease in equipment revenues was primarily attributable to the financial issues in the Asian economies as well as a general slowdown in the semiconductor equipment market overall. While materials related revenues did experience a 26.5% increase, the General Motors three month strike adversely affected

revenue, as shipments to General Motors were halted during the strike. International sales accounted for approximately 42.0% and 39.1% of revenues for the fiscal years ended September 30, 1997 and 1998, respectively.

The Company believes that in the future its revenues and results of operations in a given quarterly period could be impacted by the timing of customer development projects and related purchase orders for the Company's varied products, new merchandise announcements and releases by the Company, and conditions in the economy, generally and in the compound semiconductor industry environment, specifically.

COST OF SALES/GROSS PROFIT

Cost of sales includes direct material and labor costs, allocated manufacturing and service overhead, and installation and warranty costs. Gross profit increased from 37.0% of revenue to 43.6% of revenue for the fiscal years ended September 30, 1997 and 1998, respectively. The gross profit percentage increase was attributable to a shift in product mix towards higher gross margin materials related revenues.

SELLING, GENERAL AND ADMINISTRATIVE

Selling, general and administrative expenses increased by 50.7% from $9.3 million for the year ended September 30, 1997, to $14.1 million for the year ended September 30, 1998. The increase was largely due to sales personnel headcount increases to support both domestic and foreign markets and general headcount additions to sustain the internal administrative support necessary for the Company's expanded product lines and new locations. During fiscal 1998, the Company wrote-off a $1.0 million receivable due from an Asian customer which was deemed to be uncollectible. As a percentage of revenue, selling, general and administrative expenses increased from 19.6% of revenue during fiscal 1997 to 32.2% of revenue for fiscal 1998. The Company believes that selling, general and administrative expenses will decrease as a percentage of revenues in fiscal 1999.

GOODWILL AMORTIZATION

In connection with the purchase of MODE, the Company recorded goodwill of $3.4 million which is being amortized this amount over 36 months. Goodwill

amortization expense amounted to $922,000 for the year ended September 30, 1998. Net goodwill at September 30, 1998 was $2,457,000.

RESEARCH AND DEVELOPMENT

Recurring research and development expenses increased by 83.3% from $9.0 million for the year ended September 30, 1997, to $16.5 million for the year ended September 30, 1998. The increase was primarily attributable to the Company's acquisition of MODE and increased staffing and equipment costs necessary to enhance current products and develop new product offerings. Products introduced or under development include HB LEDs, high efficiency solar cells, new generation TurboDisc(TM) production systems, VCSELs and other optoelectronic devices. As a percentage of revenue, research and development expenses increased from 18.9% of revenue during fiscal 1997 to 37.7% of revenue for fiscal 1998. To maintain growth and market leadership in epitaxial technology, the Company expects to continue to invest a significant amount of its resources in research and development.

In connection with the MODE acquisition, the Company incurred a one-time charge for the write-off of acquired in-process research and development amounting to $29.3 million.

OPERATING LOSS

During fiscal 1998, operating loss increased from a loss of $0.7 million for the fiscal year ended September 30, 1997, to a loss of $41.7 million for the year ended September 30, 1998. The change in operating loss was primarily due to the $29.3 million one-time charge for in-process research and development written off in connection with the purchase of MODE. In addition, the General Motors three month strike adversely affected operating performance as shipments to General Motors were halted during the strike. General Motors is among the Company's largest customers. The Company was unable to furlough or reduce their workforce during the strike and thereby incurred charges without the benefit of related revenues.

OTHER EXPENSE

Other expenses decreased, particularly due to the reduced imputed warrant interest expense associated with the Company's subordinated debt and debt issuance guarantee cost. During fiscal 1996, the Company issued detachable warrants along with subordinated notes to certain of its existing shareholders. In fiscal year 1997, the Company also issued detachable warrants in return for a $10.0 million demand note facility (the "Facility") guarantee by the Chairman of the Board of the Company, who provided collateral for the Facility. The Company subsequently assigned a value to these detachable warrants issued using the Black-Scholes Option Pricing Model. The Company recorded the subordinated notes at a carrying value that is subject to periodic accretions, using the interest method, and reflected the Facility's detachable warrant value as debt issuance cost which was written off in its entirety in fiscal 1997. The consequent expense of these subordinated note accretion amounts and the now terminated Facility's debt issuance cost is charged to "imputed warrant interest, non-cash," and amounted to approximately $4.0 million and $600,000 for the fiscal years ended September 30, 1997 and 1998, respectively. In June 1998, the Company issued 284,684 warrants to its Chairman and its Chief Executive Officer for providing a guarantee in connection with the 1998 Agreement, an $8.0 million 18 month credit facility with the Bank. The Company assigned a value to these detachable warrants issued using the Black-Scholes Option Pricing Model. As a result, the Company will record imputed warrant interest, non-cash of approximately $1.3 million over the life of the credit facility.

INCOME TAXES

The Company's effective income tax rate was 0.0% in fiscal 1998, 2.6% in fiscal 1997 and 0.0% in fiscal 1996. The lower effective rate in fiscal 1998 and 1996, relative to fiscal 1997, was attributable to a federal income tax benefit offset by net operating loss and expenses not utilized or deductible for tax purposes.

As of September 30, 1998, the Company has net operating loss carryforwards for regular tax purposes of approximately $22.0 million which expire in the years 2003 through 2012. The Company believes that the consummation of certain equity transactions and a significant change in the ownership during fiscal year 1995 has constituted a change in control under Section 382 of the Internal Revenue Code ("IRC"). Due to the change in control, the Company's ability to use its federal net operating loss carryovers and federal research credit carryovers to offset future income and income taxes, respectively, are subject to annual limitations under IRC Section 382 and 383.

The Company believes that the acquisition of MODE and the consummation of certain other equity transactions has constituted a change in control in fiscal 1998 under Section 382 of the IRC. As such, Federal net operating loss carryovers and research credit carryovers incurred subsequent to the Company's fiscal 1995 change in control (as described above) will also be subject to annual limitations under IRC Section 382 and 383.

EXTRAORDINARY ITEM

In the fiscal year ended September 30, 1997, the Company repaid $2.0 million of its outstanding subordinated notes due May 1, 2001. In connection with this discharge of the Company's subordinated notes, an extraordinary loss of $286,000 was recognized in fiscal 1997 relating to such early extinguishment of debt.

NET LOSS

Net loss increased $5.6 million for the fiscal year ended September 30, 1997, to $43.5 million for the fiscal year ended September 30, 1998. This increase was primarily attributable to the aforementioned acquisition of MODE and subsequent write-off of in-process research and development of $29.3 million. In addition, the General Motors three month prolonged strike adversely affected operating performance.

COMPARISON OF FISCAL YEARS ENDED SEPTEMBER 30, 1996 AND 1997

REVENUES

The Company's revenues for fiscal 1997 increased 71.9% from $27.8 million to $47.8 million for the fiscal year ended September 30, 1996. The revenue increase was primarily attributable to increased demand of MOCVD systems and package-ready devices, as well as the introduction of compound semiconductor wafer products.

International sales accounted for approximately 42.5% and 42.0% of revenues for the fiscal years ended September 30, 1996 and 1997, respectively.

COST OF SALES/GROSS PROFIT

Cost of sales includes direct material and labor costs, allocated manufacturing and service overhead, and installation and warranty costs. Gross profit increased from 33.0% of revenue to 37.0% of revenue for the fiscal years ended September 30, 1996 and 1997, respectively. The gross profit percentage increase was attributable to higher margins on wafer, device and licensing revenues.

SELLING, GENERAL AND ADMINISTRATIVE

Selling, general and administrative expenses increased by 43.3% from $6.5 million for the year ended September 30, 1996, to $9.3 million for the year ended September 30, 1997. The increase was largely due to sales personnel headcount increases to support both domestic and foreign markets and general headcount additions to sustain the internal administrative support necessary for the Company's increased business as well as higher expenses attributable to increased revenues. As a percentage of revenue, selling, general and administrative expenses decreased from 23.5% of revenue during fiscal 1996 to 19.6% of revenue for fiscal 1997.

RESEARCH AND DEVELOPMENT

Research and development expenses increased by 66.6% from $5.4 million for the year ended September 30, 1996, to $9.0 million for the year ended September 30, 1997. The increase was primarily attributable to increased staffing and equipment costs necessary to enhance current products and research and development activities for the emulation of the Company's two new product lines (epitaxial wafers and package-ready devices). As a percentage of revenue, research and development expenses decreased from 19.4% of revenue during fiscal 1996 to 18.8% of revenue for fiscal 1997. To maintain growth and market leadership in epitaxial technology, the Company expects to continue to invest a significant amount of its resources in research and development.

OPERATING LOSS

During fiscal 1997, operating loss decreased $2.1 million from a loss of $2.8 million for the fiscal year ended September 30, 1996, to a loss of $0.7 million for the year ended September 30, 1997. The change in operating loss was primarily due to higher revenues generating greater overall gross profit.

OTHER EXPENSE

During fiscal 1996, the Company issued detachable warrants along with subordinated notes to certain of its existing shareholders. In the first quarter of fiscal year 1997, the Company also issued detachable warrants in return for the $10.0 million Facility guarantee by the Chairman of the Board of the Company, who provided collateral for the Facility. The Company subsequently assigned a value to these detachable warrants issued using the Black-Scholes Option Pricing Model. The Company recorded the subordinated notes at a carrying value that is subject to periodic accretions, using the interest method, and reflected the Facility's detachable warrant value as debt issuance cost. The consequent expense of these subordinated note accretion amounts and the now terminated Facility's debt issuance cost is charged to "Imputed warrant interest, non-cash," related to the warrant issuances in connection with the $10.0 million Facility, and amounted to approximately $126,000 and $4.0 million for the fiscal years ended September 30, 1996 and 1997, respectively.

Borrowings totaling $8.0 million under the Facility were utilized to fund capital expenditures in connection with the build-out of the Company's manufacturing facility during the six months ended March 31, 1997. The resultant interest expense was the primary reason for the increase in "Stated interest expense" for the year ended September 30, 1997. The outstanding $8.0 million under this demand note facility was repaid in March 1997.

EXTRAORDINARY ITEM

The Company repaid $10.0 million of its outstanding debt with proceeds from its initial public offering ("IPO"). The entire $8.0 million outstanding of its Facility was repaid and $2.0 million was used to repay a portion of

the Company's outstanding subordinated notes due May 1, 2001. In connection with this discharge of the Company's subordinated notes, an extraordinary loss of $286,000 was recognized in fiscal 1997 relating to such early extinguishment of debt.

NET LOSS

Net loss increased $2.4 million from $3.2 million for the fiscal year ended September 30, 1996, to $5.6 million for the fiscal year ended September 30, 1997. This increase was primarily attributable to the aforementioned $4.0 million of non-cash imputed warrant interest associated with certain financing transactions.

OTHER SELECTED SEPTEMBER 30, 1998 INFORMATION

BACKLOG

The Company's order backlog decreased 7.4% from $24.4 million for the fiscal year ended September 30, 1997, to $22.6 million for the fiscal year ended September 30, 1998. The Company includes in backlog only customer purchase orders which have been accepted by the Company and for which shipment dates have been assigned within the twelve months to follow and research contracts that are in process or awarded. Wafer and device contract agreements extending longer than one year in duration are included in backlog only for the ensuing 12 months. Some of these agreements currently extend over three years. The Company receives partial advance payments or irrevocable letters of credit on most production system orders. Subsequent to year end, the Company's backlog has increased significantly. As of December 15, 1998, the Company's order backlog exceeded $41.0 million, an increase of 81.4% since September 30, 1998.

LIQUIDITY AND CAPITAL RESOURCES

Cash and cash equivalents increased by approximately $800,000 from $3.7 million at September 30, 1997, to $4.5 million at September 30, 1998. For the year ended September 30, 1998, net cash used by operations amounted to $1.6 million, primarily due to the Company's net losses excluding the acquired in-process research and development non-cash charge and increase in inventories which was partially offset by the Company's non-cash depreciation and amortization charges, its increase in accounts payable and advanced billings, and its decrease in accounts receivable.

For the year ended September 30, 1998, net cash used in investment activities amounted to $22.2 million primarily due to the purchase and manufacture of new equipment for the Company's wafer and package ready device product lines and clean room modifications and enhancements, as well as its purchase of land and construction of a facility in Albuquerque, New Mexico to be used for the manufacture of wafers and package ready devices.

On March 31, 1997, the Company entered into the 1997 Agreement, a $10.0 million revolving loan which bears interest at the rate of prime plus 50 basis points (8.0% at September 30, 1998). As a result of the net loss for the quarter ended June 30, 1998, the Company was not in compliance with the 1997 Agreement fixed charge coverage ratio covenant. The Company received a waiver from the bank regarding this non-compliance. The Company and the Bank amended the 1997 Agreement as of November 30, 1998 to, among other things, extend the expiration until October 1, 1999 and modify certain financial covenants. In addition, pursuant to the amendment of the 1997 Agreement, Thomas Russell, the Chairman of the Board of the Company will guarantee the debt in the event that the Company does not meet certain financial covenants. On June 22, 1998, the Company entered into the 1998 Agreement, an $8.0 million loan agreement with the Bank, which expires December 31, 1999. The 1998 Agreement bears interest at a rate equal to one-month LIBOR plus three-quarters of one percent per annum (6.4% at September 30, 1998). As of September 30, 1998, the Company had borrowed approximately $10.0 million under the 1997 Agreement and $8.0 million under the 1998 Agreement.

On September 17, 1998, the Company borrowed $7.0 million from its Chairman, Thomas J. Russell. The loan bears interest at 9.75% per annum. In addition, on October 23, 1998 the Company borrowed an additional $1.5 million from its Chairman on identical terms. The entire $8.5 million, borrowed from Thomas J. Russell was repaid from the proceeds of the Private Placement. The Company received a waiver from the Bank regarding the repayment of this debt.

Net cash provided by financing activities for the year ended September 30, 1998 amounted to approximately $24.6 million, primarily due to the Company's proceeds of approximately $18.0 million from borrowings under the 1997 and 1998 Agreements and the $7.0 million note to the Company's Chairman.

The Company's operations are subject to a number of risks, including but not limited to a history of net losses from operations, future capital needs, dependence on key personnel, competition and risk of technological obsolescence, governmental regulations and approvals, research and development results, continued development of its compound semiconductor manufacturing and marketing capabilities and a concentration of international sales in Asia. The Company's operations for the year ended September 30, 1998, were primarily funded through

borrowings under existing credit facilities and short-term advances from the Company's Chairman - aggregating $7.0 million as of September 30, 1998. The Company's Chairman has from time to time provided credit enhancements in the form of debt guarantees and has loaned the Company funds to support its expansion and capital equipment requirements. The Company's Chief Executive Officer has also provided credit enhancements in the form of debt guarantees for the Company. Subsequent to September 30, 1998, the Company completed the Private Placement, resulting in proceeds of $21.2 million. The Company repaid its Chairman $8.5 million (including $1.5 million advanced to the Company subsequent to September 30, 1998), invested approximately $5.6 million in two unconsolidated ventures and the balance of approximately $7.0 million will be used for general working capital purposes. In addition, the Company's $10.0 million credit facility was extended to October 1, 1999. The Company's operating plans include, among other things attempting to improve (i) operating cash flow through increased sales of compound semiconductor systems, wafers and package-ready devices and (ii) managing its cost structure in relation to its anticipated level of revenues. The Company believes that its current liquidity, together with available credit facilities and the proceeds from the Private Placement, should be sufficient to meet its cash needs for working capital through fiscal 1999. However, if the proceeds from the Private Placement, cash generated from operations and cash on hand are not sufficient to satisfy the Company's liquidity requirements, the Company will seek to obtain additional equity or debt financing. Additional funding may not be available when needed or on terms acceptable to the Company. If the Company is required to raise additional financing and if adequate funds are not available or are not available on acceptable terms, the ability to continue to fund expansion, develop and enhance products and services, or otherwise respond to competitive pressures would be severely limited. Such a limitation could have a material adverse effect on the Company's business, financial condition or operations.

YEAR 2000 COMPLIANCE

Many currently installed computer systems and software products are coded to accept or recognize only two digit entries in the date code field. These systems and software products will need to accept four digit entries to distinguish 21st century dates from 20th century dates. As a result, computer systems and/or software used by many companies and governmental agencies may need to be upgraded to comply with such Year 2000 requirements or risk system failure or miscalculations causing disruptions of normal business activities.

STATE OF READINESS

The Company has made a preliminary assessment of the Year 2000 readiness of its operating financial and administrative systems, including the hardware and software that support such systems. The Company's assessment plan consists of (i) quality assurance testing of its internally developed proprietary software; (ii) contacting third-party vendors and licensors of material hardware, software and services that are both directly and indirectly related to the Company's business; (iii) contacting vendors of third-party systems; (iv) assessing repair or replacement requirements; (v) implementing repair or replacement; and (vi) creating contingency plans in the event of Year 2000 failures. The Company plans to perform a Year 2000 simulation on its systems during the second quarter of 1999 to test system readiness. Many vendors of material hardware and software components of its systems have indicated that the products used by the Company are currently Year 2000 compliant. The Company will require vendors of its other material hardware and software components of its systems to provide assurances of their Year 2000 compliance. The Company plans to complete this process during the first half of 1999. Until such testing is completed and such vendors and providers are contacted, the Company will not be able to completely evaluate whether its systems will need to be revised or replaced.

COSTS

To date, the Company has not incurred any material expenditures in connection with identifying, evaluating or addressing Year 2000 compliance issues. Most of the Company expenses have related to, and are expected to continue to relate to, the operating costs associated with time spent by

employees in the evaluation process and Year 2000 compliance matters generally. At this time, the Company does not possess the information necessary to estimate the potential costs of revisions to its systems should such revisions be required or the replacement of third-party software, hardware or services that are determined not to be Year 2000 compliant. Although the Company does not anticipate that such expenses will be material, such expenses if higher than anticipated could have a material adverse effect on the Company's business, results of operations and financial condition.

RISKS

The Company is not currently aware of any Year 2000 compliance problems relating to its systems that would have a material adverse effect on the Company business, results of operations and financial condition, without taking into account the Company efforts to avoid or fix such problems. There can be no assurance that the Company will not discover Year 2000 compliance problems in its systems that will require substantial revision. In addition, there can be no assurance that third-party software, hardware or services incorporated into the Company material systems will not need to be revised or replaced, all of which could be time-consuming and expensive. The failure of the Company to fix or replace its internally developed proprietary software or third-party software, hardware or services on a timely basis could result in lost revenues, increased operating costs, the loss of customers and other business interruptions, any of which could have a material adverse effect on the Company business, result of operations and financial condition. Moreover, the failure to adequately address Year 2000 compliance issues in its internally developed proprietary software could result in claims of mismanagement, misrepresentation or breach of contract and related litigation, which could be costly and time-consuming to defend.

In addition, there can be no assurance that governmental agencies, utility companies, third-party service providers and others outside of the Company's control will be Year 2000 compliant. The failure by such entities to be Year 2000 compliant could result in systemic failure beyond the control of the Company's such as a telecommunications or electrical failure, which could have a material adverse effect on the Company's business, results of operations and financial condition.

CONTINGENCY PLAN

As discussed above, the Company is engaged in an ongoing Year 2000 assessment and has not yet developed any contingency plans. The results of the Company's Year 2000 simulation testing and the responses received from third-party vendors and service providers will be taken into account in determining the nature and extent of any contingency plans.

RECENT ACCOUNTING PRONOUNCEMENTS

In June 1997, the Financial Accounting Standards Board ("FASB") issued Statement of Financial Accounting Standards ("SFAS") No. 131, "Disclosures about Segments of an Enterprise and Related Information" ("SFAS No. 131"), which establishes standards for reporting information about operating segments in annual financial statements. It also establishes standards for related disclosures about products and services, geographic areas and major customers. SFAS No. 131 is effective for fiscal years beginning after December 15, 1997. The Company will be required to adopt this standard in its fiscal year ending September 30, 1999. The adoption of SFAS No. 131 is not expected to have an impact on the Company's results of operations, financial position or cash flows.

In February 1998, FASB issued SFAS No. 132, "Employers' Disclosures about Pension and Other Postretirement Benefits" ("SFAS No. 132"), which requires disclosure about pension and postretirement benefits. SFAS No. 132 does not change the measurement or recognition of these plans. SFAS No. 132 is effective for fiscal years beginning after December 15, 1997. The adoption of SFAS No. 132 is not expected to have an impact on the Company's results of operations, financial position or cash flows.

In March 1998, the American Institute of Certified Public Accountants ("AICPA") issued Statement of Position ("SOP") 98-1, "Accounting for the Cost of Computer Software Developed or Obtained for Internal Use"

("SOP 98-1"). SOP 98-1 is effective for financial statements for years beginning after December 14, 1998. SOP 98-1 provides guidance over accounting for computer software development or obtained for internal use including the requirement to capitalize specified costs and amortization of such costs. The Company does not expect the adoption of this standard to have a material effect results of operations, financial position or cash flows.

In April 1998, the AICPA issued Statement of Position 98-5, "Reporting on the Costs of Start-Up Activities" ("SOP 98-5"). SOP 98-5, which is effective for fiscal years beginning after December 15, 1998, provides guidance on the financial reporting of start-up costs and organization costs. It requires costs of start-up activities and organization costs to be expensed as incurred. As the Company has expensed these costs historically, the adoption of this standard is not expected to have a significant impact on the Company's results of operations, financial position or cash flows.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

During fiscal 1998, the Company was not a party to any derivative contracts, hedging or other market risk transactions.

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

EMCORE CORPORATION
BALANCE SHEET
AS OF SEPTEMBER 30, 1997 AND 1998

	1997	1998
ASSETS		
Current assets:		
Cash and cash equivalents	$ 3,653,145	$ 4,455,836
Restricted cash	312,500	62,500
Accounts receivable, net of allowance for doubtful accounts of approximately $697,000 and $611,000 at September 30, 1997 and 1998, respectively	8,439,704	7,437,822
Accounts receivable - related party	2,500,000	500,000
Inventories, net	7,185,626	12,445,326
Costs in excess of billings on uncompleted contracts	--	77,531
Prepaid expenses and other current assets	120,393	130,075
Total current assets	22,211,368	25,109,090
Property, plant and equipment, net	16,797,833	36,209,831
Goodwill	--	2,457,000
Other assets, net	453,608	2,381,723
Total assets	$ 39,462,809	$ 66,157,644
LIABILITIES AND SHAREHOLDERS' EQUITY		
Current liabilities:		
Note payable - related party	$ --	$ 7,000,000
Accounts payable	4,050,216	12,022,628
Accrued expenses	3,867,589	4,197,405
Advanced billings	1,998,183	3,180,370
Unearned service revenue	124,279	52,778
Capitalized lease obligation - current	15,030	673,036
Total current liabilities	10,055,297	27,126,217
Long-term debt:		
Bank loans	--	17,950,000
Subordinated notes, net	7,499,070	7,808,772
Capitalized lease obligation, net of current portion	77,870	754,517
Total liabilities	17,632,237	53,639,506
Commitments and contingencies		

Shareholders' equity:		
Preferred Stock, $.0001 par value, 5,882,353 shares authorized, no shares outstanding in 1997 and 1998		
Common stock, no par value, 23,529,411 shares authorized, 6,000,391 shares issued and outstanding in 1997 and 9,375,952 shares issued and outstanding in 1998	45,816,774	87,443,237
Accumulated deficit	(23,777,658)	(67,258,454)
	22,039,116	20,184,783
Notes receivable from warrant issuances and stock sales	(208,544)	(7,666,645)
Total shareholders' equity	21,830,572	12,518,138
Total liabilities and shareholders' equity	$ 39,462,809	$ 66,157,644

THE ACCOMPANYING NOTES ARE AN INTEGRAL PART OF THE FINANCIAL STATEMENTS.

EMCORE CORPORATION
STATEMENTS OF OPERATIONS
FOR THE YEARS ENDED SEPTEMBER 30, 1996, 1997 AND 1998

	1996	1997	1998
Revenues:			
Systems and materials	$ 24,066,506	$ 46,591,662	$ 42,820,791
Services	3,712,379	1,160,910	939,192
Total revenues	27,778,885	47,752,572	43,759,983
Cost of sales:			
Systems and materials	16,121,938	29,309,898	24,148,783
Services	2,484,482	784,117	526,706
Total cost of sales	18,606,420	30,094,015	24,675,489
Gross profit	9,172,465	17,658,557	19,084,494
Operating expenses:			
Selling, general and administrative	6,524,482	9,346,329	14,082,438
Goodwill amortization			921,941
Research and development - recurring	5,401,413	9,001,188	16,494,888
Research and development - one-time acquired in-process, non-cash	--	--	29,294,000
Operating loss	(2,753,430)	(688,960)	(41,708,773)
Other expenses:			
Stated interest, net of interest income of $71,460, $236,945, and $448,227 for the years ended September 30, 1996, 1997 and 1998, respectively	297,093	519,422	972,992
Imputed warrant interest expense, non-cash	125,791	3,988,390	600,536
Equity in net loss of unconsolidated affiliate	--	--	198,495
Loss before income taxes and extraordinary item	(3,176,314)	(5,196,772)	(43,480,796)
Provision for income taxes	--	137,000	--
Net loss before extraordinary item	(3,176,314)	(5,333,772)	(43,480,796)
Extraordinary item - loss on early extinguishment of debt	--	285,595	--
Net loss	$ (3,176,314)	$ (5,619,367)	$(43,480,796)
Per share data:			
Basic shares used in per share data calculations	2,994,466	4,668,822	8,775,270
Diluted shares used in per share data calculations	2,994,466	4,668,822	8,775,270
Net loss per basic share before extraordinary item	$ (1.06)	$ (1.14)	$ (4.95)
Net loss per basic share	$ (1.06)	$ (1.20)	$ (4.95)

Net loss per diluted share before extraordinary item	$ (1.06)	$ (1.14)	$ (4.95)
Net loss per diluted basic share	$ (1.06)	$ (1.20)	$ (4.95)

THE ACCOMPANYING NOTES ARE AN INTEGRAL PART OF THE FINANCIAL STATEMENTS.

EMCORE CORPORATION
STATEMENTS OF SHAREHOLDERS' EQUITY
AS OF SEPTEMBER 30, 1996, 1997 AND 1998

	Common Stock		Accumulated	Shareholders' Notes	Total Shareholders'
	Shares	Amount	Deficit	Receivable	Equity
BALANCE AT SEPTEMBER 30, 1995	2,994,461	$16,637,566	$(14,981,977)	$(146,107)	$1,509,482
Issuance of common stock purchase warrants		2,340,000			2,340,000
Notes receivable due from shareholders in connection with issuance of detachable warrants				(151,579)	(151,579)
Net loss			(3,176,314)		(3,176,314)
BALANCE AT SEPTEMBER 30, 1996	2,994,461	18,977,566	(18,158,291)	(297,686)	521,589
Issuance of common stock purchase warrants		3,601,455			3,601,455
Issuance of common stock in initial public offering, net of issuance cost of $3,110,345	2,875,000	22,764,655			22,764,655
Issuance of common stock on exercise of warrants	94,124	384,027			384,027
Issuance of common stock on exercise of stock options	34,965	53,640			53,640
Redemptions of notes receivable from shareholders				31,842	31,842
Forgiveness of notes receivable from shareholder				57,300	57,300
Compensatory stock issuances	1,841	35,431			35,431
Net loss			(5,619,367)		(5,619,367)
BALANCE AT SEPTEMBER 30, 1997	6,000,391	45,816,774	(23,777,658)	(208,544)	21,830,572
Issuance of common stock purchase warrants		1,309,546			1,309,546
Issuance of common stock on exercise of warrants in exchange for notes receivable	1,827,966	7,458,101		(7,458,101)	--
Issuance of common stock and common stock purchase options and warrants in connection with the acquisition of MODE	1,461,866	32,329,000			32,329,000
Stock option exercise	35,809	83,486			83,486
Stock purchase warrant exercise	5,660	23,092			23,092
Issuance of common stock on exercise of warrants in exchange for subordinated notes	17,605	71,841			71,841
Compensatory stock issuances	26,655	351,397			351,397
Net loss			(43,480,796)		(43,480,796)
BALANCE AT SEPTEMBER 30, 1998	9,375,952	$87,443,237	$(67,258,454)	$(7,666,645)	$12,518,138

THE ACCOMPANYING NOTES ARE AN INTEGRAL PART OF THE FINANCIAL STATEMENTS.

EMCORE CORPORATION
STATEMENTS OF CASH FLOWS
FOR THE YEARS ENDED SEPTEMBER 30, 1996, 1997 AND 1998

	1996	1997	1998
CASH FLOWS FROM OPERATING ACTIVITIES:			
Net loss	$ (3,176,314)	$ (5,619,367)	$(43,480,796)
Adjustments to reconcile net loss to net cash used for operating activities:			
Acquired in-process research and development, non-cash	--	--	29,294,000
Depreciation and amortization	1,871,016	3,187,755	6,051,105
Provision for doubtful accounts	146,418	515,000	1,118,000
Provision for inventory valuation	105,000	120,000	120,000
Detachable warrant accretion and debt issuance cost amortization	125,792	3,988,390	600,536
Extraordinary loss on early extinguishment of debt	--	285,595	
Equity in net loss of unconsolidated affiliate			198,495
Compensatory stock issuances	--	35,431	351,397
Write-off note receivable due from shareholder	--	57,300	--
Change in assets and liabilities:			
Accounts receivable - trade	(1,041,956)	(5,929,533)	1,882
Accounts receivable - related party	--	(2,500,000)	2,000,000
Inventories	(4,410,566)	339,414	(5,243,187)
Costs in excess of billings on uncompleted contracts	(2,882)	19,322	(77,531)
Prepaid expenses and other current assets	(26,784)	(60,458)	12,632
Other assets	(468,565)	27,568	(623,775)
Accounts payable	3,398,078	(2,029,154)	7,949,760
Accrued expenses	777,899	1,880,943	(970,148)
Advanced billings	1,122,667	(1,308,279)	1,182,187
Billings in excess of costs on uncompleted contracts	(306,359)	--	--
Unearned service revenue	12,315	111,964	(71,501)
Total adjustments	1,302,073	(1,258,742)	41,893,852
Net cash and cash equivalents used for operating activities	(1,874,241)	(6,878,109)	(1,586,944)
CASH FLOWS FROM INVESTING ACTIVITIES:			
Purchase of property, plant, and equipment	(7,090,869)	(11,631,642)	(22,132,071)
Acquisition, cash acquired	--	--	192,799
Investment in unconsolidated affiliates	--	--	(490,000)
Funding of restricted cash	--	(312,500)	250,000
Net cash and cash equivalents used for investing activities	(7,090,869)	(11,944,142)	(22,179,272)
CASH FLOWS FROM FINANCING ACTIVITIES:			
Proceeds from initial public offering, net of issuance cost of $3,110,345	--	22,764,655	--
Proceeds under bank loans	--	8,000,000	17,950,000
Proceeds from notes payable, related party	7,000,000		
Proceeds from subordinated note issuance	11,009,600	--	--
Payments on demand note facility and subordinated debt	--	(10,000,000)	--
Proceeds from exercise of stock purchase warrants	--	85,121	23,092
Proceeds from exercise of stock options	--	53,640	83,486
Payments on capital lease obligations	(3,000,000)	(5,723)	(487,671)
Reduction in notes receivable from shareholders	--	210,317	--

Net cash and cash equivalents provided by financing activities	8,009,600	21,108,010	24,568,907
Net (decrease) increase in cash and cash equivalents	(955,510)	2,285,759	802,691
Cash and cash equivalents at beginning of year	2,322,896	1,367,386	3,653,145
Cash and cash equivalents at end of year	$ 1,367,386	$ 3,653,145	$ 4,455,836
SUPPLEMENTAL DISCLOSURES OF CASH FLOW INFORMATION:			
Cash paid for interest	$ 276,000	$ 600,000	$ 1,347,000
Cash paid for income taxes	55,000	--	--
NONCASH INVESTING AND FINANCING ACTIVITIES:			
Common stock issued on the exercise of warrants in exchange for subordinated notes			$ 71,841
Issuance of common stock on the exercise of warrants in exchange for notes receivable			$ 7,458,101
Issuance of common stock, and common stock purchase options and warrants in connection with the acquisition of MicroOptical Devices Inc.			$ 32,329,003

Reference is made to Note 8 - Debt Facilities - for disclosure relating to certain non-cash warrant issuance.

THE ACCOMPANYING NOTES ARE AN INTEGRAL PART OF THE FINANCIAL STATEMENTS.

EMCORE Corporation

Notes to Financial Statements

NOTE 1. DESCRIPTION OF BUSINESS

EMCORE is a designer and developer of compound semiconductor materials and process technology and a manufacturer of production systems used to fabricate compound semiconductor wafers. Compound semiconductors are used in a broad range of applications in wireless communications, telecommunications, computers, and consumer and automotive electronics. The Company has recently capitalized on its technology base by expanding into the design and production of compound semiconductor wafers and package-ready devices and under specific arrangements has licensed certain process technologies. During fiscal 1998, the Company completed the acquisition of a development stage company focused on the research and development of optical laser technologies (see Note 3). The Company offers its customers a complete, vertically-integrated solution for the design, development and production of compound semiconductor wafers and devices.

BASIS OF PRESENTATION AND LIQUIDITY. The accompanying financial statements have been prepared on a going concern basis. The Company for the year ended September 30, 1998, experienced a 10% decline in revenue of approximately $4.0 million and a substantial operating loss amounting to approximately $41.7 million (approximately $12.5 million excluding the effect of acquired in-process research and development) and had a working capital deficiency of $2.0 million.

The Company's operations are subject to a number of risks, including but not limited to a history of net losses from operations, future capital needs, dependence on key personnel, competition and risk of technological obsolescence, governmental regulations and approvals, research and development results, continued development of its compound semiconductor manufacturing and marketing capabilities and a concentration of international sales in Asia. The Company's operations for the year ended September 30, 1998, were primarily funded through borrowings under existing credit facilities, as well as short-term advances from the Company's Chairman - aggregating $7.0 million as of September 30, 1998. The Company's Chairman has from time to time provided credit enhancements in the

form of debt guarantees and has loaned the Company funds to support its expansion and capital equipment requirements. The Company's Chief Executive Officer has also provided credit enhancements in the form of debt guarantees for the Company. Subsequent to September 30, 1998, the Company completed a preferred stock private placement (the "Private Placement," see Note 17), resulting in proceeds of $21.2 million. The Company repaid its Chairman $8.5 million (including $1.5 million advanced to the Company subsequent to September 30, 1998), invested approximately $5.6 million in two unconsolidated ventures and the balance of approximately $7.0 million will be used for general working capital purposes. In addition, the Company's $10.0 million credit facility was extended to October 1, 1999. The Company's operating plans include, among other things attempting to improve (i) operating cash flow through increased sales of compound semiconductor systems, wafers and package-ready devices and (ii) managing its cost structure in relation to its anticipated level of revenues. The Company believes that its current liquidity, together with available credit facilities and the proceeds from the Private Placement, should be sufficient to meet its cash needs for working capital through fiscal 1999. However, if the proceeds from the Private Placement, cash generated from operations and cash on hand are not sufficient to satisfy the Company's liquidity requirements, the Company will seek to obtain additional equity or debt financing. Additional funding may not be available when needed or on terms acceptable to the Company. If the Company is required to raise additional financing and if adequate funds are not available or are not available on acceptable terms, the ability to continue to fund expansion, develop and enhance products and services, or otherwise respond to competitive pressures would be severely limited. Such a limitation could have a material adverse effect on the Company's business, financial condition or operations and the financial statements do not include any adjustment that could result therefrom.

NOTE 2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

PRINCIPLES OF CONSOLIDATION. The consolidated financial statements include the accounts of the Company and its wholly-owned subsidiary. The equity method of accounting is used for unconsolidated affiliates in which the Company's equity is at least 20% and not more than 50%. All significant intercompany transactions are eliminated upon consolidation.

CASH AND CASH EQUIVALENTS. The Company considers all highly liquid short-term investments purchased with an original maturity of three months or less to be cash equivalents. The Company had approximately $2,254,000 and $3,003,000 in cash equivalents at September 30, 1997 and 1998, respectively. As of September 30, 1998, the Company had restricted cash in the amount of $62,500 due to a contractual obligation.

INVENTORIES. Inventories are stated at the lower of FIFO (first-in, first-out) cost or market. Reserves are established for slow moving or obsolete inventory based upon historical and anticipated usage.

PROPERTY AND EQUIPMENT. Property and equipment are stated at cost. Significant renewals and betterments are capitalized. Maintenance and repairs which do not extend the useful lives of the respective assets are expensed. Depreciation is recorded using the straight-line method over the estimated useful lives of the applicable assets, which range from three to five years. Leasehold improvements are amortized using the straight-line method over the term of the related leases or the estimated useful lives of the improvements, whichever is less. Depreciation expense includes the amortization of capital lease assets. When assets are retired or otherwise disposed of, the assets and related accumulated depreciation accounts are adjusted accordingly, and any resulting gain or loss is recorded in current operations.

LONG-LIVED ASSETS. The carrying amount of assets is reviewed on a regular basis for the existence of facts or circumstances, both internally and externally, that suggest impairment. To date no such impairment has been indicated. The Company determines if the carrying amount of a long-lived asset is impaired based on anticipated undiscounted cash flows before interest. In the event of an impairment, a loss is recognized based on the amount by which the carrying amount exceeds fair value of the asset. Fair value is determined primarily using the anticipated cash flows before interest, discounted at a

rate commensurate with the risk involved.

DEFERRED COSTS. Included in other assets are deferred costs related to obtaining product patents and debt issuance costs and an investment in an unconsolidated affiliate. Amortization expense related to product patents amounted to approximately $128,000, $40,000 and $79,000 for the years ended September 30, 1996, 1997 and 1998, respectively. During the year ended September 30, 1998, the Company issued 284,684 common stock purchase warrants in exchange for the guaranteeing of a credit facility by the Company's Chairman and Chief Executive Officer. The warrants were assigned a value of $1,310,000 which is being amortized over the eighteen month term of the facility. The warrants were valued by the Company based upon its application of the Black Scholes Option Pricing Model. Amortization expense related to such warrant issuance amounted to approximately $219,000 for fiscal 1998.

GOODWILL. Goodwill is amortized using the straight-line method over three years. The Company evaluates annually whether there has been a permanent impairment in the value of goodwill. Any impairment would be recognized when the sum of expected undiscounted cash flows derived from the acquired business is less than its carrying value. If such an impairment occurred, the amount of the impairment would be based on the fair value of the acquired business as determined by the market value of comparable companies on the present value of expected cash flows.

INCOME TAXES. The Company recognizes deferred taxes by the asset and liability method of accounting for income taxes. Under the asset and liability method, deferred income taxes are recognized for differences between the financial-statement and tax bases of assets and liabilities at enacted statutory tax rates in effect for the years in which the differences are expected to reverse. The effect on deferred taxes of a change in tax rates is recognized in income in the period that includes the enactment date. In addition, valuation allowances are established when necessary to reduce deferred tax assets to the amounts expected to be realized. The primary sources of temporary differences are depreciation and amortization of intangible assets.

REVENUE AND COST RECOGNITION--SYSTEMS, COMPONENTS AND SERVICE REVENUEs. Revenue from systems sales is recognized upon shipment, when title passes to the customer. Subsequent to product shipment, the Company incurs certain installation costs at the customer's facility and warranty costs which are estimated and accrued at the time the sale is recognized. Component sales and service revenues are recognized when goods are shipped or services are rendered to the customer. Service revenue under contracts with specified service terms is recognized as earned over the service period in accordance with the terms of the applicable contract. Costs in connection with the procurement of the contracts are charged to expense as incurred.

REVENUE AND COST RECOGNITION--CONTRACT REVENUe. The Company's research contracts require the development or evaluation of new materials applications and have a duration of six to thirty-six months. For research contracts with the U.S. Government and commercial enterprises with duration's greater than six months, the Company recognizes revenue to the extent of costs incurred plus the estimated gross profit as stipulated in such contracts, based upon contract performance. Contracts with a duration of six months or less are accounted for on the completed contract method. A contract is considered complete when all costs, except insignificant items, have been incurred, and the research reporting requirements to the customer have been met. Contract costs include all direct material and labor costs and those indirect costs related to contract performance, such as indirect labor, supplies, tools, repairs and depreciation costs, as well as coverage of certain general and administrative costs. Provisions for estimated losses on uncompleted contracts are made in the period in which such losses are determined. Revenues from contracts amounted to approximately $3,295,000, $614,000 and $438,000 for the years ended September 30, 1996, 1997 and 1998, respectively.

RESEARCH AND DEVELOPMENT. Research and development costs related to the development of both present and future products and Company sponsored materials application research are charged to expense as incurred. In connection with the

acquisition of MicroOptical Devices, Inc. ("MODE"), the Company they recorded a charge of $29,294,000 for acquired in-process research and development.

FAIR VALUE OF FINANCIAL INSTRUMENTS. The Company estimates the fair value of its financial instruments based upon discounted cash flow analyses using the Company's incremental borrowing rate on similar instruments as the discount rate. As of September 30, 1998, the fair value of the Company's subordinated notes exceeded the carrying value of such instruments by approximately $830,000. As of September 30, 1998, the carrying values of the Company's cash and cash equivalents, receivables, accounts payable and variable rate based debt as reflected on the Company's accompanying balance sheet approximates fair value.

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 reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements. Estimates also affect the reported amounts of revenues and expenses during the reporting period. Actual results may differ from those estimates. The Company's most significant estimates relate to acquired in-process research and development, accounts receivable and inventory valuation reserves, warranty and installation accruals, estimates of cost and related gross profits on certain research contracts and the valuation of long-lived assets.

NET LOSS PER SHARE. The Company adopted the provisions of Statement of Financial Accounting Standards No. 128 "Earnings per share" ("SFAS No. 128") effective with its first quarter. Basic and diluted earnings per share calculated pursuant to SAFS No. 128 have been restated for all periods presented to give effect to the Securities and Exchange Commission's Staff Accounting Bulletin No. 98 which eliminated certain computational requirements of Staff Accounting Bulletin No. 64.

Basic earnings per common share was calculated by dividing net loss by the weighted average number of common stock shares outstanding during the period. Diluted earnings per share was calculated by dividing net income by the sum of the weighted average number of common shares outstanding plus all additional common shares that would have been outstanding if potentially dilutive common shares had been issued. The following table reconciles the number of shares utilized in the Company's earnings per share calculations.

	Years Ended September 30,		
	1996	1997	1998
Net loss	$ (3,176,314)	$ (5,619,367)	$(43,480,796)
Earnings per common share - basic	$ (1.06)	$ (1.20)	$ (4.95)
Earnings per common share - diluted	$ (1.06)	$ (1.20)	$ (4.95)
Common share - basic	2,994,466	4,668,822	8,775,270
EFFECT OF DILUTIVE SECURITIES:			
Stock options and warrants	--	--	--
Common shares - diluted	2,994,466	4,668,822	8,775,270

RECENT ACCOUNTING PRONOUNCEMENTS

In June 1997, the Financial Accounting Standards Board ("FASB") issued Statement of Financial Accounting Standards ("SFAS") No. 131. "Disclosures about Segments of an Enterprise and Related Information" ("SFAS No. 131"), which establishes standards for reporting information about operating segments in annual financial statements. It also establishes standards for related disclosures about products and services, geographic areas and major customers. The Company will be required to adopt this standard in its fiscal year ended

September 30, 1999. The adoption of SFAS No. 131 is not expected to have an impact on the Company's results of operations, financial position or cash flows.

In February 1998, FASB issued SFAS No. 132, "Employers' Disclosures about Pension and Other Postretirement Benefits" ("SFAS No. 132"), which revises employers' disclosures about pension and other postretirement benefit plans. SFAS No. 132 does not change the measurement or recognition of those plans. SFAS No. 132 is effective for fiscal years beginning after December 15, 1997. The adoption of SFAS No. 132 is not expected to have an impact on the Company's results of operations, financial position or cash flows.

In March 1998, the American Institute of Certified Public Accountants ("AICPA") issued Statement of Position ("SOP") 98-1, "Accounting for the Cost of Computer Software Developed or Obtained for Internal Use" ("SOP 98-1"). SOP 98-1 is effective for financial statements for years beginning after December 14, 1998. SOP 98-1 provides guidance over accounting for computer software development or obtained for internal use including the requirement to capitalize specified costs and amortization of such costs. The Company does not expect the adoption of this standard to have a material effect results of operations, financial position or cash flows.

In April 1998, AICPA issued SOP 98-5, "Reporting on the Costs of Start-Up Activities" ("SOP 98-5"). SOP 98-5, which is effective for fiscal years beginning after December 15, 1998, provides guidance on the financial reporting of start-up costs and organization costs. It requires costs of start up activities and organization costs to be expenses as incurred. As the Company has expensed these costs historically, the adoption of this standard is not expected to have a significant impact on its results of operations, financial position or cash flows.

RECLASSIFICATIONS. Prior period balances have been reclassified to conform with the current period financial statement presentation.

NOTE 3. ACQUISITION

On December 5, 1997, the Company acquired all of the outstanding capital stock of MODE in exchange for 1,461,866 shares of EMCORE common stock, 200,966 common stock purchase options (exercise prices ranging from $0.43 to $0.59), and 47,118 common stock purchase warrants (exercise prices ranging from $4.32 to $5.92). The purchase price was approximately $32,829,000 including direct acquisition costs of approximately $500,000. The acquisitions of MODE was recorded using the purchase method of accounting. Accordingly, the results of operations of the acquired business and the fair values of the acquired tangible and intangible assets and assumed liabilities have been included in the Company's financial statements as of December 5, 1997. The allocation of the fair value of the net assets acquired is as follows:

Net tangible assets	$ 156,000
Goodwill	3,379,000
Acquired in process research and development	29,294,000
Total purchase price	$32,829,000

MODE was a development stage company (incorporated in August 1995) and had 18 employees at the date of acquisition. MODE's activities were substantially dedicated towards the research and development of micro optical laser devices at the date of acquisition.

The amount allocated to acquired in-process research and development was determined through an independent valuation, which includes a number of estimates and assumptions. The amount allocated to acquired

in-process research and development was immediately written-off. Goodwill is being amortized over a period of three years.

The following unaudited pro forma basis financial information reflects the combined results of operations of the Company and MODE, as if MODE had been acquired as of October 1, 1996. The summary includes the impact of certain adjustments, such as goodwill amortization and the number of shares outstanding.

	(UNAUDITED) YEAR ENDED SEPTEMBER 30,	
	1997	1998
Revenue	$ 48,313,000	$ 43,860,000
Net loss before extraordinary item	8,769,000	15,085,000
Net loss	9,055,000	15,085,000
Net loss, per share	$ 1.42	$ 1.72

The unaudited pro forma results of operations are not necessarily indicative of what actually would have occurred if the acquisition had occurred on October 1, 1996. In addition, the unaudited pro forma results of operations are not intended to be a projection of future results that might be achieved from the combined entity. The foregoing pro forma results of operations does not reflect the non-recurring write-off of acquired in-process research and development.

NOTE 4. CONCENTRATION OF CREDIT RISK

The Company sells its compound semiconductor products domestically and internationally. The Company's international sales are generally made under letter of credit arrangements.

For the years ended September 30, 1996, 1997 and 1998, the Company sold 42.5%, 42.0% and 39.1% of its products to foreign customers, respectively.

The Company's world-wide sales to major customers were as follows:

	As of September 30,		
	1996	1997	1998
Customer A	$ 6,558,930	$ 4,872,540	$ 7,563,137
Customer B	1,773,864	7,158,619	5,602,120
Customer C	--	2,500,000	2,501,500
Customer D	1,530,000	3,085,000	178,856
Customer E	2,075,722	--	--
Total	$11,938,516	$17,616,159	$15,845,613

The Company performs material application research under contract with the U.S. Government or as a subcontractor of U.S. Government funded projects.

The Company performs ongoing credit evaluations of its customers' financial condition and collateral is not requested. The Company maintains reserves for potential credit losses based upon the credit risk of specified customers, historical trends and other information. To reduce credit risk and to fund manufacturing costs, the Company requires periodic prepayments or irrevocable letters of credit on most production system orders. During the quarter ended June 30, 1998, the Company wrote off outstanding receivables of approximately $1.0 million which was due from an Asian customer. Prior to this event, the Company's credit losses generally had not exceeded its expectations.

The Company has maintained cash balances with certain financial institutions in excess of the $100,000 insured limit of the Federal Deposit Insurance Corporation.

NOTE 5. INVENTORIES

The components of inventories consisted of the following:

	As of September 30,	
	1997	1998
Raw materials	$6,513,379	$11,346,487
Work-in-process	672,247	1,091,971
Finished goods	--	6,868
Total	$7,185,626	$12,445,326

NOTE 6. PROPERTY, PLANT AND EQUIPMENT

Major classes of property and equipment are summarized below:

	As of September 30,	
	1997	1998
Land	$ --	$ 1,028,902
Building	--	7,493,385
Equipment	19,190,770	28,367,324
Furniture and fixtures	2,300,146	3,255,680
Leasehold improvements	6,085,256	9,948,121
Fixed assets under capital leases	98,623	2,042,728
	27,674,795	52,136,140
Less: accumulated depreciation and amortization	(10,876,962)	(15,926,309)
Total	$ 16,797,833	$ 36,209,831

At September 30, 1998, minimum future lease payments due under the capital leases are as follows:

Period ending September 30,	
1999	$ 796,648
2000	741,345
2001	62,478
2002	25,336
2003 and thereafter	--
Total minimum lease payments	1,625,807
Less: amount representing interest (average rate of 9.8%)	(198,254)
Net minimum lease payments	1,427,553
Less: current portion	(673,036)
Long-term portion	$ 754,517

The provisions for depreciation and amortization expense on owned property and equipment amounted to approximately $1,743,000, $3,148,000 and $4,683,000 for the years ended September 30, 1996, 1997 and 1998, respectively. Accumulated amortization on assets accounted for as capital lease amounted to approximately $366,000 as of September 30, 1998.

Included in equipment above are ten systems and 18 systems with a combined net book value of approximately $5,057,000 and $9,644,000 at September 30, 1997 and 1998, respectively. Such systems are utilized for the production of compound semiconductor wafers and package-ready devices for sale to third parties, systems demonstration purposes, system sales support, in-house materials applications, internal research and contract research funded by third

parties.

NOTE 7. ACCRUED EXPENSES

Accrued expenses consisted of the following:

	As of September 30,	
	1997	1998
Accrued payroll, vacation and other employee expenses	$1,659,428	$2,113,765
Installation and warranty costs	1,411,120	704,114
Interest	272,445	346,250
Other	524,596	1,033,276
Total	$3,867,589	$4,197,405

NOTE 8. DEBT FACILITIES

1998 Agreement:

On June 22, 1998, the Company entered into an $8.0 million loan agreement with First Union National Bank (the "1998 Agreement"), which expires December 31, 1999. The 1998 Agreement bears interest at a rate equal to one-month LIBOR plus three-quarters of one percent per annum (or 6.4% at September 30, 1998). As of September 30, 1998, $8.0 million was outstanding under the 1998 Agreement and is due and payable on December 31, 1999. The 1998 Agreement is guaranteed by both the Company's Chairman and Chief Executive Officer. In exchange for guaranteeing the facility, the Chairman and the Chief Executive Officer were granted an aggregate of 284,684 common stock purchase warrants exercisable at $11.375 per share until May 1, 2001. These warrants are callable at the Company's option at $0.85 per warrant at such time as the Company's Common Stock has traded at or above 150% of the exercise price for a period of thirty days.

The Company assigned a value of $1,310,000 to the warrants issued to the guarantors. This valuation was based upon the Company's application of the Black Scholes Option Pricing Model. This value is accounted for as debt issuance cost and will be amortized over the eighteen month life of the 1998 Agreement.

1997 Agreement:

On March 31, 1997, the Company entered into a $10.0 million loan agreement (the "1997 Agreement"). The Agreement bears interest at the rate of Prime plus 50 basis points (8.0% and 9.0% at September 30, 1998 and 1997, respectively). As of September 30, 1998 the Company had $9,950,000 outstanding under this facility. As of September 30, 1997, there were no amounts outstanding under this facility.

As a result of the net loss for the quarter ended June 30, 1998, the Company was not in compliance with the 1997 Agreement fixed charged coverage ratio covenant. The Company received a waiver from the bank regarding this non-compliance. The 1997 Agreement was extended to November 30, 1998 and subsequently further

extended through October 1, 1999. The 1997 Agreement's financial covenants were modified under the second extension, and management believes that the Company will be able to comply with such requirements throughout fiscal 1999. In addition, the Company's Chairman will guarantee such debt in the event the Company does not meet certain financial covenants.

Subordinated Notes:

On May 1, 1996, the Company issued subordinated notes (the "Subordinated Notes") in the amount of $9,500,000 to its existing shareholders, $1,000,000 of which were exchanged for notes receivable from officers and certain employees with identical payment and interest provisions. The Subordinated Notes are scheduled to mature on May 1, 2001, and have a stated interest rate of 6.0% which is payable semi-annually on May 1 and November 1. In addition, the noteholders were issued 2,328,432 common stock purchase warrants with an exercise price of $4.08 per share which expire on May 1, 2001. The warrants are exercisable after November 1, 1996, and are callable at the Company's option, after May 1, 1997, at $0.85 per warrant. The Company has the legal right of offset with respect to the notes receivable from officers and certain key employees, and it is their full intention to offset the corresponding notes receivable and payable upon maturity. As such, the Company reflected $848,000 of the officers' and employees' notes receivable as a contra liability, reducing the Company's Subordinated Notes balance. The remaining $152,000 note receivable has been reflected as a contra equity note receivable balance, representing the portion of the employee note receivable associated with common stock purchase warrants issued to such employees. The Company received cash proceeds of $8,500,000 in connection with this Subordinated Notes issuance.

On September 1, 1996, the Company issued a subordinated note in the amount of $2,500,000 to the Company's then majority shareholder with terms identical to the Subordinated Notes issued on May 1, 1996. In addition, under the terms of this issuance, 245,098 common stock purchase warrants were issued to purchase common stock at $10.20 per share and which expire September 1, 2001. These warrants are exercisable after March 1, 1997, and are callable at the Company's option after September 1, 1997, at $0.85 per warrant.

The Company assigned a value of $1,440,000 to the May 1, 1996 detachable warrants and $900,000 to the September 1, 1996 detachable warrants. These valuations were based upon the Company's application of Black Scholes and the Company's assessment of the underlying valuation factors, as well as an assessment of the terms of the Subordinated Notes. The carrying value of the Subordinated Notes will be subject to periodic accretions, using the interest method, in order for the carrying amount to equal the Company's obligation upon maturity. As a result, the May 1, 1996 and September 1, 1996 Subordinated Notes have an effective interest rate of approximately 9.3% and 15.0%, respectively. For the years ended September 30, 1998, 1997 and 1996, imputed warrant interest related to the subordinated notes amounted to $593,000, $3,988,000 and $126,000, respectively.

Demand Note Facilities:

On September 17, 1998, the Company borrowed $7.0 million from its Chairman. The loan bears interest at 9.75% per annum. In addition, on October 23, 1998 the Company borrowed an additional $1.5 million from its Chairman on identical terms. The entire sum of $8.5 million borrowed plus interest was repaid from the proceeds of the Private Placement.

On October 25, 1996, the Company entered into a $10.0 million demand note facility (the "Facility"). The Facility bore interest at the rate of LIBOR plus 75 basis points, had a term of one year and was due and payable on demand. The Facility was guaranteed by the Chairman of the Company's Board of Directors who provided collateral for the Facility. In December 1996, in return for guaranteeing the facility, the Company granted the Chairman 980,392 common stock purchase warrants at $10.20 per share which expire September 1, 2001. These warrants are exercisable after July 1, 1997, and are callable at the Company's option after December 1, 1997 at $0.85 per warrant. The Facility was terminated in conjunction with the Company's initial public offering.

The Company assigned a value of $3,600,000 to the warrants issued to the guarantor. This valuation was based upon the Company's application of the Black-Scholes Option Pricing Model ("Black Scholes"). This value was accounted for as debt issuance cost and was amortized over the expected period that the facility was to be in place (four months).

The Company utilized a portion of the proceeds from its initial public

offering to pay down or discharge certain of its debts. The Company repaid the entire $8.0 million outstanding under its October 1996 Facility and $2.0 million was used to repay a portion of the Company's outstanding subordinated notes, due May 1, 2001. In connection with the discharge of the Company's subordinated notes, an extraordinary loss of $286,000 was recognized.

NOTE 9. COMMITMENTS AND CONTINGENCIES

On November 16, 1992, the Company entered into a three-year lease agreement with a bank for 34,000 square feet of space in the building the Company presently occupies. On March 31, 1995, the agreement was renewed for 5 years for 49,000 square feet. In November 1996, the Company signed an agreement to occupy the remaining 26,000 square feet that it previously had not occupied.

The Company leases certain equipment under non-cancelable operating leases.

Facility and equipment rent expense under such leases amounted to approximately $350,000, $548,000 and $554,000 for the years ended September 30, 1996, 1997 and 1998, respectively.

Future minimum rental payments under the Company's non-cancelable operating leases with an initial or remaining term of one year or more as of September 30, 1998 are as follows:

Period Ending September 30,	Operating
1999	$712,000
2000	359,000
2001	74,000
2002 (and thereafter)	21,000
Total minimum lease payments	$1,166,000

The Company is from time to time involved in litigation incidental to the conduct of its business. Management and its counsel believe that such pending litigation will not have a material adverse effect on the Company's results of operations, cash flows or financial condition.

NOTE 10. INCOME TAXES

Income tax expense consists of the following:

	Years ended September 30,		
	1996	1997	1998
Current:			
Federal	$ --	$ 113,000	$ --
State	--	24,000	--
	--	137,000	--
Deferred:			--
Federal	--	--	--
State	--	--	--
Total	$ --	$ 137,000	$ --

The principal differences between the U.S. statutory and effective income tax rates were as follows:

	Years ended September 30,		
	1996	1997	1998
US statutory income tax (benefit) expense rate	(34.0)%	(34.0)%	(34.0)%
Net operating loss carryforward	--	--	--
Net operating loss not utilized	27.7	1.7	44.5
Expenses not yet deductible for tax purposes	6.3	32.0	(10.5)
AMT and state taxes	--	2.9	--
Effective tax rate	0.0%	2.6%	0.0%

The components of the Company's net deferred taxes were as follows:

	Years ended September 30,	
	1997	1998
Deferred tax assets:		
Federal net operating loss carryforwards	$ 3,502,348	$ 7,943,877
Research credit carryforwards (state and federal)	718,644	1,479,221
Inventory reserves	207,732	247,521
Accounts receivable reserves	243,996	239,701
Interest	1,461,389	1,657,337
Accrued installation reserve	362,379	163,778
Accrued warranty reserve	158,202	75,621
State net operating loss carryforwards	461,821	1,494,064
Other	144,586	238,318
Valuation reserve - federal	(5,583,217)	(9,438,122)
Valuation reserve - state	(1,334,975)	(3,751,314)
Total deferred tax assets	342,905	350,002
Deferred tax liabilities:		
Fixed assets and intangibles	(342,905)	(350,002)
Total deferred tax liabilities	(342,905)	(350,002)
Net deferred taxes	$ --	$ --

The Company has established a valuation reserve as it has not determined that it is more likely than not that the net deferred tax asset is realizable, based upon the Company's past earnings history.

As of September 30, 1998, the Company has net operating loss carryforwards for regular tax purposes of approximately $22.0 million which expire in the years 2003 through 2013. The Company believes that the consummation of certain equity transactions and a significant change in the ownership during fiscal years 1995 and 1998 have constituted a change in control under Section 382 of the Internal Revenue Code ("IRC"). Due to the change in control, the Company's ability to use its federal net operating loss carryovers and federal research credit carryovers to offset future income and income taxes, respectively, are subject to annual limitations under IRC Section 382 and 383.

The Company believes that the acquisition of MODE and the consummation of certain other equity transactions has constituted a change in control in fiscal 1998 under Section 382 of the IRC. As such, Federal net operating loss carryovers and research credit carryovers incurred subsequent to the Company's fiscal 1995 change in control (as described above) will also be subject to

annual limitations under IRC Section 382 and 383.

NOTE 11. STOCKHOLDERS' EQUITY

Reverse Stock Split

On February 3, 1997, the Board of Directors approved a 3.4:1 reverse stock split of its common stock and approved a decrease in the number of shares of common stock authorized. All references in the accompanying financial statements to the number of common stock and per-share amounts have been restated to reflect the reverse split.

Common Stock Offering

In March 1997, the Company completed an initial public offering of 2,500,000 shares of common stock at a price of $9.00 per share (the "Offering"), and upon the exercise of the Underwriter's overallotment option, 375,000 additional shares of common stock were also sold at $9.00 per share. The proceeds, net of commissions and certain expenses, to the Company from the offering were approximately $22.8 million. Prior to the Offering, there was no public market for the Company's common stock.

Warrant Exercise

On December 3, 1997, the holders of 1.8 million common stock purchase warrants (with an exercise price of $4.08) exercised such warrants with the Company taking full recourse notes amounting to approximately $7.5 million in exchange for the issued common stock. In addition, the holders are required to provide collateral at a 2:1 coverage ratio. This collateral is presently held by the Company.

Preferred Stock

The Company's certificate of incorporation authorizes the Board of Directors to issue up to 5,882,353 shares of preferred stock of the Company upon such terms and conditions having such rights, privileges and preferences as the Board of Directors may determine.

NOTE 12. STOCK OPTIONS AND WARRANTS

STOCK OPTION PLAN. In November 1994, the Company's Incentive Stock Option Plan, initiated in 1987, was eliminated. On June 5, 1995, the Company adopted the 1995 Incentive and Non-Statutory Stock Option Plan (the "Option Plan"). Under the terms of the Option Plan, options to acquire 323,529 shares of common stock may be granted to eligible employees, as defined, at no less than 100 percent of the fair market value on the date of grant. In March 1996, options to acquire an additional 323,530 shares of common stock were approved.

Certain options under the Option Plan are intended to qualify as incentive stock options pursuant to Section 422A of the Internal Revenue Code.

During fiscal 1998, options with respect to 816,284 shares were granted pursuant to the Company's Option Plan or issued in connection with the MODE acquisition at exercise prices ranging from $0.44 to $20.00 per share.

Stock options granted generally vest over three to five years and are exercisable over a ten year period. As of September 30, 1996, 1997 and 1998, options with respect to 162,764, 199,368 and 481,863 shares were exercisable, respectively.

The following table summarized the activity under the plan:

	Shares	Weighted Average Exercise Price

Outstanding as of September 30, 1995	281,470	$3.03
Granted	57,942	6.04
Exercised	--	--
Canceled	--	--
Outstanding as of September 30, 1996	339,412	$3.54
Granted	182,700	11.06
Exercised	(42,165)	3.17
Canceled	(4,475)	3.08
Outstanding as of September 30, 1997	475,472	$6.47
Granted	816,284	10.18
Exercised	(35,809)	2.33
Canceled	(43,221)	10.22
Outstanding as of September 30, 1998	1,212,726	$8.95

As of September 30, 1998, stock options outstanding were as follows:

Exercise Prices	Options Outstanding	Weighted Average Remaining Contractual Life (Years)	Exercisable Options
$ 0 less than x Less than or equal to $ 5	419,531	7.96	295,423
$ 5 less than x Less than or equal to $10	22,500	9.88	--
$10 less than x Less than or equal to $15	661,975	9.17	178,873
$15 less than x Less than or equal to $20	74,720	9.19	767
$20 less than x Less than or equal to $25	34,000	8.94	6,800

In October 1995, the Financial Accounting Standards Board issued SFAS No. 123, "ACCOUNTING FOR STOCK BASED COMPENSATION" ("SFAS 123"). SFAS 123 establishes financial and reporting standards for stock based compensation plans. The Company has adopted the disclosure only provisions of this standard and has elected to continue to apply the provision of Accounting Principles Board Opinion No. 25, "Accounting for Stock Issued to Employees". Had the Company elected to recognize compensation expense for stock options based on the fair value at the grant dates of awards, net loss and net loss per share would have been as follows:

	Years ended September 30,	
	1997	1998
Net loss before extraordinary item		
As reported	$5,333,772	$43,480,796
Pro forma	$5,441,274	$44,099,847
Net loss per basic and diluted share before extraordinary item		
As reported	$(1.14)	$(4.95)
Pro forma	$(1.17)	$(5.03)
Net loss		
As reported	$5,619,367	$43,480,796
Pro forma	$5,726,869	$44,099,847
Net loss per basic and diluted share		
As reported	$(1.20)	$(4.95)
Pro forma	$(1.23)	$(5.03)

The weighted average fair value of the Company's stock options was calculated using Black-Scholes with the following weighted-average assumptions used for grants: No dividend yield; expected volatility of 0% prior to the Company's initial public offering and 60% thereafter; a risk-free interest rate

of 6.04% and 5.57% for fiscal years 1997 and 1998, respectively, expected lives of 5 years. The weighted average fair value of options granted during the years ended September 30, 1997 and 1998 is $3.82 and $7.50 per share, respectively. Stock options granted by the Company prior to its initial public offering were valued using the minimum value method under FASB No. 123.

WARRANTS

Set forth below is a summary of the Company's outstanding warrants at September 30, 1998:

Security	Exercise Price	Warrants	Expiration Date
Common Stock(1)	$4.08	385,428	May 1, 2001
Common Stock(2)	$4.33	36,990	August 21, 2006
Common Stock(2)	$5.92	10,128	May 16, 2007
Common Stock(3)	$10.20	1,225,490	September 1, 2001
Common Stock(4)	$11.38	284,684	May 1, 2001

(1) Issued in connection with the Company's May 1996 subordinated note issuance.
(2) Issued in connection with the MODE acquisition.
(3) Issued in connection with the Company's September 1996 subordinated debt issuance and October 1996 debt guarantee.
(4) Issued in connection with 1998 Agreement guarantee.

NOTE 13. RELATED PARTIES

In May 1995, 52% of the Company's outstanding shares of Common Stock were purchased by Jesup & Lamont Merchant Partners, L.L.C. ("JLMP"). Prior to May 12, 1997, a majority of the Company's then six directors were members of JLMP. On May 12, 1997, JLMP distributed all of its shares of the Company to the individual members of JLMP. In May 1995, the Company entered into a consulting agreement (the "Agreement") with Jesup & Lamont Capital Markets, Inc. ("Jesup & Lamont") pursuant to which Jesup & Lamont agreed to provide financial advisory and employee services for the Company for one year. Total fees paid to Jesup & Lamont amounted to approximately $241,697 for the fiscal year ended September 30, 1996. No fees were paid to Jesup & Lamont during the fiscal years ended September 30, 1998 and 1997.

In December 1996, the Company's chairman and chief executive officer retired. The Company entered into a consulting agreement with him for a term of two years and will provide compensation of $250,000 per annum. In addition, the Company has also forgiven $115,300 of his indebtedness to the Company and had agreed to extend the period for the exercise of his vested stock options through March 1997 and accordingly he exercised all 26,471 vested shares.

In fiscal 1997, the Company entered into a non-exclusive and non-refundable technology licensing and royalty agreement with Uniroyal Technology Corporation ("UTC") for the process technology to develop and manufacture high brightness light emitting diodes ("LEDs"). During fiscal 1998 and 1997, revenue associated with the UTC licensing agreement amounted to $2.5 million and $2.5 million, respectively. At the time the transaction was originally entered into, UTC's Chairman and CEO was a member of EMCORE's Board of Directors and EMCORE's Chairman was on the Board of Directors of UTC. All related party accounts receivable for fiscal 1997 have been paid in full. As of September 30, 1998, the Company had an outstanding related party receivable of $500,000.

In July 1998, the Company and a wholly-owned subsidiary of UTC entered into a venture to produce and market compound semi-conductor products. The Company has a 49% non-controlling minority interest. The Company's rights under the venture agreement are protective and as such, the Company accounts for its interest in the venture under the equity method of accounting. The investment in this venture amounted to $490,000 as of September 30, 1998, and has been classified as a component of other long-term assets. For the year ended September 30, 1998, the Company recognized a loss of $198,000 related to this venture, which has been recorded as a component of other income and expense.

The President of Hakuto Co. Ltd. ("Hakuto"), the Company's Asian distributor, is a member of the Company's Board of Directors and Hakuto is a minority shareholder of the Company. During the year ended September 30, 1998, sales made through Hakuto approximated $9.2 million.

On June 22, 1998, the Company entered into the 1998 Agreement. The 1998 Agreement was guaranteed by the Chairman and the Chief Executive Officer of the Company (see Note 8). In return for guaranteeing the facility, the Company granted the Chairman and the Chief Executive Officer an aggregate of 284,684 common stock purchase warrants at $11.375 per share which expire May 1, 2001. These warrants are callable at the Company's option at $0.85 per warrant at such time as the Company's common stock has traded at or above 150% of the exercise price for a period of 30 days.

On September 17, 1998, the Company borrowed $7.0 million from its Chairman, Thomas J. Russell. The loan bears interest at 9.75% per annum. In addition, on October 23, 1998 the Company borrowed an additional $1.5 million from its Chairman on identical terms. The entire $8.5 million, borrowed from Mr. Russell was repaid from the proceeds of a private placement (See Note 8).

NOTE 14. EXPORT SALES

The information below summarizes the Company's export sales by geographic area. The Company's export sales to the Far East and Europe are as follows:

	Far East	Europe	Total
Year ended September 30, 1996	$ 8,209,309	$ 3,588,066	$11,797,375
Year ended September 30, 1997	$14,583,981	$ 5,478,186	$20,062,167
Year ended September 30, 1998	$15,527,169	$ 1,584,851	$17,112,020

NOTE 15. QUARTERLY FINANCIAL DATA (UNAUDITED)

(in thousands except per share data)	Revenues	Operating (Loss) Income	Net (Loss) Income	Net (Loss) Income Per Share
FISCAL YEAR 1997:				
December 31, 1996	$ 8,591	$ (2,585)	$ (3,798)	$ (0.86)
March 31, 1997	12,929	147	(3,150)	(0.82)
June 30, 1997	14,106	907	830	0.10
September 30, 1997	12,126	841	498	0.06
FISCAL YEAR 1998:				
December 31, 1997	12,357	$(29,223)*	$(29,389)*	$ (4.15)*
March 31, 1998	13,808	200	37	0.00
June 30, 1998	$ 9,074	(7,141)	(7,446)	(0.80)
September 30, 1998	$ 8,521	(5,544)	(6,683)	(0.71)

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*includes $29.3 million one-time acquired in-process, non-cash research and development.

NOTE 16. EMPLOYEE SAVINGS PLAN

The Company has a savings plan (the "Savings Plan") that qualifies as a deferred salary arrangement under Section 401(k) of the Internal Revenue Code. Under the Savings Plan, participating employees may defer a portion of their pretax earnings, up to the Internal Revenue Service annual contribution limit. Effective August 1, 1997, the Company began contributing to the Savings Plan. All employer contributions are made in the Company's common stock. For the year ended September 30, 1998, the Company contributed approximately $252,000 to the Savings Plan.

NOTE 17. SUBSEQUENT EVENTS (UNAUDITED)

Preferred Stock Private Placement

On November 30, 1998, the Company sold an aggregate of 1,550,000 shares of Series I Redeemable Convertible Preferred Stock for aggregate consideration of $21.7 million before deducting costs and expenses of the offering of approximately $500,000. The shares of Series I Preferred Stock are convertible, at any time, at the option of the holders thereof, unless previously redeemed, into shares of Common Stock at an initial conversion price of $14.00 per share of Common Stock, subject to adjustment in certain cases. The Series I Preferred Stock is redeemable, in whole or in part, at the option of the Company at any time the Company's stock has traded at or above $28.00 per share for 30 consecutive trading days, at a price of $14.00 per share, plus accrued and unpaid dividends, if any, to the redemption date. In addition, the Series I Preferred Stock is subject to mandatory redemption by the Company at $14.00 per share plus accrued and unpaid dividends, if any, on November 17, 2003.

Joint Ventures

In November 1998, the Company formed a joint venture with Union Miniere Inc. to explore and develop alternate uses of germanium substrates. The Company also formed a joint venture in November 1998, with Optek Technology, Inc. to market an expanded line of magneto resistive sensors.

REPORT OF INDEPENDENT ACCOUNTANTS

To the Board of Directors and
Shareholders of EMCORE Corporation

In our opinion, the accompanying consolidated balance sheets and the related consolidated statements of operations, shareholders' equity and cash flows present fairly, in all material respects, the financial position of EMCORE Corporation and its subsidiaries at September 30, 1998 and 1997, and the results of their operations and their cash flows for each of the three years in the period ended September 30, 1998, in conformity with generally accepted accounting principles. In addition, in our opinion, the financial statement schedule listed in the index appearing under Item 14(a)(2) presents fairly, in all material respects, the information set forth therein when read in conjunction with the related consolidated financial statements. These financial statements and financial statement schedule are the responsibility of the Company's management; our responsibility is to express an opinion on these financial statements and financial statement schedule based on our audits. We conducted our audits of these statements in accordance with generally accepted auditing standards which 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, assessing the accounting principles used and significant estimates made by management, and evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for the opinion expressed above.

As discussed in Note 2 (Net loss per share), the Company has changed its method of calculating earnings per basic and diluted common share.

PricewaterhouseCoopers LLP

Florham Park, New Jersey
November 30, 1998,

STATEMENT OF MANAGEMENT RESPONSIBILITY FOR FINANCIAL STATEMENTS

To the Shareholders of
EMCORE Corporation:

Management has prepared and is responsible for the consolidated financial statements and related information in the Annual Report. The financial statements, which include amounts based on judgment, have been prepared in conformity with generally accepted accounting principles consistently applied.

Management has developed, and in 1998 continued to strengthen, a system of internal accounting and other controls for the Company. Management believes these controls provide reasonable assurance that assets are safeguarded from loss or unauthorized use and that the Company's financial records are a reliable basis for preparing the financial statements. Underlying the concept of reasonable assurance is the premise that the cost of control should not exceed the benefit derived.

The Board of Directors, through its audit committee, is responsible for reviewing and monitoring the Company's financial reporting and accounting practices. The audit committee meets regularly with management and independent accountants - both separately and together. The independent accountants have free access to the audit committee to review the results of their audits, the adequacy of internal accounting controls and the quality of financial reporting.

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

Not applicable.

PART III

ITEM 10. DIRECTORS AND EXECUTIVE OFFICERS OF THE REGISTRANT

The information required by this item is incorporated herein by reference to the Company's 1999 Proxy Statement which will be filed on or before January 28, 1999.

ITEM 11. EXECUTIVE COMPENSATION

The information required by this item is incorporated herein by reference to the Company's 1999 Proxy Statement which will be filed on or before January 28, 1999.

ITEM 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT

The information required by this item is incorporated herein by reference to the Company's 1999 Proxy Statement which will be filed on or before January 28, 1999.

ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS

The information required by this term is incorporated herein by reference to the Company's 1999 Proxy Statement which will be filed on or before January 28, 1999.

PART IV

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

14(A)(1) FINANCIAL STATEMENTS:

14(A)(3) EXHIBITS

EXHIBIT NO.	DESCRIPTION
3.1	Restated Certificate of Incorporation, amended February 3, 1997 (incorporated by reference to Exhibit 3.1 to Amendment No. 1 to the Registration Statement on Form S-1 (File No. 333-18565) filed with the Commission on February 6, 1997 (the "1997 S-1")).*
3.2	Amended By-Laws, as amended January 11, 1989 (incorporated by reference to Exhibit 3.2 to Amendment No. 1 to the 1997 S-1).*
3.3	Certificate of Amendment to the Certificate of Incorporation, dated November 19, 1998.
4.1	Specimen certificate for shares of Common Stock (incorporated by reference to Exhibit 4.1 to Amendment No. 3 to the 1997 S-1).*
4.2	Form of $11.375 Warrant.
10.1	1995 Incentive and Non-Statutory Stock Option Plan (incorporated by reference to Exhibit 10.1 to Amendment No. 1 to the 1997 S-1).*

10.2	1996 Amendment to Option Plan (incorporated by reference to Exhibit 10.2 to Amendment No. 1 to the 1997 S-1).*
10.3	Specimen Incentive Stock Option Agreement (incorporated by reference to Exhibit 10.3 to Amendment No. 1 to the 1997 S-1).*
10.4	Second Amended and Restated Distributorship Agreement dated as of March 31, 1998 between the Company and Hakuto. Confidential treatment has been requested by the Company for portions of this document. Such portions are indicated by "[*]".
10.5	Amendment to Lease for premises at 394 Elizabeth Avenue, Somerset, New Jersey 08873 (incorporated by reference to Exhibit 10.5 to Amendment No. 1 to the 1997 S-1).*
10.6	Registration Rights Agreement relating to September 1996 warrant issuance (incorporated by reference to Exhibit 10.6 to Amendment No. 1 to the 1997 S-1).*
10.7	Registration Rights Agreement relating to December 1996 warrant issuance (incorporated by reference to Exhibit 10.7 to Amendment No. 1 to the 1997 S-1).*
10.8	Form of 6% Subordinated Note Due May 1, 2001 (incorporated by reference to Exhibit 10.8 to Amendment No. 1 to the 1997 S-1).*
10.9	Form of 6% Subordinated Note Due September 1, 2001 (incorporated by reference to Exhibit 10.9 to Amendment No. 1 to the 1997 S-1).*
10.10	Form of $4.08 Warrant (incorporated by reference to Exhibit 10.10 to Amendment No. 1 to the 1997 S-1).*

EXHIBIT INDEX - (CONTINUED)

EXHIBIT NO.	DESCRIPTION
10.11	Form of $10.20 Warrant (incorporated by reference to Exhibit 10.12 to Amendment No. 1 to the 1997 S-1).*
10.12	Consulting Agreement dated December 6, 1996 between the Company and Norman E. Schumaker (incorporated by reference to Exhibit 10.14 to Amendment No. 1 to the 1997 S-1).*
10.13	Purchase Order issued to the Company by General Motors Corporation on November 17, 1996. (incorporated by reference to Exhibit 10.15 to Amendment No. 1 to the 1997 S-1).* Confidential treatment has been requested by the Company with respect to portions of this document. Such portions are indicated by "[*]".
10.14	Acquisition Agreement, dated as of December 5, 1997, between the Company and MicroOptical Devices, Inc. (incorporated by reference to Exhibit 2 to the Company's filing on Form 8-K, dated December 22, 1997).*
10.15	Purchase Agreement, dated November 30, 1998, by and between the Company, Hakuto UMI and UTC.
10.16	Registration Rights Agreement, dated November 30, 1998 by and between the Company, Hakuto, UMI and UTC.
10.17	Long Term Purchase Agreement dated November 24, 1998 by and between the Company and Space Systems/Loral, Inc. Confidential treatment has been requested by the Company with respect to portions of this document. Such portions are indicated by "[*]."
10.18	Promissory Note, dated June 22, 1998 by the Company in favor of

First Union National Bank.

10.19 Second Amendment to Revolving Loan and Security Agreement, dated as of November 30, 1998 between the Company and First Union National Bank.

21 Subsidiaries of the registrant.

23.1 Consent of Pricewaterhouse Coopers LLP

27 Financial Data Schedule.

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* Incorporated by reference.

14(B) Reports on Form 8-K:

The Company filed a current report on Form 8-K dated August 6, 1998 which set forth information under Item 5.

SIGNATURES

Pursuant to the requirements of the Securities Act, the Registrant has duly caused this Registration Statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the Township of Somerset, State of New Jersey, on December 28, 1998.

EMCORE CORPORATION

By /s/ REUBEN F. RICHARDS, JR.

Name: Reuben F. Richards, Jr.
TITLE: PRESIDENT AND CHIEF EXECUTIVE OFFICER

Pursuant to the requirements of the Securities Exchange Act of 1934, this report on Form 10-K has been signed below by the following persons on behalf of EMCORE Corporation in the capacities indicated, on December 28, 1998.

SIGNATURE	TITLE
/s/ THOMAS J. RUSSELL Thomas J. Russell	Chairman of the Board and Director
/s/ REUBEN F. RICHARDS, JR. Reuben F. Richards, Jr.	President, Chief Executive Officer and Director (Principal Executive Officer)
/s/ THOMAS G. WERTHAN Thomas G. Werthan	Vice President, Chief Financial Officer, Secretary and Director (Principal Accounting and Financial Officer)
/s/ RICHARD A. STALL	Director

Richard A. Stall		
/s/ ROBERT LOUIS-DREYFUS	Director	
Robert Louis-Dreyfus		
/s/ HUGH H. FENWICK	Director	
Hugh H. Fenwick		
/s/ SHIGEO TAKAYAMA	Director	
Shigeo Takayama		
/s/ CHARLES T. SCOTT	Director	
Charles T. Scott		

SCHEDULE II

EMCORE CORPORATION
VALUATION AND QUALIFYING ACCOUNTS AND RESERVES
FOR THE YEARS ENDED SEPTEMBER 30, 1996, 1997 AND 1998

	Balance at Beginning of Period	Additions Charged to Costs and Expenses	Write-offs (Deductions)	Balance at End of Period
ALLOWANCE FOR DOUBTFUL ACCOUNTS				
Year Ended September 30, 1996	$164,000	$ 183,000	$ (37,000)	$310,000
Year Ended September 30, 1997	310,000	515,000	(128,000)	697,000
Year Ended September 30, 1998	697,000	1,118,000	(1,203,000)	612,000
RESERVES FOR INVENTORY OBSOLESCENCE				
Year Ended September 30, 1996	$115,000	$ 105,000	--	$220,000
Year Ended September 30, 1997	220,000	120,000	--	340,000
Year Ended September 30, 1998	340,000	120,000	--	460,000

Exhibit 3.3

CERTIFICATE OF AMENDMENT

TO DESIGNATE

SERIES I REDEEMABLE CONVERTIBLE PREFERRED STOCK
$.0001 PAR VALUE PER SHARE

OF

EMCORE CORPORATION

- ---

Pursuant to Sections 14A:9-2(2) and 14A:7-2
of the New Jersey Business Corporations Act

- ---

The undersigned duly authorized officers of EMCORE CORPORATION, a New Jersey corporation (the "Company"), do hereby certify that the following resolution was duly adopted as of November 11, 1998, by the Board of Directors of the Company pursuant to authority conferred by the provisions of the Restated Certificate of Incorporation of the Company and in accordance with the provisions of the New Jersey Business Corporations Act:

RESOLVED, that pursuant to authority conferred on the Board of Directors by the provisions of the Restated Certificate of Incorporation of the Company (the "Certificate of Incorporation") and recognizing that no shares of Series A Preferred Stock, $.0001 par value per share of the Company ("Series A Preferred") have been issued by the Company, the Board of Directors hereby decreases the number of authorized shares of Series A Preferred to zero; and it is further

RESOLVED, that pursuant to authority conferred on the Board of Directors by the provisions of the Certificate of Incorporation of the Company, both the authorization of a series of Series I Preferred Stock, $.0001 par value per share, of the Company (the "Series I Preferred Stock"), which shall consist of 2,000,000 of the 5,882,353 shares of preferred stock which the Company presently has authority to issue and the issuance of 1,550,000 shares of such Series I Preferred Stock, be, and the same hereby is, authorized, and the Board of Directors hereby fixes the powers, designations, preferences and relative, participating, optional and other special rights of the shares of such series, and the qualification, limitation and restrictions thereof (in addition to the powers, designations, preferences and relative, participating, optional or other

special rights, and the qualifications, limitations or restrictions thereof, set forth in the Certificate of Incorporation which may be applicable to the Series I Preferred Stock) as follows:

1. NUMBER OF SHARES AND DESIGNATION. 2,000,000 shares of the Preferred Stock, $.0001 par value per share, of the Company are hereby constituted as a series of the Preferred Stock designated as Series I Preferred Stock (the "Series I Preferred Stock"). The Series I Preferred Stock will rank senior to the Common Stock with respect to the payment of dividends and upon liquidation, dissolution or winding up of the Company.

2. DEFINITIONS. For purposes of the Series I Preferred Stock, the following terms shall have the meanings indicated.

"Board of Directors" shall mean the board of

directors of the Company or any committee authorized by such Board of Directors to perform any of its responsibilities with respect to the Series I Preferred Stock.

"Business Day" shall mean any day other than a Saturday, Sunday or a day on which banking institutions in the city of New York are authorized or obligated by law or executive order to close.

"Change in Control" shall have the meaning set forth in Section 8 hereof.

"Closing Price" of the Common Stock on any day shall mean on such day the reported last sales price, regular way, for the Common Stock or, in case no sale takes place on such day, the average of the reported closing bid and asked prices, regular way, for the Common Stock, in either case, as reported on the National Market system of the National Association of Securities Dealers, Inc. Automated Quotation System ("NASDAQ National Market") or, if the Common Stock is not quoted on the NASDAQ National Market, on such national securities exchange on which the Common Stock is listed or admitted to trading or, if the Common Stock is not listed or admitted to trading on any national securities exchange, the average of the closing bid and asked prices for the Common Stock on such day in the over-the-counter market as reported by NASDAQ or, if bid and asked prices for the Common Stock on each such date shall not have been reported by NASDAQ, the average of the bid and asked prices of the Common Stock for such day as furnished by any NASD member firm regularly making a market in the Common Stock selected for such purpose by the Board of Directors or, if no such quotations are available, the fair market value of the Common Stock furnished by any NASD member firm selected from time to time by the Board of Directors for that purpose.

"Common Stock" shall mean the common stock of the Company, no par value per share.

"Conversion Price" shall mean the conversion price per share of Common Stock into which the Series I Preferred Stock is convertible, as such Conversion

Price may be adjusted pursuant to Section 7 hereof. The initial Conversion Price will be $14.00 (equivalent to the conversion rate of one share of Common Stock for each share of Series I Preferred Stock).

"Current Market Price" per share of Common Stock on any date shall mean the average of the daily Closing Prices for the 20 consecutive Trading Dates commencing 30 Trading Dates before the date of determination.

"dividend payment date" shall have the meaning set forth in Section 3(a) hereof.

"dividend payment record date" shall have the meaning set forth in Section 3(a) hereof.

"Dividend Period" shall mean quarterly dividend periods commencing on March 31, June 30, September 30 and December 31, and continuing through and including the day preceding the first day of the next succeeding Dividend Period (other than the initial Dividend Period, which shall commence on the Issue Date).

"Issue Date" shall mean the first date on which shares of Series I Preferred Stock are issued.

"Person" shall mean any individual, firm,

partnership, corporation or other entity, and shall include any successor (by merger or otherwise) of such entity.

"Trading Date" or "Trading Day" with respect to Common Stock means (i) if the Common Stock is quoted on the NASDAQ National Market, or any similar system of automated dissemination of quotations of securities prices, a day on which trades may be made on such system, (ii) if the Common Stock is listed or admitted for trading on a national securities exchange, a day or on which such national securities exchange is open for business, (iii) if not quoted as described in clauses (i) or (ii), days on which quotations are reported by the National Quotation Bureau Incorporated, or (iv) otherwise, any Business Day.

"Transaction" shall have the meaning set forth in Section 7(a) hereof.

"Transfer Agent" means the Company or such other agent or agents of the Company as may be designated by the Board of Directors from time to time as the transfer agent for the Series I Preferred Stock.

3. DIVIDENDS.

(a) The holders of shares of the Series I Preferred Stock shall be entitled to receive, when, as and if declared by the Board of Directors out of funds legally available therefor, cumulative cash dividends at an annual rate of 2% of the liquidation preference per share (an amount initially equivalent to $.28 per annum per share) of Series I

Preferred Stock, payable at the option of the Company in cash or additional duly and validly issued, fully paid and non-assessable shares of Series I Preferred Stock, free from all taxes, liens and charges with respect to the issuance thereof, which will be valued at the liquidation preference (without giving effect to accrued and unpaid dividends) as of the relevant dividend payment record date. Notwithstanding the foregoing, the Company shall not be required to issue fractional shares of Series I Preferred Stock; the Company may elect, in its sole discretion, independently for each holder, whether such number of shares (on an aggregated basis) will be rounded up to the nearest whole share or whether such holder will be given cash in lieu of any fractional shares. Such dividends shall be cumulative from the Issue Date, whether or not in any Dividend Period or Periods there shall be funds of the Company legally available for the payment of such dividends and whether or not such dividends are declared and shall be payable quarterly, when, as and if declared by the Board of Directors on March 31, June 30, September 30 and December 31 in each year (each a "dividend payment date"), commencing on December 31, 1998. If December 31, 1998 or any other dividend payment date shall be on a day other than a Business Day, then the dividend shall be payable on the next following Business Day. Dividends are payable in arrears to the holders of record of shares of the Series I Preferred Stock, as they appear on the stock records of the Company at the close of business on those dates (each such date, a "dividend payment record date"), not less than 10 days nor more than 60 days preceding the dividend payment dates thereof, as shall be fixed by the Board of Directors. Dividends on the Series I Preferred Stock shall accrue (whether or not declared) on a daily basis from the Issue Date and accrued dividends for each Dividend Period shall accumulate to the extent not paid on the dividend payment date first following the Dividend Period for which they accrue. As used herein, the term "accrued" with respect to dividends includes both accrued and accumulated dividends. Accrued and unpaid dividends for any past Dividend Periods may be declared and paid at any time, without reference to any regular dividend payment date, to holders of record on the record date, not less than 10 nor more than 60 days preceding the payment date thereof, as may be fixed by the Board of Directors.

(b) The amount of dividends payable for each full Dividend Period for the Series I Preferred Stock shall be computed by dividing the annual dividend rate by four (rounded to the nearest tenth of a cent). The amount of dividends payable for the initial Dividend Period on the Series I Preferred Stock, or any other period shorter or longer than a full Dividend

Period on the Series I Preferred Stock, shall be computed on the basis of a 360-day year consisting of twelve 30-day months. Holders of shares of Series I Preferred Stock called for redemption on a redemption date falling between the close of business on a dividend payment record date and the close of business on the corresponding dividend payment date shall, in lieu of receiving such dividend on the dividend payment date fixed therefor, receive such dividend payment together with all other accrued and unpaid dividends on the date fixed for redemption (unless such holder converts such shares in accordance with Section 7 hereof). Holders of shares of Series I Preferred Stock shall not be entitled to any dividends, whether payable in cash, property or securities, in excess of cumulative dividends, as herein provided, on the Series I Preferred Stock. No interest, or sum of money in lieu of interest, shall be payable in respect of any dividend payment or payments on the Series I Preferred Stock which are in arrears.

(c) So long as any shares of the Series I Preferred Stock are outstanding, no dividends, except as described in the next succeeding sentence, shall be declared or paid or set apart for payment on any class or series of stock of the Company ranking, as to dividends, on a parity with the Series I Preferred Stock, for any period unless full cumulative dividends have been or contemporaneously are declared and paid or declared and a sum sufficient for the payment thereof is set apart for such payment on the Series I Preferred Stock for all Dividend Periods terminating on or prior to the date of payment, or setting apart for payment, of such dividends on such parity stock. When dividends are not paid in full or a sum sufficient for such payment is not set apart, as aforesaid, upon the shares of the Series I Preferred Stock and any other class or series of stock ranking on a parity as to dividends with the Series I Preferred Stock, all dividends declared upon shares of the Series I Preferred Stock and all dividends declared upon such other stock shall be declared pro rata so that the amounts of dividends per share declared on the Series I Preferred Stock and such other stock shall in all cases bear to each other the same ratio that accrued dividends per share on the shares of the Series I Preferred Stock and on such other stock bear to each other.

(d) So long as any shares of the Series I Preferred Stock are outstanding, no other stock of the Company ranking on a parity with the Series I Preferred Stock as to dividends or upon liquidation, dissolution or winding up shall be redeemed, purchased or otherwise acquired for any consideration (or any moneys be paid to or made available for a sinking fund or otherwise for the purchase or redemption of any shares of any such stock) by the Company (except by conversion into or exchange for stock of the Company ranking junior to the Series I Preferred Stock as to dividends and upon liquidation, dissolution or winding up) unless (i) the full cumulative dividends, if any, accrued on all outstanding shares of the Series I Preferred Stock shall have been paid or set apart for payment for all past Dividend Periods and (ii) sufficient funds shall have been set apart for the payment of the dividend for the current Dividend Period with respect to the Series I Preferred Stock and for the current dividend period with respect to any other stock of the Company ranking on a parity with the Series I Preferred Stock as to dividends.

(e) So long as any shares of the Series I Preferred Stock are outstanding, no dividends (other than dividends or distributions paid in shares of, or options, warrants or rights to subscribe for or purchase shares of, Common Stock or other stock ranking junior to the Series I Preferred Stock as to dividends and upon liquidation, dissolution or winding up) shall be declared or paid or set apart for payment and no other distribution shall be declared or made or set apart for payment, in each case, upon the Common Stock or other stock of the Company ranking junior to the Series I Preferred Stock as to dividends or upon liquidation, dissolution or winding up, nor shall any Common Stock nor any other such stock of the Company ranking junior to the Series I Preferred Stock as to dividends or upon liquidation, dissolution or winding up be redeemed, purchased or otherwise acquired for any consideration (or any moneys be paid to or made available for a sinking fund or otherwise for the purchase or redemption of any shares of any such stock) by the Company (except by conversion into or exchange for stock of the Company ranking junior to the Series I Preferred Stock as to dividends and upon liquidation, dissolution or winding up) unless, in each case (i) the full cumulative

dividends, if any, accrued on all outstanding shares of the Series I Preferred Stock and any other

stock of the Company ranking on a parity with the Series I Preferred Stock as to dividends shall have been paid or set apart for payment for all past Dividend Periods and all past dividend periods with respect to such other stock and (ii) sufficient funds shall have been set apart for the payment of the dividend for the current Dividend Period with respect to the Series I Preferred Stock and for the current dividend period with respect to any other stock of the Company ranking on a parity with the Series I Preferred Stock as to dividends.

4. LIQUIDATION PREFERENCE.

(a) In the event of any liquidation, dissolution or winding up of the Company, whether voluntary or involuntary, the holders of the shares of Series I Preferred Stock shall be entitled to receive out of assets of the Company available for distribution to shareholders $14.00 per share (as adjusted for any stock combinations or splits with respect to the Series I Preferred Stock) plus an amount per share equal to all dividends (whether or not earned or declared) accrued and unpaid thereon to the date of final distribution to such holders (collectively, the "Liquidation Preference") before any payment or distribution of the assets of the Company (whether capital or surplus) shall be made to or set apart for the holders of Common Stock or any other series or class or classes of stock of the Company ranking junior to the Series I Preferred Stock upon liquidation, dissolution or winding up of the Company and no payments or distributions of any assets of the Company shall be made to the holders of any class or series of stock ranking on a parity with the Series I Preferred Stock in respect of the distribution of assets upon dissolution, liquidation or winding up unless there shall likewise be paid at the same time to the holders of the Series I Preferred Stock a like proportionate amount determined ratably in proportion to the full amounts to which the holders of all outstanding shares of Series I Preferred Stock and the holders of all outstanding shares of such parity stock are respectively entitled with respect to such distribution. If, upon any liquidation, dissolution or winding up of the Company, the assets of the Company, or proceeds thereof, distributable among the holders of the shares of Series I Preferred Stock shall be insufficient to pay in full the preferential amount aforesaid and liquidating payments on any other shares of stock ranking, as to the liquidation, dissolution or winding up, on a parity with the Series I Preferred Stock, then such assets, or the proceeds thereof, shall be distributed among the holders of shares of Series I Preferred Stock and any such other stock ratably in accordance with the respective amounts which would be payable on such shares of Series I Preferred Stock and any such other stock if all amounts payable thereon were paid in full. For the purposes of this Section 4, (i) a consolidation or merger of the Company with one or more corporations or other entities, (ii) a sale, lease, exchange or transfer of all or any part of the Company's assets or (iii) a statutory share exchange shall not be deemed to be a liquidation, dissolution or winding up of the Company, voluntary or involuntary.

(b) Subject to the rights of the holders of shares of any series or class of stock ranking on a parity with the Series I Preferred Stock upon liquidation, dissolution or winding up, upon any liquidation, dissolution or winding up of the Company, after payment shall have been made in full to the holders of Series I Preferred Stock, as provided in this Section 4, any other series or class or classes of stock ranking junior to the Series I Preferred Stock upon liquidation, dissolution or winding up shall, subject to the respective terms and provisions (if

any) applying thereto, be entitled to receive any and all assets remaining to be paid or distributed, and the holders of Series I Preferred Stock shall not be entitled to share therein.

(c) Written notice of any liquidation, dissolution or winding up of the Company, stating the payment date or dates when and the place or places where the amounts distributable in such circumstances shall be payable, shall be given by first class mail, postage prepaid, not less than 30 days prior to any payment date stated therein, to the holders of record of the Series I Preferred Stock at their respective addresses as the same shall appear on the books of the Transfer Agent.

5. REDEMPTION.

(a) Except as provided in Section 5(b) hereof, the shares of Series I Preferred Stock may not be redeemed by the Company prior to such date as the Closing Price of the Company's Common Stock is $28.00 or more per share for 30 consecutive Trading Dates, on or after which the Company, at its option, may redeem the shares of the Series I Preferred Stock, in whole or in part, at any time or from time to time out of funds legally available therefor, subject to the notice provisions and provisions for partial redemption described below, at a price equal to $14.00 per share (as adjusted for any stock combinations or splits with respect to the Series I Preferred Stock) plus a cash amount equal to accrued and unpaid dividends, if any, to (and including) the date of redemption.

(b) The Company shall redeem all outstanding shares of the Series I Preferred Stock on November 17, 2003 at a price of $14.00 per Share (as adjusted for any stock combinations or splits with respect to the Series I Preferred Stock), plus accrued and unpaid dividends.

(c) In the event the Company shall redeem shares of Series I Preferred Stock pursuant to Section 5(a) or 5(b) hereof, notice of such redemption shall be given not less than 30 nor more than 60 days prior to the redemption date, to each holder of record of the shares to be redeemed, at such holder's address as the same appears on the stock records of the Company. Each such notice shall state: (i) the redemption date; (ii) the number of shares of Series I Preferred Stock to be redeemed and, if less than all the shares held by such holder are to be redeemed, the number of such shares to be redeemed from such holder; (iii) the redemption price; (iv) the place or places where certificates for such shares are to be surrendered for payment of the redemption price; (v) the then current conversion price; (vi) that dividends on the shares to be redeemed shall cease to accrue on such redemption date and (vii) that shares of Series I Preferred Stock called for redemption may be converted at any time prior to the close of business on the date of redemption. Notice having been given as aforesaid, from and after the redemption date, unless the Company shall be in default in providing money for the payment of the redemption price (including any accrued and unpaid dividends to (and including) the date fixed for redemption), (i) dividends on the shares of the Series I Preferred Stock so called for redemption shall cease to accrue, (ii) said shares shall be deemed no longer outstanding, and (iii) all rights of the holders thereof as shareholders of the Company (except the right to receive from the Company the moneys payable upon redemption without interest thereon) shall cease. The

Company's obligation to provide moneys in accordance with the preceding sentence shall be deemed fulfilled if, on or before the redemption date, the Company shall deposit with a bank or trust company having a capital and surplus of at least $50,000,000, funds necessary for such redemption, in trust for the account of the holders of the shares to be redeemed (and so as to be and continue to be available therefor), with irrevocable instructions and authority to such bank or trust company that such funds be applied to the redemption of the shares of Series I Preferred Stock so called for redemption. Any interest accrued on such funds shall be paid to the Company from time to time. Any funds so deposited and unclaimed at the end of three years from such redemption date shall be released or repaid to the Company, after which, subject to any applicable laws relating to escheat or unclaimed property, the holder or holders of such shares of Series I Preferred Stock so called for redemption shall look only to the Company for payment of the redemption price.

(d) Upon surrender in accordance with said notice of the certificates for any such shares so redeemed (properly endorsed or assigned for transfer, if the Board of Directors shall so require and the notice shall so

state), such shares shall be redeemed by the Company at the applicable redemption price aforesaid. If fewer than all the outstanding shares of Series I Preferred Stock are to be redeemed, shares to be redeemed shall be selected by the Company from outstanding shares of Series I Preferred Stock not previously called for redemption by lot or pro rata (as near as may be). If fewer than all the shares represented by any certificate are redeemed, a new certificate shall be issued representing the unredeemed shares without cost to the holder thereof.

(e) Notwithstanding the foregoing, if notice of redemption has been given pursuant to this Section 5 and any holder of shares of Series I Preferred Stock shall, prior to the close of business on the redemption date, give written notice to the Company pursuant to Section 7(b) hereof of the conversion of any or all of the shares to be redeemed held by such holder (accompanied by a certificate or certificates for such shares, duly endorsed or assigned to the Company), then the conversion of such shares to be redeemed shall become effective as provided in Section 7.

6. SHARES TO BE RETIRED. All shares of Series I Preferred Stock purchased, redeemed, exchanged or converted by the Company shall be retired and canceled and shall be restored to the status of authorized but unissued shares of Preferred Stock, without designation as to series, and may thereafter be reissued.

7. CONVERSION. Holders of shares of Series I Preferred Stock shall have the right to convert all or a portion of such shares (including fractions of such shares) into shares of Common Stock, as follows:

(a) Subject to and upon compliance with the provisions of this Section 7, a holder of shares of Series I Preferred Stock shall have the right, at such holder's option, at any time (except that, with respect to any shares called for redemption or exchange, such right shall terminate at the close of business on the date fixed for redemption or exchange of such shares) to convert any of such shares (or fractions thereof) into the number of fully paid and non-

assessable shares of Common Stock (as such shares shall then be constituted) obtained by dividing the aggregate liquidation preference of the shares to be converted by the Conversion Price and by surrender of such shares, such surrender to be made in the manner provided in Section 7(b). Subject to the following provisions of this Section 7(a), any shares of Series I Preferred Stock may be converted, at the option of its holder, in part into Common Stock under the procedure set forth above. If a part of a share of Series I Preferred Stock is converted, then the Company will convert such share into the appropriate number of shares of Common Stock (subject to Section 7(c)). No fractional shares or securities representing fractional shares of Common Stock will be issued upon conversion; in lieu of fractional shares of Common Stock, the Company will pay a cash adjustment based upon the Closing Price of the Common Stock at the close of business on the first Trading Date preceding the date of conversion.

(b) In order to exercise the conversion right, the holder of each share of Series I Preferred Stock (or fraction thereof) to be converted shall surrender the certificate representing such share, duly endorsed or assigned to the Company or in blank, at the office of the Transfer Agent, which shall initially be the Company, accompanied by funds, if any, required by the last paragraph of this Section 7(b), and shall give written notice to the Company in the form set forth on the reverse of the stock certificates for the Series I Preferred Stock that the holder thereof elects to convert such Series I Preferred Stock or a specified portion thereof. Such notice shall also state the name or names (with address) in which the certificate or certificates for shares of Common Stock which shall be issuable upon such conversion shall be issued, and shall be accompanied by funds in an amount sufficient to pay any transfer or similar tax resulting from the issuance of certificates in a name other than the name of the holder of the Series I Preferred Stock. Each share surrendered for conversion shall, unless the shares issuable on conversion are to be issued in the same name as the name in which such share of Series I Preferred Stock is registered, be duly endorsed by, or be accompanied by instruments of transfer (in each case, in form satisfactory to the Company), duly executed by the holder

or such holder's duly authorized attorney.

As promptly as practicable after the surrender of certificates for shares of Series I Preferred Stock for conversion and the receipt of such notice and funds, if any, as aforesaid, the Company shall issue and shall deliver at such office to such holder, or on such holder's written order, a certificate or certificates for the number of full shares of Common Stock issuable upon the conversion of such shares of Series I Preferred Stock in accordance with the provisions of this Section 7, a certificate or certificates representing any shares of Series I Preferred Stock not so surrendered for conversion but previously evidenced by the stock certificate representing shares of Series I Preferred Stock surrendered for conversion and a check or cash in respect of any fractional interest in respect of a share of Common Stock arising upon such conversion, as provided in Section 7(c).

Each conversion shall be deemed to have been effected immediately prior to the close of business on the date on which the certificates for shares of Series I Preferred Stock shall have been surrendered (accompanied by the funds, if any, required by the last paragraph of this section 7(b)) and such notice shall have been received by the Company as aforesaid, and the person or persons in whose name or names any certificate or certificates for shares of Common

Stock shall be issuable upon such conversion shall be deemed to have become on said date the holder or holders of record of the shares represented thereby; provided, however, that any surrender on any date when the stock transfer books of the Company shall be closed shall cause the person or persons in whose name or names the certificates are to be issued to become the holder or holders of record thereof for all purposes on the next succeeding day on which such stock transfer books are open, but such conversion shall be at the Conversion Price in effect on the date upon which such shares shall have been surrendered. All shares of Common Stock delivered upon conversion of the Series I Preferred Stock will, upon delivery, be duly and validly issued, fully paid and nonassessable, free from all taxes, liens and charges with respect to the issuance thereof.

If a Holder shall surrender a share of Series I Preferred Stock for conversion during the period from the close of business on any dividend payment record date to the close of business on the following dividend payment date, such holder shall nevertheless be entitled to receive the dividend payable on such shares on such dividend payment date notwithstanding the conversion thereof following the close of business on such former dividend payment record date and prior to the close of business on such latter dividend payment date. However, shares of Series I Preferred Stock surrendered for conversion during the period between the close of business on any dividend payment record date and the close of business on the corresponding dividend payment date (except shares called for redemption or exchange on a redemption date or exchange date during such period) must be accompanied by payment of an amount equal to the dividend payment for the then current Dividend Period with respect to such share of Series I Preferred Stock presented for conversion on such dividend payment date; provided, however, that no such payment need be made if, at the time of conversion, dividends payable on the shares of Series I Preferred Stock outstanding shall be in arrears for more than 30 days beyond the previous dividend payment date. The dividend payment with respect to shares of Series I Preferred Stock which are called for redemption on a redemption date during the period from the close of business on a dividend payment record date to the close of business on the corresponding dividend payment date shall be payable on such dividend payment date to the holder of record of such shares on the books of the Company at the close of business on the dividend payment record date notwithstanding the conversion of such shares during the period between the close of business on such dividend payment record date and the close of business on such dividend payment date, and the holder of such shares need not make a payment equal to the dividend payment amount upon surrender of such shares for conversion. A holder of shares of Series I Preferred Stock on a dividend payment record date will receive the dividend payable by the Company on such shares of Series I Preferred Stock surrendered for conversion. Except as provided above, the Company shall make no payment or allowances for unpaid dividends, whether or not in arrears, on converted shares or for dividends on the shares of Common Stock issued upon such conversion.

(c) In connection with the conversion of any shares of Series I Preferred Stock, fractions of such shares may be converted; however, no fractional shares or scrip representing fractions of shares of Common Stock shall be issued upon conversion of the Series I Preferred Stock. If more than one share (or fraction thereof) shall be surrendered for conversion at one time by the same holder, the number of full shares of Common Stock issuable upon

conversion thereof shall be computed on the basis of the aggregate number of shares of Series I Preferred Stock so surrendered. If any fractional share of Common Stock would otherwise be issuable upon the conversion of a share of Series I Preferred Stock (or fraction thereof), the Company shall make an adjustment therefor in cash (computed to the nearest cent) equal to the Closing Price of Common Stock on the Trading Date immediately preceding the date of conversion multiplied by the fraction of a share of Common Stock otherwise issuable.

(d) The Conversion Price shall be adjusted from time to time by the Company as follows:

(i) This section intentionally omitted.

(ii) In case the Company shall issue after the Issue Date rights or warrants to all holders of Common Stock entitling them to subscribe for or purchase Common Stock at a price per share less than the Current Market Price per share of Common Stock at the record date for the determination of shareholders entitled to receive such rights or warrants, then the Conversion Price in effect immediately prior thereto shall be adjusted to equal the price determined by multiplying (A) the Conversion Price in effect immediately prior to the date of issuance of such rights or warrants by (B) a fraction, the numerator of which shall be the sum of (1) the number of shares of Common Stock outstanding on the date of issuance of such rights or warrants (without giving effect to any such issuance) and (2) the number of shares of Common Stock which the aggregate proceeds from the exercise of such rights or warrants for Common Stock would purchase at such Current Market Price, and the denominator of which shall be the sum of (1) the number of shares of Common Stock outstanding on the date of issuance of such rights or warrants (without giving effect to any such issuance) and (2) the number of additional shares of Common Stock offered for subscription or purchase. Such adjustment shall be made successively whenever any such rights or warrants are issued, and shall become effective immediately after such record date. In determining whether any rights or warrants entitle the holder of Common Stock to subscribe for or purchase shares of Common Stock at less than such Current Market Price, there shall be taken into account any consideration received by the Company upon issuance and upon exercise of such rights or warrants, the value of such consideration, if other than cash, to be reasonably determined in good faith by the Board of Directors.

(iii) In case the Company shall pay a dividend or make a distribution to all holders of its Common Stock after the Issue Date of any shares of capital stock of the Company or its subsidiaries (other than Common Stock, which shall be subject to adjustment pursuant to Section 7(d)(vi)) or evidences of indebtedness of the Company or its subsidiaries or assets (including securities, but excluding those rights, warrants, dividends and distributions referred to in subparagraph (ii) and (vi) of this Section 7(d)), excluding dividends or distributions in connection with the liquidation, dissolution or winding up of the Company and excluding cash dividends referred to in subparagraph (v) of this Section 7(d) then in each such case, the Conversion Price shall be adjusted so that it shall equal the price determined by multiplying (A) the Conversion

Price in effect on the record date mentioned below by (B) a fraction, the numerator of which shall be the Current Market Price per share of the Common Stock on the record date mentioned below less the then fair market value (as determined by the Board of Directors, whose determination shall, if made in good faith, be conclusive) as of such record date of the portion of the capital stock or evidences of indebtedness or assets so distributed or of such rights or warrants applicable to one share of Common Stock, and the denominator of which shall be the Current Market Price per share of the Common Stock on such record date. Such adjustment shall become effective immediately, except as provided in Section 7(h) below, after the record date for the determination of shareholders entitled to receive such distribution.

(iv) Notwithstanding anything in subparagraphs (ii) and (iii) of this Section 7(d), if such rights or warrants shall by their terms provide for an increase or increases (or decrease or decreases) with the passage of time or otherwise in the price payable to the Company upon the exercise thereof, the Conversion Price upon any such increase or decrease becoming effective shall forthwith be readjusted (but, in case of an increase or increases in exercise price, to no greater extent than originally adjusted by reason of such issuance or sale) to reflect the same. Upon the expiration or termination of such rights or warrants, if any such rights or warrants shall not have been exercised, then the Conversion Price shall forthwith be readjusted and thereafter be the rate which it would have been had an adjustment been made on the basis that (A) the only rights or warrants issued or sold were those so exercised and they were issued or sold for the consideration actually received by the Company for the granting of all such options, rights or warrants whether or not exercised and (B) the Company issued and sold a number of shares of Common Stock equal to those actually issued upon exercise of such rights, and such shares were issued and sold for a consideration equal to the aggregate exercise price in effect under the exercise rights actually exercised at the respective dates of their exercise. For purposes of subparagraphs (ii) and (iii) of this Section 7(d), the aggregate consideration received by the Company in connection with the issuance of shares of Common Stock or of rights or warrants shall be deemed to be equal to the sum of the aggregate offering price (before deduction of underwriting discounts or commissions and expenses payable to third parties) of all such securities plus the minimum aggregate amount, if any, payable upon the exercise of such rights or warrants into shares of Common Stock.

(v) In case the Company shall, by dividend or otherwise, at any time distribute to all holders of the Common Stock cash (excluding any cash that is distributed as part of a distribution referred to in subparagraph (iii) of this Section 7(d) or in connection with a transaction to which Section 7(e) applies) in an aggregate amount that, together with (A) the aggregate amount of any other distributions to all holders of the Common Stock made exclusively in cash within the 12 months preceding the date fixed for the determination of shareholders entitled to such distribution and in respect of which no Conversion Price adjustment has been made previously and (B) the aggregate amount of any cash plus the fair market value (as determined by the Board of Directors, whose determination shall, if made in good faith, be conclusive) as of such date of

determination of any other consideration payable in respect of any tender or exchange offer or other purchase by the Company or a subsidiary of the Company for all or any portion of the Common Stock consummated within 12 months preceding such date of determination and in respect of which no Conversion Price adjustment has been made previously, exceeds 5.0% of the product of the Current Market Price per

share of Common Stock multiplied by the number of shares of Common Stock outstanding on such date, then in each such case the Conversion Price shall be reduced (but not increased) so that it shall equal the price obtained by multiplying the Conversion Price in effect immediately prior to the close of business on such date of determination by a fraction of which the numerator shall be (x) the product of the Current Market Price per share of Common Stock on such date, multiplied by the number of shares of Common Stock outstanding on such date, less (y) the sum of (i) the aggregate amount of cash to be distributed at such time, (ii) the aggregate amount of any other distributions to holders of Common Stock made exclusively in cash within the preceding 12 months, in respect of which no Conversion Price adjustment has been made previously, and (iii) the aggregate amount of any cash plus the fair market value (determined as aforesaid) of any other consideration payable in respect of any tender or exchange offer or other purchase by the Company or a subsidiary of the Company for all or any portion of the Common Stock within the preceding 12 months, in respect of which no Conversion Price adjustment has been made previously; and the denominator shall be the product of such Current Market Price, multiplied by the number of shares of Common Stock outstanding on such date. Such reduction shall become effective immediately prior to the opening of business on the date after such determination.

(vi) In case outstanding shares of Common Stock shall be subdivided into a greater number of shares of Common Stock or in case the Company effects a dividend of Common Stock to the holders of its Common Stock, the Conversion Price in effect at the opening of business on the day following the day upon which such subdivision becomes effective or the record date of such dividend, as the case may be, shall be proportionately reduced, and, conversely in case outstanding shares of Common Stock shall be combined into a smaller number of shares of Common Stock, the conversion price in effect at the opening of business on the day following the day upon which such combination becomes effective shall be proportionately increased, such reduction or increase, as the case may be, to become effective immediately after the opening of business on the day following the day upon which such subdivision or combination becomes effective.

(vii) The reclassification of Common Stock into securities which include securities other than Common Stock (other than any reclassification upon a consolidation or merger) shall be deemed to involve (i) a distribution of such securities other than Common Stock to all holders of Common Stock (and the effective date of such reclassification shall be deemed to be the "date fixed for a determination of shareholders entitled to such distribution" within the meaning of paragraph (iii) of this Section and (ii) a subdivision or combination, as the case may be, of the number of shares of Common Stock outstanding immediately prior to such reclassification into the number of shares of

Common Stock outstanding immediately thereafter (and the effective date of such reclassification shall be deemed to be "the day upon which such subdivision becomes effective" or "the day upon which such combination becomes effective," as the case may be, and "the day upon which such subdivision or combination becomes effective" within the meaning of paragraph (vi) of this Section). Rights or warrants issued by the Company to all holders of the Common Stock that entitle the holders thereof to subscribe for or purchase shares of Common Stock (either initially or under certain circumstances), which rights or warrants (i) are deemed to be transferred with such shares of Common Stock, (ii) are not exercisable and (iii) are also issued in respect of future issuances of Common Stock, in each case in clauses (i) through (iii) until the occurrence of a specified event or events ("Trigger Event"), shall for purposes of this Section 7(d)(vii) not be deemed issued until the occurrence of the earliest Trigger Event.

(viii) In case a tender or exchange offer or other purchase made by the Company or any subsidiary of the Company for all or any portion of the Common Stock shall be consummated and such tender or exchange offer or purchase shall involve an aggregate consideration having a fair market value (as determined by the Board of Directors, whose determination shall, if made in good faith, be conclusive) as of the last time (the "Expiration Time") that tenders or exchanges may be made pursuant to such tender or exchange offer (as it shall have been amended) or the date of such other purchase, as the case may be, that, together with (A) the aggregate amount of the cash plus the fair market value (as determined by the Board of Directors, whose determination shall, if made in good faith, be conclusive) as of the Expiration Time of any other consideration paid in respect of any other tender or exchange offer or other purchase by the Company or a subsidiary of the Company for all or any portion of the Common Stock consummated within 12 months preceding the Expiration Time and in respect of which no Conversion Price adjustment has been made previously and (B) the aggregate amount of any distributions to all holders of the Common Stock made exclusively in cash within the 12 months preceding the Expiration Time and in respect of which no Conversion Price adjustment has been made previously, exceeds 5.0% of the product of the Current Market Price per share of Common Stock immediately prior to the Expiration Time times the number of shares of Common Stock outstanding (including any tendered, exchanged or purchased shares) at the Expiration Time, then in each such case the Conversion Price shall be reduced (but not increased) so that it shall equal the price obtained by multiplying the Conversion Price in effect immediately prior to the Expiration Time by a fraction of which the numerator shall be (x) the product of the Current Market Price per share of Common Stock immediately prior to the Expiration Time, multiplied by the number of shares of Common Stock outstanding (including any tendered, exchanged or purchased shares) at the Expiration Time less (y) the sum of (i) the aggregate amount of cash plus the fair market value (determined as aforesaid) of any other consideration payable in respect of such tender or exchange offer or other purchase, (ii) the aggregate amount of any distributions to holders of Common Stock made exclusively in cash within the preceding 12 months, in respect of which no Conversion Price adjustment has been made previously, and (iii) the aggregate amount of any cash plus the fair market value (determined as aforesaid) of any other consideration payable in respect to any other

tender or exchange offer or other purchase by the Company or a subsidiary of the Company for all or any portion of the Common Stock within the preceding 12 months, in respect of which no Conversion Price adjustment has been made previously; and the denominator shall be the product of such Current Market Price, multiplied by the number of shares of Common Stock outstanding (excluding any tendered, exchanged or purchased shares) at the Expiration Time. Such reduction shall become effective immediately prior to the opening of business on the date following the Expiration Time; provided, however, that if the number of tendered, exchanged or purchased shares or the aggregate consideration payable therefor has not been finally determined by such opening of business, the adjustment required by this subparagraph (viii) shall be made based upon the number of tendered, exchanged or purchased shares and the aggregate consideration payable therefor as so finally determined.

(ix) No adjustment in the Conversion Price shall be required unless such adjustment would require an increase or decrease of at least 1% in such price; provided, however, that any adjustments which by reason of this subparagraph (ix) are not required to be made shall be carried forward and taken into account in any subsequent adjustment; and provided, further, that any adjustment required in order to preserve the tax-free nature of a distribution to the holders of shares of Common Stock shall be made when so required. All calculations under this Section 7 shall be made to the nearest cent (with $.005 being rounded upward). Anything in this Section 7(d) to the

contrary notwithstanding, the Company shall be entitled, to the extent permitted by law, to make such reductions in the Conversion Price, in addition to those required by this Section 7(d), as it in its discretion shall determine to be advisable in order that any stock dividends, subdivision or combination of shares, distribution of capital stock or rights or warrants to purchase stock or securities, distribution of evidences of indebtedness or assets or any other transaction which could be treated as any of the foregoing transactions pursuant to Section 305 of the Internal Revenue Code of 1986, as amended (and any successor provision), hereafter made by the Company to its shareholders shall not be taxable to such shareholders.

(e) Subject to the provisions of Section 8, in case the Company shall be a party to any transaction (including, without limitation, a merger, consolidation, sale of all or substantially all of the Company's assets, or recapitalization of the Common Stock and excluding any transaction as to which paragraph (d)(iii), (vi) or (vii) of this Section 7 applies) (each of the foregoing being referred to as a "Transaction"), in each case as a result of which shares of Common Stock shall be converted into the right to receive stock, securities or other property (including cash or any combination thereof), then each share of the Series I Preferred Stock will thereafter no longer be subject to conversion into Common Stock pursuant to Section 7, but instead shall be convertible into the kind and amount of shares of stock and other securities and property receivable (including cash) upon the consummation of such Transaction by a holder of that number of shares or fraction thereof of Common Stock into which one share of Series I Preferred Stock was convertible immediately prior to such Transaction. The Company shall not be a party to any Transaction unless the terms of such Transaction are consistent with the provisions of this Section 7(e) and it shall not consent or agree to the occurrence of any

Transaction until the Company has entered into an agreement with the successor or purchasing entity, as the case may be, for the benefit of the holders of the Series I Preferred Stock which will contain provisions enabling the holders of the Series I Preferred Stock which remains outstanding after such Transaction to convert into the kind and amount of stock, securities or other property (including cash or any combination thereof) which such holder would have been entitled to receive if such holder had held the Common Stock issuable upon conversion of such Series I Preferred Stock immediately prior to such Transaction. In the event that at any time, as a result of an adjustment made pursuant to this Section 7, the Series I Preferred Stock shall become subject to conversion into any securities other than shares of Common Stock, thereafter the number of such other securities so issuable upon conversion of the shares of Series I Preferred Stock shall be subject to adjustment from time to time in a manner and on terms as nearly equivalent as practicable to the provisions with respect to the shares of Series I Preferred Stock contained in this Section 7. The provisions of this Section 7(e) shall similarly apply to successive Transactions.

(f) If:

(i) the Company shall take any action which would require an adjustment in the Conversion Price pursuant to Section 7(d); or

(ii) the Company shall authorize the granting to the holders of its Common Stock generally of rights or warrants to subscribe for or purchase any shares of any class or any other rights or warrants; or

(iii) there shall be any reclassification or change of the Common Stock (other than a subdivision or combination of its outstanding Common Stock or a change in par value) or any consolidation, merger or statutory share exchange to which the Company is a party and for which approval of any shareholders of the Company is required, or the sale or transfer of all or substantially all of the assets of the Company or any Change in Control (each as defined in Section 8 below) or any Transaction; or

(iv) there shall be a voluntary or involuntary dissolution, liquidation or winding up of the Company;

then, except as provided otherwise in Section 8, the Company shall cause to be filed with the Transfer Agent (if different than the Company) and shall cause to be given to the holders of shares of the Series I Preferred Stock, as promptly as possible, but at least 30 days prior to the applicable date hereinafter specified, a notice stating (A) the date on which a record is to be taken for the purpose of such dividend, distribution or granting of rights or warrants, or, if a record is not to be taken, the date as of which the holders of Common Stock of record to be entitled to such dividend, distribution or rights or warrants are to be determined or (B) the date on which such reclassification, change, consolidation, merger, statutory share exchange, sale, Change in Control, transfer, dissolution, Transaction, liquidation or winding up is expected to become effective or occur, and the date as of which it is expected that holders of Common Stock of record shall be entitled to exchange their shares of Common Stock for securities or other property deliverable

upon such reclassification, change, consolidation, merger, statutory share exchange, sale, Change in Control, transfer, dissolution, liquidation or winding up. Failure to give such notice or any defect therein shall not affect the legality or validity of the proceedings described in this Section 7(f).

(g) Whenever the Conversion Price is adjusted as herein provided, the Company shall promptly file with the Transfer Agent (if different than the Company) or, if the Transfer Agent is the Company, shall provide to all holders of Series I Preferred Stock an officer's certificate signed by the President or a Vice President and the Chief Financial Officer or the Treasurer setting forth a brief statement of the facts requiring such adjustment and upon which such adjustments are based. Promptly after delivery of such certificate, the Company shall prepare a notice of such adjustment of the Conversion Price setting forth the adjusted Conversion Price, the facts requiring such adjustment and upon which such adjustments are based, the calculation of the Conversion Price adjustment and the date on which such adjustment becomes effective and shall give such notice of such adjustment of the Conversion Price to the holder of each share of Series I Preferred Stock.

(h) In any case in which Section 7(d) provides that an adjustment shall become effective immediately after a record date for an event and the date fixed for such adjustment pursuant to Section 7 occurs after such record date but before the occurrence of such event, the Company may defer until the actual occurrence of such event (i) issuing to the holder of any shares of Series I Preferred Stock converted after such record date and before the occurrence of such event the additional shares of Common Stock issuable upon such conversion by reason of the adjustment required by such event over and above the Common Stock issuable upon such conversion before giving effect to such adjustment and (ii) paying to such holder any amount in cash in lieu of any fraction pursuant to Section 7(c).

(i) For purposes of this Section 7, the number of shares of Common Stock at any time outstanding shall not include any shares of Common Stock then owned or held by or for the account of the Company or any corporation controlled by the Company.

(j) Notwithstanding any other provision herein to the contrary, the issuance of any shares of Common Stock pursuant to any plan providing for the reinvestment of dividends or interest payable on securities of the Company and the investment of additional optional amounts of shares of Common Stock under any such plan shall not be deemed to constitute an issuance of Common Stock. In case of the issuance of any stock of the Company in a reorganization, acquisition or other similar transaction which would require adjustment of the Conversion Price pursuant to more than one paragraph of this Section 7, only one adjustment shall be made and such adjustment shall be the amount of adjustment which has the highest absolute value to the holders of Series I Preferred Stock.

(k) The Board of Directors may in its discretion, decrease the Conversion Price to the extent permitted by law, in such manner, if any, and at such time, as the Board of Directors determines to be equitable in the circumstances; provided, however, that in no event shall the Board of Directors be required to take any such action.

(l) The Company shall at all times reserve and keep available, free from preemptive rights, out of its authorized but unissued shares of Common Stock, sufficient shares of Common Stock to provide for the conversion of the Series I Preferred Stock from time to time as such Series I Preferred Stock is presented for conversion. For purposes of this Section 7(l), the number of shares of Common Stock which shall be deliverable upon the conversion of all outstanding shares of Series I Preferred Stock shall be computed as if at the time of computation all such outstanding shares were held by a single holder.

Before taking any action which would cause an adjustment reducing the Conversion Price below the then par value of the shares of Common Stock deliverable upon conversion of the Series I Preferred Stock, the Company will take any corporate action which may, in the opinion of its counsel, be necessary in order that the Company may validly and legally issue fully paid and nonassessable shares of Common Stock at such adjusted Conversion Price.

The Company will, pursuant to the Registration Rights Agreement relating to the Series I Preferred Stock, list the shares of Common Stock required to be delivered upon conversion of the Series I Preferred Stock, prior to delivery, upon each national securities exchange, the NASDAQ National Market or any similar system of automated dissemination of securities prices, if any, upon which the Common Stock is listed at the time of delivery.

Prior to the delivery of any securities which the Company shall be obligated to deliver upon conversion of the Series I Preferred Stock, the Company will use its best efforts to comply with all federal and state laws and regulations thereunder requiring the registration of such securities with, or any approval of or consent to the delivery thereof by, any governmental authority.

(m) The Company will pay any and all documentary stamp or similar issue or transfer taxes payable in respect of the issue or delivery of the shares of Series I Preferred Stock (or any other securities issued on account of the Series I Preferred Stock pursuant hereto) or shares of Common Stock issued upon conversion of the Series I Preferred Stock pursuant hereto; provided, however, that the Company shall not be required to pay any tax which may be payable in respect of any transfer involved in the issue or delivery of shares of Series I Preferred Stock pursuant hereto or shares of Common Stock in a name other than the name in which the shares of Series I Preferred Stock with respect to which such shares of Common Stock are issued were registered and the Company shall not be required to make any issue or delivery unless and until the person requesting such issue or delivery has paid to the Company the amount of any such tax or has established, to the reasonable satisfaction of the Company, that such tax has been paid or is not required to be paid.

8. SPECIAL CONVERSION RIGHTS UPON CHANGE IN CONTROL.

(a) If a Change in Control (as defined below) should occur with respect to the Company, each holder of shares of the Series I Preferred Stock shall have the right, at the holder's option, for a period of 45 days after the giving of notice by the Company that a Change in Control has occurred, to convert all, but not less than all, of such holder's shares of the

Series I Preferred Stock into the kind and amount of cash, securities, property or other assets receivable upon such Change in Control by a holder of the number of shares of Common Stock into which such holder's Series I Preferred Stock would have been convertible immediately prior to the Change in Control at an adjusted conversion price equal to the Special Conversion Price (as defined below). Shares of the Series I Preferred Stock that are not converted as provided above will remain convertible into the kind and amount of cash, securities, property or other assets that the holders of the shares of the Series I Preferred Stock would have owned immediately after the Change in Control if the holders had converted the shares of the Series I Preferred Stock immediately before the effective date of the Change in Control. The Company will notify the holders of the Series I Preferred Stock of any pending Change in Control as soon as practicable and in any event at least 30 days in advance of the effective date of such Change in Control. In the event of a pending Change in Control, the Company (or any successor corporation) shall take all action necessary to provide for sufficient amounts of cash, securities, property or other assets for the conversion of the Series I Preferred Stock as provided herein.

(b) If a Change in Control shall occur, then, as soon as practicable and in any event within five (5) business days after the occurrence of such Change in Control, the Company shall provide notice to each registered holder of a share of Series I Preferred Stock a notice (the "Special Conversion Notice") setting forth details regarding the Special Right of the holders to convert their shares of Series I Preferred Stock as a result of such Change in Control. A holder of a share of Series I Preferred Stock must exercise such conversion right within the 45-day period after the giving of the Special Conversion Notice by the Company or such Special Right shall expire. The conversion date for shares so converted shall be the 45th day after the giving of the Special Conversion Notice or, if the merger, consolidation, reorganization, liquidation or dissolution related to such Change in Control has not become effective within 45 days of the giving of the Special Conversion Notice but becomes effective within 90 days after the giving of the Special Conversion Notice, then on the date of such effectiveness. If such merger, consolidation, reorganization, liquidation or dissolution shall not occur within 90 days after the date on which the Special Conversion Notice is given, the Company shall be required to give a new Special Conversion Notice. Within five Business Days following the conversion date, the Company shall deliver a certificate for the Common Stock together with a check for any fractional shares issuable or the cash, securities, property or other assets receivable by a holder. Exercise of such conversion right to the extent permitted by law (including, if applicable, Rule 13d-3 under the Securities Exchange Act of 1934, as amended (the "Exchange Act") shall be irrevocable and no dividends on the shares of Series I Preferred Stock tendered for conversion shall accrue from and after the conversion date.

(c) The Special Conversion Notice shall state:

(i) The event constituting the Change in Control;

(ii) the last date upon which holders may submit shares of Series I Preferred Stock for conversion at the Special Conversion Price;

(iii) the Special Conversion Price;

(iv) the Conversion Price then in effect under Section 7 and the continuing conversion rights, if any, under Section 7;

(v) the name and address of any paying agent and conversion agent;

(vi) that holders who wish to convert shares of Series I Preferred Stock must satisfy the requirements of Section 7

and must exercise such conversion right within the 45-day period after giving of such notice by the Company;

(vii) that exercise of such conversion right shall be irrevocable and no dividends on shares of Series I Preferred Stock tendered for conversion shall accrue from and after the conversion date; and

(viii) that the consideration to be received shall be delivered within the five Business Days after the last date upon which holders may submit Series I Preferred Stock for conversion.

(d) (i) As used herein, a "Change in Control" with respect to the Company means (A) the acquisition by a person, entity or "group," within the meaning of Section 13(d)(3) of the Exchange Act, (excluding, for this purpose, the Company or any of its subsidiaries and any of Thomas Russell, The AER Trust 1997, Robert Louis-Dreyfus, Gallium Enterprises, Inc. and Reuben Richards which acquires beneficial ownership of voting securities of the Company) of securities of the Company that result in such person, entity or group having beneficial ownership (within the meaning of Rule 13d-3 promulgated under the Exchange Act) of (x) 50% or more of either the then outstanding shares of Common Stock or the combined voting power of the Company's then outstanding voting securities entitled to vote generally in the election of directors or (y) 35% or more of either the then outstanding shares of Common Stock or the combined voting power of the Company's then outstanding voting securities entitled to vote generally in the election of directors, unless Thomas Russell, The AER Trust 1997, Robert Louis-Dreyfus, Gallium Enterpises, Inc. and Reuben Richards collectively beneficially own a greater percentage than such person, entity or "group"; (B) approval by the shareholders of the Company of a reorganization, merger or consolidation, in each case, with respect to which persons who were the shareholders of the Company immediately prior to such reorganization, merger or consolidation do not, immediately thereafter, own more than 50% of the combined voting power entitled to vote generally in the election of directors of the reorganized, merged or consolidated company's then outstanding voting securities (a "Control Transaction"); or (C) approval of the Board of Directors and, if required, of the shareholders of the Company of a liquidation or dissolution of the Company (other than pursuant to the United States Bankruptcy Code) or the sale of all or substantially all of the assets of the Company.

(ii) As used herein, a person shall be deemed to have "beneficial ownership" with respect to, and shall be deemed to "beneficially own," any securities of the Company in accordance with the definitions of such terms in Section 13 of the Exchange Act and rules and regulations (including Rule 13d-3, Rule 13d-5, and any successor rules) promulgated by the Securities and Exchange Commission

thereunder; PROVIDED, HOWEVER, that a person shall be deemed to have beneficial ownership of all securities that any such person has a right to acquire whether such right is exercisable immediately or only after the passage of time and without regard to the 60-day limitation referred to in Rule 13d-3.

(iii) As used herein, the "Market Value" of a share of the Common Stock shall be the average of the Closing Prices of the Common Stock for the five Trading Dates ending on the last Trading Day preceding the date of the Change in Control provided that, in the event the Change in Control was not announced at least ten (10) Trading Dates prior to its occurrence, then five Trading Dates ending ten (10) Trading Dates after a public announcement of such Change in Control.

(iv) As used herein, the "Special Conversion Price" shall mean the lower of the Market Value of the Common Stock or $14.00 per share (which amount will, each time the Conversion Price is adjusted, be likewise adjusted).

9. REPURCHASE AT OPTION OF HOLDERS UPON CHANGE IN CONTROL.

(a) Upon the occurrence of a Change in Control (as defined in Section 8(d)) each holder of Series I Preferred Stock shall have the right (the "Repurchase Right") to require the Company to repurchase all of such holder's Series I Preferred Stock, or any portion thereof which is 100 shares or any integral multiple thereof at a price equal to 101% of the liquidation preference of the Series I Preferred Stock, plus accrued and unpaid dividends, if any, to the Repurchase Date. Such repurchase shall occur on the date (the "Repurchase Date") that is 45 days after the date of the Company Notice (as defined below). The Company will give a notice containing the information set forth in Section 9(b) below (the "Company Notice") to all holders within five (5) business days following any Change in Control, and the Company will purchase all tendered shares of Series I Preferred Stock by making payment of 101% of the liquidation preference plus accrued and unpaid dividends, if any, on the Repurchase Date. The Company shall promptly deliver a copy of the Company Notice to the Transfer Agent and shall cause a copy of such notice to be published in the Wall Street Journal or another newspaper of national circulation. The Company intends not to treat for tax purposes the Preferred Stock as having a redemption premium which is required to be treated as distributed pursuant to Section 305(c) of the Internal Revenue code.

(b) The Company Notice shall state

(i) that a Change in Control has occurred and that each holder has the right to require the Company to repurchase such holder's shares of Series I Preferred Stock for cash at a price equal to 101% of the liquidation preference of the Series I Preferred Stock, plus accrued and unpaid dividends, if any, to the Repurchase Date and the amount of such repurchase price;

(ii) the circumstances and relevant facts regarding the Change in Control;

(iii) the Repurchase Date and the instructions a holder must follow in order to have such holder's securities repurchased in accordance with this Section 9.

(iv) that any shares of Series I Preferred Stock not tendered will continue to accrue dividends.

(v) that on the Repurchase Date any share of Series I Preferred Stock tendered for payment pursuant to the terms hereof and for which money sufficient to repurchase the shares of Series I Preferred Stock has been deposited by the Company as required by Section 9(c) hereof, shall cease to accrue dividends after the Repurchase Date;

(vi) that holders electing to have shares of Series I Preferred Stock repurchased pursuant to this Section 9 will be required to surrender such shares, duly endorsed for transfer, together with irrevocable notice of such holder's intent to exercise such Repurchase Right, to the Company at the address specified in the Company Notice on or prior to the close of business on the 35th day after the date the Company's Notice is given; and

(vii) such other information as may be required by applicable law or regulations;

PROVIDED that no failure of the Company to give the foregoing notices and no defect therein shall limit the holder's Repurchase Right or affect the validity of the proceedings for the repurchase of the shares of Series I Preferred Stock pursuant to this Section 9.

(c) Following a Change in Control, the Company shall

accept for payment shares of Series I Preferred Stock properly tendered pursuant to this Section 9. Prior to the Repurchase Date, the Company shall deposit with a bank or trust company having a capital and surplus of at least $50,000,000, funds sufficient to pay the redemption price for all shares of Series I Preferred Stock tendered and shall deliver, or cause to be delivered to such bank or trust company, the shares of Series I Preferred Stock properly tendered pursuant to this Section 9 and accepted together with an officer's certificate describing the shares of Series I Preferred Stock so tendered to and being purchased by the Company. On the Repurchase Date, the bank or trust company shall, to the extent that monies deposited with such bank or trust company are available therefor, give to the holders of shares of Series I Preferred Stock so tendered and accepted payment in an amount equal to the redemption price and, as soon as possible after such payment, the bank or trust company shall cancel the shares of Series I Preferred Stock so tendered and accepted. The Company will publicly announce the results of the Change in Control tender offer as soon as practicable after the Repurchase Date. The Company will issue to holders whose shares of Series I Preferred Stock are purchased only in part new shares of Series I Preferred Stock equal in principal amount to the unpurchased portion of the shares of Series I Preferred Stock surrendered.

(d) Notwithstanding the foregoing, in repurchasing the shares of Series I Preferred Stock pursuant to this Section 9, the Company will comply with all applicable tender offer rules, including but not limited to Sections 13(e) and 14(e) under the Exchange Act and Rules 13c-1 and 14c-1 thereunder.

10. RANKING. Any class or classes of stock of the Company shall be deemed to rank:

(i) prior to the Series I Preferred Stock, as to dividends or as to the distribution of assets upon liquidation, dissolution or winding up, if the holders of such class shall be entitled to the receipt of dividends or of amounts distributable upon liquidation, dissolution winding up, as the case may be, in preference or priority to the holders of Series I Preferred Stock.

(ii) on a parity with the Series I Preferred Stock, as to dividends or as to the distribution of assets upon liquidation, dissolution or winding up, whether or not the dividend rates, dividend payment dates or redemption or liquidation prices per share thereof be different from those of the Series I Preferred Stock, if the holders of such class of stock and the Series I Preferred Stock shall be entitled to the receipt of dividends or of amounts distributable upon liquidation, dissolution or winding up, as the case may be, in proportion to their respective amount of accrued and unpaid dividends per share or liquidation prices, without preference or priority of one over the other, and

(iii) junior to the Series I Preferred Stock, as to dividends or as to the distribution of assets upon liquidation, dissolution or winding up, if such stock shall be Common Stock or if the holders of Series I Preferred Stock shall be entitled to receipt of dividends or of amounts distributable upon liquidation, dissolution or winding up, as the case may be, in preference or priority to the holders of shares of such stock.

11. VOTING.

(a)(i) Except as herein provided or as otherwise from time to time required by law, holders of Series I Preferred Stock shall have one vote per share of Common Stock issuable upon conversion thereof on all matters submitted to the holders of the Common Stock, and shall vote with the Common Stock as a single class. Whenever, at any time or times, dividends payable on the shares of Series I Preferred Stock shall be cumulatively in arrears in an amount equal to or greater than the amount payable in respect of six complete Dividend Periods; the holders of Series I Preferred Stock shall have the exclusive right, voting separately as a class to elect two directors of the

Company at the Company's next annual meeting of shareholders and at each subsequent annual meeting of shareholders until such dividends have been paid. If such voting rights shall become vested more than 90 days or less than 20 days before the date prescribed for the annual meeting of shareholders, thereupon the holders of the shares of Series I Preferred Stock shall be entitled to exercise their voting rights at a special meeting of the holders of Series I Preferred Stock as set forth in paragraphs (ii) and (iii) of this Section 11(a). At elections for such directors, each holder of Series I Preferred Stock shall be entitled to one vote

for each share held by such holder. Upon the vesting of such right of the holders of the Series I Preferred Stock, the maximum authorized number of members of the Board of Directors shall automatically be increased by two, the size of the Board of Directors shall automatically be increased by two directors and the two vacancies so created shall be filled by vote of the holders of outstanding Series I Preferred Stock as hereinabove set forth. The right of holders of the Series I Preferred Stock, voting separately as a class, to elect members of the Board of Directors as aforesaid shall continue until such time as all dividends accumulated on the Series I Preferred Stock shall have been paid, or declared and funds or additional shares of Series I Preferred Stock set aside for payment in full, at which time such right shall terminate, except as herein or by law expressly provided, subject to revesting in the event of each and every such subsequent default. Notwithstanding the foregoing, in the event the holders of Preferred Stock are entitled to elect a director as provided in Section 11(b), the number of directors which the holders of the Series I Preferred Stock may elect pursuant to this Section 11(a) shall be one, and the number of directors which the holders of the Series I Preferred Stock may elect pursuant to Section 11(b) shall be one.

(ii) Whenever such voting right shall have vested, such right may be exercised initially either, as provided in Section 11(a)(i) or 11(b), at a special meeting of the holders of shares of the Series I Preferred Stock called as hereinafter provided, or at any annual meeting of shareholders held for the purposes of electing directors, and thereafter at such meetings or by the written consent of such holders pursuant to the Business Corporation Act of the State of New Jersey.

(iii) At any time when such voting rights shall have vested in the holders of shares of the Series I Preferred Stock and if such right shall not already have been initially exercised, an officer of the Company shall, upon the written request of holders of record of 10% or more of shares of the Series I Preferred Stock then outstanding, addressed to the Chief Financial Officer of the Company, call a special meeting of holders of shares of the Series I Preferred Stock. Such meeting shall be held at the earliest practicable date upon the notice required for annual meetings of shareholders at the place for holding annual meetings of shareholders of the Company or, if none, at a place designated by the Chief Financial Officer of the Company. If such meeting shall not be called by the proper officers of the Company within 30 days after the personal service of such written request upon the Chief Financial Officer of the Company, or within 30 days after giving notice, then the holders of record of 10% of the shares of the Series I Preferred Stock then outstanding may designate in writing any person to call such meeting at the expense of the Company, and such meeting may be called by such person so designated upon the notice required for annual meetings of shareholders and shall be held at the location requested by the person calling the meeting. Any holder of shares of the Series I Preferred Stock then outstanding that would be entitled to vote at such meeting shall have access to the stock record books of the Company for the purpose of causing a meeting of shareholders to be called pursuant to the provisions of this paragraph. Notwithstanding the provisions of this paragraph, however, no such special meeting shall be called or held during a period within 45 days immediately preceding the date fixed for the next annual meeting of shareholders.

25

(iv) The directors elected pursuant to this Section 11(a) shall serve until the earlier of (A) the next annual meeting or until their respective successors shall be elected and shall qualify or (B) the date that the Company has paid all accrued and unpaid dividends on the Series I Preferred Stock. Any director elected by the holders of Series I Preferred Stock may be removed by, and shall not be removed otherwise than by, the vote of the holders of a majority of the outstanding shares of the Series I Preferred Stock, as applicable, voting as a separate class, at a meeting called for such purpose or by written consent as permitted by law and the Certificate of Incorporation and By-laws of the Company; provided, that upon payment of all accrued, but unpaid dividends, such person shall automatically and without further action cease to be members of the Company's Board of Directors. If the office of any director elected by the holders of the Series I Preferred Stock, as applicable, voting as a class, becomes vacant by reason of death, resignation, retirement, disqualification or removal from office or otherwise, the remaining director elected by the holders of the Series I Preferred Stock may choose a successor who shall hold office for the unexpired term in respect of which such vacancy occurred. Upon any termination of the right of the holders of the Series I Preferred Stock to vote for directors as herein provided, the term of office of all directors then in office elected by the holders of the Series I Preferred Stock shall terminate immediately. Whenever the terms of office of the directors elected by the holders of the Series I Preferred Stock shall so terminate and the special voting powers vested in the holders of the Series I Preferred Stock shall have expired, the number of directors shall be such number as may be provided for pursuant to the By-laws of the Company irrespective of any increase made pursuant to the provisions of this Section 11.

(b) Until such time as there are outstanding a number of shares of Series I Preferred Stock less than that number of shares equal to two-thirds of the number of shares of Series I Preferred Stock issued in November 1998 to Hakuto Co., Ltd., Union Miniere, Inc. and Uniroyal Technology Corporation (as adjusted for any stock combinations or splits with respect to such shares) (the "Threshold Amount"), if the Company materially breaches a substantive provision of one of the Strategic Agreements (as defined below), the holders of Series I Preferred Stock who are a party to one or more of the Strategic Agreements that have been breached by the Company shall collectively have the right, voting separately as a class, to elect one director of the Company at the Company's next annual meeting of the shareholders; provided, however, that if such voting rights shall become vested more than 90 days or less than 20 days before the date of the prescribed annual meeting of shareholders, such holders of the shares of Series I Preferred Stock shall be entitled to exercise their voting rights at a special meeting of the holders of the shares of Series I Preferred Stock as set forth in Sections 11(a)(ii) and (iii). At such elections for directors, each such holder of Series I Preferred Stock shall be entitled to one vote for each share held. Upon the vesting of such right of the holders of Series I Preferred Stock, the maximum authorized number of members of the Board shall automatically be increased by one, the size of the Board of Directors shall automatically be increased by one director and the one vacancy so created shall be filled by vote of the holders of Series I Preferred Stock as hereinabove set forth. The right of holders of Series I Preferred Stock, voting separately as a class, to elect a member of the Board of Directors pursuant to this Section 11(b) shall continue until the earlier of (i) the cure of each material breach giving rise such right or (ii) the

26

date that less than the Threshold Amount of shares of Series I Preferred Stock is outstanding. As used herein the term "Strategic Agreements" shall mean the following agreements as each may be amended and any material agreements related

thereto: distributorship agreements with Hakuto Co., Ltd.; the Joint-Venture Agreement between the Company and Union Miniere Inc., the Limited Liability Company Agreement of Umcore LLC, the Management and Services Agreement between Umcore LLC and the Company, the Party IP License Agreement between the Company and Umcore LLC, the New Application License Agreement between the Company and Umcore LLC, the Amended and Restated Joint Venture Agreement, dated November 1998 among the Company, Uniroyal Technology Corporation and Uniroyal Optoelectronics, Inc. and the Amended and Restated Technology License Agreement, dated November 1998 among the Company, Uniroyal Technology Corporation and Uniroyal Optoelectronics, Inc.

(c) So long as any shares of the Series I Preferred Stock remain outstanding, the consent of the holders of at least two-thirds of the shares of Series I Preferred Stock outstanding at the time, given in person or by proxy either in writing (as permitted by law and the Certificate of Incorporation and By-laws of the Company) or at any special or annual meeting, shall be necessary to permit, effect or validate any one or more of the following:

(i) the authorization, creation or issuance, or any increase in the authorized or issued amount of any class or series of stock, or any security convertible into stock of such class or series, ranking prior to or on parity with the Series I Preferred Stock (including the authorization or issuance of additional shares of Series I Preferred Stock other than issuances of Series I Preferred Stock as a dividend on any then outstanding shares of Series I Preferred Stock) as to dividends or the distribution of assets upon liquidation, dissolution or winding up;

(ii) the amendment, alteration or repeal, whether by merger, consolidation or otherwise, of any of the provisions of the Certificate of Incorporation (including this Certificate) or the Bylaws of the Company which would adversely affect any right, preference, privilege or voting power of the Series I Preferred Stock or of the holders thereof; provided, however, that the creation and issuance of other series of preferred stock, or any increase in the amount of authorized shares of such series or of any other series of preferred stock, in each case ranking junior to the Series I Preferred Stock with respect to the payment of dividends and the distribution of assets upon liquidation, dissolution or winding up, shall not be deemed to adversely affect such rights, preferences, privileges or voting powers; or

(iii) the authorization of any reclassification of the Series I Preferred Stock.

The unanimous consent of the Series I Preferred Stock is required to modify or eliminate the mandatory redemption provisions in Section 5(b) hereof. The foregoing voting provisions shall not apply if, at or prior to the time when the act with respect to which such vote would otherwise be required shall be effected, all outstanding shares of Series I

Preferred Stock shall have been redeemed or sufficient funds shall have been deposited in trust to effect such redemption, scheduled to be consummated within three months after such time.

12. PREEMPTIVE RIGHTS. Subject to Section 12(d), for so long as at least the Threshold Amount of shares of Series I Preferred Stock is outstanding, each time the Company proposes to sell shares of its capital stock or options, warrants or other rights to buy capital stock for cash, the Company shall also make an offering of such securities to the holders of Series I Preferred Stock in accordance with the following provisions:

(a) The Company shall deliver a notice to each holder of Series I Preferred Stock stating the number of securities to be offered and the price and the terms on which it proposes to offer such securities. Such notice shall be sent to the addresses set forth in the records of the Company.

(b) Each holder of Series I Preferred Stock may elect to purchase, at the price and on the terms specified in the notice, up to its Pro Rata Portion of such securities by delivering written notice of such election to the Company within 14 calendar days of the giving of such notice. Such election to purchase shall state that it is a binding commitment to purchase the securities. "Pro Rata Portion" shall mean the number of securities determined by multiplying the number of securities subject to the notice in Section 12(a) above by a fraction the numerator of which is the number of shares of Series I Preferred Stock held by such holder and the denominator of which is the number of shares of Series I Preferred Stock held by all holders provided, however, that if any of the holders of Series I Preferred Stock shall not elect to purchase their full Pro Rata Portion, the Pro Rata Portion of each holder electing to purchase its full Pro Rata Portion (without giving effect to this oversubscription adjustment) shall be increased by a proportionate amount of such unsubscribed shares.

(c) Any shares referred to in the notice that are not elected to be purchased as provided in subsection (b) above may, during the 180-day period thereafter, be offered by the Company to any other person or persons at a price not less than, and on terms not materially more favorable to the offeree than, those specified in the notice.

(d) The preemptive rights set forth in this Section 12 shall not be applicable to the issuance of (i) securities to directors, officers, or employees of the Company as a form of compensation or in connection with their initial employment, (ii) shares of common stock issuable upon exercise of any options or warrants, (iii) capital stock in connection with a merger, acquisition, plan of exchange or consolidation of another company, (iv) capital stock in connection with a joint venture, (v) securities pursuant to a registration statement filed pursuant to the Securities Act with the Securities and Exchange Commission, (vi) Common Stock or other securities issued upon conversion of the Series I Preferred Stock or (vii) Series I Preferred Stock issued as a dividend on the Series I Preferred Stock.

13. RECORD HOLDERS. The Company and the Transfer Agent may deem and treat the record holder of any shares of Series I Preferred Stock as the true and lawful owner thereof for all purposes, and neither the Company nor the Transfer Agent shall be affected by any notice to the contrary.

14. NOTICE. Except as may otherwise be provided for herein, all notices referred to herein shall be in writing, and all notices hereunder shall be deemed to have been given upon receipt, in the case of a notice of conversion given to the Company as contemplated in Section 7(b) hereof, or, in all other cases, upon the earlier of receipt of such notice or three Business Days after the giving of such notice if sent by registered mail (unless first-class mail shall be specifically permitted for such notice under the terms of this Certificate) with postage prepaid, addressed: if to the Company, to its offices at 394 Elizabeth Avenue, Somerset, New Jersey 08873, Attention: Chief Financial Officer, or other agent of the Company designated as permitted by this Certificate, or, if to any holder of the Series I Preferred Stock, to such holder at the address of such holder of the Series I Preferred Stock as listed in the stock record books of the Company (which may include the records of any Transfer Agent for the Series I Preferred Stock); or to such other address as the Company or holder, as the case may be, shall have designated by notice similarly given, provided, that, any notice given to Hakuto Co., Ltd. shall be given by facsimile at the facsimile number provided to the Company followed by a confirmation copy by mail, postage prepaid.

IN WITNESS WHEREOF, this Certificate has been signed by the President and Chief Executive Officer of the Company and attested to by the

Secretary of the Company, as of the 18th day of November, 1998.

EMCORE CORPORATION

By: /s/ REUBEN F. RICHARDS

Reuben F. Richards, Jr.
President and Chief Executive Officer

Attest:

By: /s/ THOMAS G. WERTHAN

Thomas G. Werthan
Secretary

Exhibit 4.2

THE SECURITIES REPRESENTED BY THIS CERTIFICATE HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED (THE "SECURITIES ACT") THE HOLDER HEREOF, BY PURCHASING THIS SECURITY, AGREES FOR THE BENEFIT OF EMCORE CORPORATION (THE "COMPANY") THAT THIS SECURITY MAY BE RESOLD, PLEDGED OR OTHERWISE TRANSFERRED ONLY: (1) TO THE COMPANY (UPON REPURCHASE THEREOF OR OTHERWISE), (2) IN AN OFFSHORE TRANSACTION IN ACCORDANCE WITH THE MEANING OF REGULATION S UNDER THE SECURITIES ACT, AS THE SAME MAY BE AMENDED FROM TIME TO TIME, PROVIDED THAT THE CONDITIONS OF REGULATION S FOR RESALES HAVE BEEN SATISFIED, (3) PURSUANT TO AN EXEMPTION FROM REGISTRATION IN ACCORDANCE WITH RULE 144 (IF AVAILABLE) UNDER THE SECURITIES ACT, AS THE SAME MAY BE AMENDED FROM TIME TO TIME, (4) IN RELIANCE ON ANOTHER EXEMPTION FROM THE REGISTRATION REQUIREMENTS OF THE SECURITIES ACT, AND SUBJECT TO THE RECEIPT BY THE COMPANY OF AN OPINION OF COUNSEL TO THE EFFECT THAT SUCH TRANSFER DOES NOT REQUIRE REGISTRATION UNDER THE SECURITIES ACT, OR (5) PURSUANT TO AN EFFECTIVE REGISTRATION STATEMENT UNDER THE SECURITIES ACT, IN EACH CASE IN ACCORDANCE WITH APPLICABLE SECURITIES LAWS OF ANY STATE OF THE UNITED STATES.

Warrant No. ____	Number of Shares: _____
Date of Issuance: June 22, 1998	Price: $11.375 per share (subject to adjustment)

EMCORE CORPORATION
SOMERSET, NEW JERSEY
ISSUE DATE: JUNE 22, 1998

WARRANT

EMCORE CORPORATION, a New Jersey corporation (the "Company"), for value received, hereby certifies that _____ or his registered assigns (the "Registered Holder"), is entitled, subject to the terms set forth below, to purchase from the Company, at any time or from time to time on or after June 22, 1998 and on or before May 1, 2001, at no later than 5:00 p.m. (New York City time), up to _____ shares of the common stock of the Company ("Common Stock"), at a purchase price of $11.375 per share. The shares purchasable upon exercise of this Warrant, and the purchase price per share, each as adjusted from time to time pursuant to the provisions of this Warrant, are hereinafter referred to as the "Warrant Shares" and the "Purchase Price," respectively.

1. EXERCISE.

(a) Subject to the requirements of Section 5, this Warrant may be exercised by the Registered Holder, in whole or in part, by surrendering this Warrant, with the purchase form appended hereto as EXHIBIT I duly executed by such Registered Holder or by such Registered Holder's duly authorized attorney, at the principal office of the Company, or at such other office or agency as the Company may designate, accompanied by payment in full, in lawful money of the United States, of the Purchase Price payable in respect of the number of shares of Warrant Shares purchased upon such exercise.

(b) Each exercise of this Warrant shall be deemed to have been effected immediately prior to the close of business on the day on which this Warrant shall have been surrendered to the Company as provided in subsection 1(a) above. At such time, the person or persons in whose name or names any certificates for warrant shares shall be issuable upon such exercise as provided in subsection 1(c) below shall be deemed to have become the holder or holders of record of the Warrant Shares represented by such certificates.

(c) As soon as practicable after the exercise of this Warrant

in full or in part, and in any event within 10 days thereafter, the Company, at its expense, will cause to be issued in the name of, and delivered to, the Registered Holder, or such Holder (upon payment by such Holder of any applicable transfer taxes) as the Registered Holder may direct:

(i) a certificate or certificates for the number of full Warrant Shares to which such Registered Holder shall be entitled upon such exercise plus, in lieu of any fractional share to which such Registered Holder would otherwise be entitled, cash in an amount determined pursuant to Section 4 hereof; and

(ii) in case such exercise is in part only, a new warrant or warrants (dated the date hereof) of like tenor, calling in the aggregate on the face or faces thereof for the number of Warrant Shares equal (without giving effect to any adjustment therein) to the number of such shares called for on the face or this Warrant minus the number of such shares purchased by the Registered Holder upon such exercise as provided in subsection 1(a) above.

2. CALL PROVISION.

This Warrant may be called in whole or in part by the Board of Directors of the Company upon 30 days written notice to the holder at any time after October 1, 1998 at a price per warrant of $0.85. No call of this warrant shall be made unless (i) the Corporation can deliver registered shares of Common Stock and (ii) the price per share of Common Stock is at least 150% of the Purchase Price for at least 30 consecutive trading days.

3. ADJUSTMENTS.

(a) EFFECT OF STOCK CHANGES. If, at any time or from time to time the Company, by stock dividend, stock split, subdivision, reverse split, consolidation, reclassification

of shares, or other similar structural change, changes as a whole its outstanding Common Stock into a different number or class of shares, then, immediately upon the occurrence of the change:

(i) the class of shares into which the Common Stock has been changed shall replace the Common Stock, for the purposes of this Warrant and the terms and conditions hereof, so that the registered owner or owners of this Warrant shall be entitled to receive, and shall receive upon exercise of this Warrant, shares of the class of stock into which the Common Stock had been changed;

(ii) the number of shares purchasable upon exercise of this Warrant shall proportionately be adjusted. (For example, if the outstanding Common Stock of the Corporation is converted into X stock at the rate of one (1) share of Common Stock into three (3) shares of X stock, and prior to the change the Registered Holder of this Warrant were entitled, upon exercise of this Warrant, to purchase one hundred shares of Common Stock, then the registered owner or owners shall, after the change, be entitled to purchase three hundred shares of X stock for the total same exercise price that the owner or owners had to pay prior to the change to purchase the one hundred shares of Common Stock); and

(iii) the purchase price per share shall be proportionately adjusted. (In the above example, the purchase price per share would be reduced by two-thirds).

Irrespective of any adjustment or change in the number or class of shares purchasable under this or any other Warrant of like tenor or in the purchase price per share, this Warrant, as well as any other warrant of like tenor, may continue to express the purchase price per share and the number and class of shares purchasable upon exercise of this Warrant as the purchase price per share and the number and class of shares purchasable were expressed in this Warrant when it was initially issued.

(b) EFFECT OF MERGER. If at any time while this Warrant is outstanding another corporation merges into the Company, the Registered Holder of this Warrant shall be entitled, immediately after the merger becomes effective and upon exercise of this Warrant, to obtain the same number of shares of Common Stock of the Company (or shares into which the Common Stock has been changed as provided in the paragraph of this Warrant covering changes) to which the owner or owners were entitled upon the exercise hereof to obtain immediately before the merger became effective at the same exercise price. The Company shall take any and all steps necessary in connection with the merger to assure that sufficient shares of Common Stock to satisfy all conversion and purchase rights represented by outstanding convertible securities, options and warrants, including this Warrant, are available so that these convertible securities, options and warrants, including this Warrant, may be exercised.

(c) EFFECT OF CONSOLIDATION OR SALE. Notwithstanding any provision of this Warrant concerning the callability of this Warrant, if the Company consolidates with or merges into another corporation or other entity in a transaction in which the Company is not the surviving corporation, or receives an offer to purchase or lease all or substantially all of the assets of the Company or an offer to purchase forty-five percent (45%) or more of the issued and outstanding Common Stock of the Company, or if all or substantially all of the assets of the

Company are sold or leased or forty-five percent (45%) or more of the issued and outstanding Common Stock of the Company is purchased by any person or group of persons acting in concert, then this Warrant shall be called by the Company on the Effective Date of such consolidation or merger or asset sale, or in the case of an offer to purchase forty-five percent (45%) of the Company's Common Stock, on the date such offer is accepted by the Company. The right to exercise this Warrant shall terminate when it is called. The call price shall be determined by the board of directors of the Company in accordance with the provisions of this second and third sentences of paragraph 3 hereof as of the time the event triggering the call occurs, or the value of the securities or the other consideration that shall be received in the transaction by the owner of a number of outstanding shares of Common Stock equal to the number of shares purchasable upon exercise of this Warrant. This call price shall be payable not later than sixty (60) days after the effective date of the call to the registered owner or owners of this Warrant upon its surrender for cancellation at the offices of the Company, together with the transfer or assignment form which forms a part hereof, duly completed and executed in blank.

(d) DISSOLUTION. In the event that a voluntary or involuntary dissolution, liquidation or winding up of the Company (other than in connection with a merger where the Company is the surviving corporation as covered in this Warrant, or a merger or consolidation with or into another corporation, a sale or lease of all or substantially all of the assets of the Company, or a sale of a specified portion or percentage of its stock as covered in this Warrant) is at any time proposed during the term of this Warrant, the Company shall give written notice to the registered owner or owners of this Warrant at least thirty (30) days prior to the record date of the proposed transaction. The notice must contain:

(i) the date on which the transaction is to take place;

(ii) the record date (which must be at least thirty (30) days after the giving of the notice) as of which holders of the Common Stock entitled to receive distributions as a result of the transaction shall be determined;

(iii) a brief description of the transaction;

(iv) a brief description of the distributions, if any, to be made to holders of the Common Stock as a result of the transaction; and

(v) an estimate of the fair market value of the distributions.

On the date of the transaction, if it actually occurs, this Warrant and all rights existing under this Warrant shall terminate.

4. FRACTIONAL SHARES. The Company shall not be required upon the exercise of this Warrant to issue any fractional shares, but shall pay in cash an amount determined by multiplying the fraction to which the Holder is entitled by the fair market value of the Common Stock on the date of exercise. Should the Common Stock then be traded on an Exchange or quoted on a quotation system for which a last sale reporting system is in effect, the reported last sale on the exercise date shall be deemed to be such fair market value. If the Common Stock is

quoted on a quotation system without last sale reporting, the fair market value shall be deemed to be the highest bid price of any broker/dealer regularly making a market in the Common Stock on the exercise date. In all other cases fair market value shall be as determined in good faith by the Company.

5. CERTAIN REQUIREMENTS FOR TRANSFER AND EXERCISE.

(a) In the absence of an effective Registration Statement under the Securities Act of 1933, as amended (the "Act"), it shall be a condition to any transfer or any exercise of this Warrant that the Issuer shall be received, at the time of such transfer or exercise:

(i) A representation in writing from the proposed transferee that the Warrant is being transferred or the Common Stock being purchased is being acquired for investment and not with a view to any sale or distribution thereof which would constitute or result in a violation of the Act;

(ii) an opinion of counsel, which opinion is reasonably satisfactory to the Issuer, that the transaction shall not result in a violation of state or federal securities laws.

(b) In such case, each certificate representing the Warrant and the Warrant Shares shall bear a legend substantially in the following form:

> THE SECURITIES REPRESENTED BY THIS CERTIFICATE HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED (THE "SECURITIES ACT"). THE HOLDER HEREOF, BY PURCHASING THIS SECURITY, AGREES FOR THE BENEFIT OF EMCORE CORPORATION (THE "COMPANY") THAT THIS SECURITY MAY BE RESOLD, PLEDGED OR OTHERWISE TRANSFERRED ONLY: (1) TO THE COMPANY (UPON REPURCHASE THEREOF OR OTHERWISE), (2) IN AN OFFSHORE TRANSACTION IN ACCORDANCE WITH THE MEANING OF REGULATION S UNDER THE SECURITIES ACT, AS THE SAME MAY BE AMENDED FROM TIME TO TIME, PROVIDED THAT THE CONDITIONS OF REGULATION S FOR RESALES HAVE BEEN SATISFIED, (3) PURSUANT TO AN EXEMPTION FROM REGISTRATION IN ACCORDANCE WITH RULE 144 AVAILABLE) UNDER THE SECURITIES ACT, AS THE SAME MAY BE AMENDED FROM TIME TO TIME, (4) IN RELIANCE ON ANOTHER EXEMPTION FROM THE REGISTRATION REQUIREMENTS OF THE SECURITIES ACT, AND SUBJECT TO THE RECEIPT BY THE COMPANY OF AN OPINION OF COUNSEL TO THE EFFECT THAT SUCH TRANSFER DOES NOT REQUIRE REGISTRATION UNDER THE SECURITIES ACT, OR (5) PURSUANT TO AN EFFECTIVE REGISTRATION STATEMENT UNDER THE SECURITIES ACT, IN EACH CASE IN ACCORDANCE WITH APPLICABLE SECURITIES LAWS OF ANY STATE OF THE UNITED STATES.

6. NO IMPAIRMENT. The Company will not, by amendment of its charter or through reorganization, consolidation, merger, dissolution, sale of assets or any other voluntary action, avoid or seek to avoid the observance or performance

of any of the terms of this Warrant, but will at all times in good faith assist in the carrying out of all such terms and in the taking of all such action as may be necessary or appropriate in order to protect the rights of the holder of this Warrant against impairment.

7. RESERVATION OF STOCK. The Company will at all times reserve and keep available, solely for issuance and delivery upon the exercise of this Warrant, such number of Warrant Shares and other stock, securities and property as from time to time shall be issuable upon the exercise of this Warrant.

8. EXCHANGE OF WARRANTS. Upon the surrender of the Registered Holder of any Warrant or Warrants, properly endorsed, to the Company at the principal office of the Company, the Company will, subject to the provisions of Section 5 hereof, issue and deliver to or upon the order of such Holder, at the Company's expense, a new Warrant or Warrants of like tenor, in the name of such Registered Holder or as such Registered Holder (upon payment by such Registered Holder of any applicable transfer taxes) may direct.

9. REPLACEMENT OF WARRANTS. Upon receipt of evidence reasonably satisfactory to the Company of the loss, theft, destruction or mutilation of this Warrant and (in the case of loss, theft or destruction) upon delivery of an indemnity agreement (with surety if reasonably required in an amount reasonably satisfactory to the Company), or in the case of mutilation upon surrender and cancellation of this Warrant, the Company will issue, in lieu thereof, a new Warrant of like tenor.

10. TRANSFERS, ETC.

(a) The Company will maintain a register containing the names and addresses of the Registered Holders of this Warrant. Any Registered Holders may change its or his address as shown on the warrant register by written notice to the Company requesting such change.

(b) Subject to the provisions of Section 5 hereof, this Warrant and all rights hereunder are transferable, in whole or in part, upon surrender of this Warrant with a properly executed assignment (in the form of EXHIBIT II hereto) at the principal office of the Company.

(c) Until any transfer of this Warrant is made in the warrant register, the Company may treat the Registered Holder of this Warrant as the absolute owner hereof for all purposes; PROVIDED, HOWEVER, that if and when this Warrant is properly assigned in blank, the Company may (but shall not be obligated to) treat the bearer hereof as the absolute owner hereof for all purposes, notwithstanding any notice to the contrary.

11. REQUIRED NOTICES. The Company shall give the Registered Holder such notices as it may, from time to time, be required to give the holders of the Common Stock, as if the Registered Holder was a holder of Common Stock at the time such notices are required to be given. The Company shall also give Registered Holder written notice of: (i) each adjustment of the Purchase Price or other warrant item made pursuant to Section 2 hereof; and (ii) of each

dividend and distribution payable with respect to any security which may be acquired by exercise of the Warrant, at least ten (10) business days prior to the record date for such dividend or distribution so that the Registered Holder may exercise the warrant and participate in the dividend or distribution

12. MAILING OF NOTICES, ETC. All notices and other communications from the Company to the Registered Holder of this Warrant shall be mailed by first-class certified or registered mail, postage prepaid, to the address furnished to the Company in writing by the last Registered Holder of this Warrant who shall have furnished an address to the Company in writing. All notices and other communications from the Registered Holder of this Warrant who shall have furnished an address to the Company in writing. All notices and other communications from the Registered Holder of this Warrant or in connection herewith to the Company shall be mailed by first-class certified or registered mail, postage prepaid, to the Company at its principal office set forth below. If the Company should at any time change the location of its principal office to a place other than as set forth below, it shall give prompt written notice to

the Registered Holder of this Warrant and thereafter all references in this Warrant to the location of its principal office at the particular time shall be as so specified in such notice.

EMCORE Corporation
Attention: Secretary
394 Elizabeth Avenue
Somerset, New Jersey 08873-1214

13. NO RIGHTS AS STOCKHOLDER. Until the exercise of this Warrant, the Registered Holder of this Warrant shall not have or exercise any rights by virtue hereof as a stockholder of the Company.

14. CHANGE OR WAIVER. Any term of this Warrant may be changed or waived only by an instrument in writing signed by the party against which enforcement of the change or waiver is sought.

15. HEADINGS. The headings in this Warrant are for purposes of reference only and shall not limit or otherwise affect the meaning of any provision of this Warrant.

16. GOVERNING LAW. This Warrant will be governed by and construed in accordance with the internal laws of the State of New Jersey.

EMCORE CORPORATION

[CORPORATE SEAL] By: _____
Reuben Richards, President

ATTEST:

- _____
Thomas G. Werthan, Secretary

Exhibit I

PURCHASE FORM

TO: EMCORE CORPORATION Dated: _____

The undersigned, pursuant to the provisions set forth in the attached Warrant (No. _____, hereby irrevocably elects to purchase _____ shares of the Common Stock of Emcore Corporation covered by such Warrant and herewith makes payment of $_____ representing the full purchase price for such shares at the price per share provided for in such Warrant either in cash or by delivery of an equal principal amount of the Company's Floating Rate Subordinated Note, due May 1, 2001, in an equal amount.

Holder: _____

Address:_____

Phone:_____

Fax:_____

Exhibit II

ASSIGNMENT FORM

FOR VALUE RECEIVED, _____ hereby sells, assigns and transfers all of the rights of the undersigned under the attached Warrant (No. _____) including the right to purchase the number of shares of EMCORE Corporation Common Stock covered thereby set forth below, unto:

NAME OF ASSIGNEE	ADDRESS	NO. OF SHARES

Dated:_____

Signature:_____

Dated:_____

Witness:_____

SECOND AMENDED AND RESTATED DISTRIBUTORSHIP AGREEMENT

THIS SECOND AMENDED AND RESTATED DISTRIBUTORSHIP AGREEMENT, effective as of March 31, 1998 (as amended, modified or supplemented from time to time, the "Agreement"), by and between EMCORE CORPORATION, a corporation duly organized and existing under the laws of New Jersey, having its principal place of business at 394 Elizabeth Avenue, Somerset, New Jersey 08873 ("Emcore"), and HAKUTO CO. LTD., a corporation duly organized and existing under the laws of Japan, having its principal place of business at 1-13, Shinjuku, 1-chome, Shinjuku-ku, Tokyo 160, Japan ("Hakuto"), amends, restates, replaces and supersedes that certain Amended and Restated Distributorship Agreement, dated as of January 20, 1998, retroactively effective as of July 12, 1995, by and between Emcore and Hakuto (the "Amended Distributorship Agreement").

W I T N E S S E T H:

WHEREAS, Emcore is engaged in the business of manufacturing technical and industrial products; and

WHEREAS, Hakuto is engaged in the business of, among other things, marketing and selling products throughout the world; and

WHEREAS, the parties heretofore entered into the Amended and Restated Distributorship Agreement pursuant to which Hakuto distributed certain Emcore products in defined markets, and the parties desire to revise the terms of the Amended and Restated Distributorship Agreement in accordance with which revised terms Hakuto will continue to serve as Emcore's distributor.

NOW, THEREFORE, in consideration of the mutual covenants and agreements contained herein, Emcore and Hakuto do hereby agree as follows:

1. DEFINITIONS. As used in this Agreement, the following terms shall have the following meanings:

"CHANGE OF CONTROL" means: (1) the acquisition by any party, or any group acting in concert (other than a group consisting exclusively of current directors and/or officers of

Emcore), of 50% or more of the issued and outstanding capital stock of Emcore; or (2) the sale by Emcore of assets that significantly reduces Emcore's ability to produce Mode Items, Pegasus Items or E2M Items.

"EQUIPMENT" means any or all items listed in Part 1 of Exhibit A attached hereto and made a part hereof, including all Modifications and Improvements thereto.

"E2M ITEMS" means any or all items listed in Part 2 of Exhibit A attached hereto and made a part hereof, including all Modifications and Improvements thereto.

"MODE ITEMS" means any or all items listed in Part 3 of Exhibit A attached hereto and made a part hereof, including all Modifications and Improvements thereto.

"MODIFICATION" AND "IMPROVEMENT" means any and all alterations, whether patentable or not, or copyrightable or not, to the Products or the name or designation thereof, or of the method of manufacture, design, construction, installation, maintenance or sale of products.

"NEW CONTROL PARTY" means any party that acquires 50% or more

of the outstanding capital stock of Emcore in a Change of Control, or any party that acquires assets of Emcore in a Change of Control.

"NON-JAPAN AGREEMENTS" means, collectively, the Amended and Restated Distributorship Agreement, dated as of March 31, 1998, by and between Emcore and S&T Enterprises Ltd., a Hong Kong company, and the Amended and Restated Distributorship Agreement, dated as of January 20, 1998, by and between Emcore and S&T Enterprises (Singapore) Pte. Ltd., a Singapore company.

"PEGASUS ITEMS" means any or all items listed in Part 4 of Exhibit A attached hereto and made a part hereof, including all Modifications and Improvements thereto.

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"PRODUCTS" means, collectively, Equipment, Mode Items, Pegasus Items and E2M Items.

[*]

"TERRITORY" means the country of Japan, provided, however, if Hakuto develops a business prospect or prospective customer in the Philippines, Hakuto shall advise Emcore forthwith of such business prospect and request that the Philippines be made a part of Hakuto's exclusive territory. Upon receipt of such request, Emcore shall give first priority to Hakuto to act as Emcore's exclusive distributor in the Philippines, and the Philippines shall thereupon be added to this Agreement as part of the Territory.

2. EXCLUSIVE DISTRIBUTORSHIP.

2.1 APPOINTMENT AND ACCEPTANCE. Emcore hereby appoints Hakuto as the sole and exclusive distributor of the Products in the Territory and Hakuto accepts such appointment, all in accordance with the terms and conditions set forth in this Agreement. Without limiting the foregoing, Emcore shall refer to Hakuto: (1) all inquiries concerning the Products from parties in the Territory or parties outside the Territory who may deliver, or cause to be delivered, Products in the Territory; and (2) orders for Products from customers or potential customers in the Territory, or orders originating outside the Territory that may require intermediate or ultimate delivery or use of Products in the Territory. During the term of this Agreement, Emcore shall not appoint or designate, directly or indirectly, any distributor of the Products in the Territory other than Hakuto and shall not itself, directly or indirectly, sell any of the Products in the Territory.

2.2 COMPENSATION TO HAKUTO. As indicated in SECTION 2.7 of this Agreement, the relationship between Emcore and Hakuto is that of seller and purchaser, respectively, and Hakuto

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shall be compensated for Hakuto's ultimate sale of the Products to Hakuto's customers through [*]; provided, however, that, given the global market and expected competitive pressures on the prices of the Products in the Territory, from time to time Hakuto and Emcore shall consult regarding the pricing of the Products, and, to the extent that Hakuto cannot be compensated to Hakuto's satisfaction by the [*], Hakuto shall receive, for all sales of Mode Items, E2M Items and Pegasus Items in the Territory, at least [*] of the total amount invoiced to Hakuto's customer in connection with any such sale. Without limiting the foregoing, Emcore shall pay to Hakuto [*] of the total invoice amount in connection with all sales outside the Territory of Mode Items, Pegasus Items and E2M Items that are designed in the Territory but produced or further designed outside the Territory and the territories specified in the Non-Japan Agreements.

2.3 LICENSE ROYALTY FEES. Emcore shall promptly pay to Hakuto [*] of all license royalties, fees and other compensation accruing, directly or indirectly, to or received by Emcore in connection with Emcore's technology sharing arrangements (including, but not limited to, licensing and leasing) of Mode Items: (1) in the Territory or (2) to any customer procured by Hakuto but relating to arrangements outside of the Territory and the territories specified in the Non-Japan Agreements (the "Licensing Royalty Fee").

2.4 REVIEW OF COMPENSATION AND LICENSING ROYALTY FEE. Hakuto and Emcore shall: (1) review compensation and Licensing Royalty Fee on the second anniversary of the effective date of this Agreement and on every other anniversary date thereafter; and (2) alter such compensation and Licensing Royalty Fee, if agreed to by both Hakuto and Emcore.

2.5 FEES PAYABLE TO EMCORE. In consideration of the distribution rights granted by Emcore to Hakuto in this Agreement and in the Non-Japan Agreements, Hakuto shall pay to Emcore [*] as follows: (1) [*] upon execution of this Agreement; and (2) an additional [*] will be due in four equal installments, such installments equaling [*] for each [*] in sales orders (for

which Hakuto and any of its affiliates under the Non-Japan Agreements is compensated hereunder) for Mode Items, Pegasus Items and E2M Items generated in the Territory or in the territories specified in the Non-Japan Agreements.

2.6 BEST EFFORTS. Hakuto shall exert its best efforts to sell the Products in the Territory. Specifically, and not in limitation hereof, if Emcore, based on its independent market research, believes that certain of the Products should be targeted to specific customers in the Territory, Emcore shall convey its findings to Hakuto forthwith, whereupon Hakuto shall promptly exert its full and best efforts to address these markets and Hakuto will confer with Emcore regarding the best marketing strategies to promote sales of the Products, and Hakuto will otherwise fully coordinate its sales efforts with Emcore. Hakuto shall not market, distribute, sell or advertise for sale within the Territory any products that are competitive with the Products.

2.7 NO AGENCY. The relationship between Emcore and Hakuto shall not be that of a principal and agent, but shall be that of a seller and purchaser, each acting as an independent contractor. Neither Hakuto nor Emcore shall have the right or authority to incur, assume or create, in writing or otherwise, any warranty, liability or obligation of any kind, express or implied, in the name of or on behalf of the other party.

2.8 SUBDISTRIBUTORS. Hakuto shall not appoint any subdistributor or subagent to perform any of its obligations under this Agreement without the

prior written consent of Emcore. Nothing herein, however, shall prohibit Hakuto from assigning certain parts of the Territory, or certain customers in the Territory, to its subsidiaries and affiliates. If Hakuto makes any such assignment to a subsidiary or affiliate, Hakuto and Emcore shall nevertheless be responsible for the obligations created hereunder.

2.9 MARKETING. Notwithstanding the exclusive sales rights granted to Hakuto, Emcore may at its own expense and from time to time dispatch to the Territory its personnel to engage in market research, Product promotion, and other marketing activities, provided that all such activities shall at all times be coordinated with Hakuto, conducted with full disclosure to and knowledge of Hakuto, and provided further that any potential sale of any Products resulting from

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such activities of Emcore shall be referred to and channeled exclusively through Hakuto, pursuant to the terms of this Agreement.

2.10 PRODUCT MODIFICATION, IMPROVEMENT AND DISCONTINUANCE. Emcore shall have the right to make Modifications and Improvements, and to discontinue production of any or all of the Products in its sole discretion, provided, that: (1) Emcore shall give Hakuto not less than ninety (90) days' notice prior to the discontinuance, Modification or Improvement of any Product; and (2) any Modification or Improvement by Emcore of any Product shall be deemed to be added to Exhibit A hereto by reference.

3. ORDERS AND PRICE TERMS.

3.1 PRODUCTS. Hakuto may submit to Emcore from time to time requests for quotations with respect to any Products. Each such request for a quotation shall identify Hakuto's prospective customer and shall set forth detailed specifications for the Products required, including all optional features. Emcore may respond to any such request by submitting a quotation on Emcore's standard form setting forth the sales price to Hakuto for such Products.

3.2 EQUIPMENT; AND EQUIPMENT SPARE PARTS. At Hakuto's specific request, Emcore will include in its quotations for Equipment: (1) a firm price for Emcore's installation or assistance in installing the Equipment; and/or (2) a firm price for Emcore's assistance in the start-up of the Equipment and a demonstration of basic material specifications, provided that, in each case, such request contains sufficiently detailed information regarding the nature of the installation or assistance required or the material specifications to be demonstrated. Hakuto may submit to Emcore from time to time purchase orders with respect to spare parts or components included as Equipment under this Agreement ("Spare Parts"), setting forth the quantity and desired delivery date of such Spare Parts. The price for any Spare Part shall be [*]. Emcore reserves the right to

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change its Spare Parts price list from time to time upon not less than ninety (90) days' prior written notice to Hakuto.

3.3 OTHER TERMS. The terms and conditions on purchase orders issued by Hakuto and quotations issued by Emcore shall be deemed to be a part of this Agreement as a supplement hereto, provided that any provision in such purchase order or quotation which is inconsistent with or contrary to the provisions of this Agreement shall be deemed to be deleted from the purchase order or quotation and of no force or effect unless the parties shall have specifically agreed in writing that said provision in the purchase order or provision is intended to supersede the inconsistent provision of this Agreement, in which case the provisions of the purchase order or quotation shall prevail solely with respect to such purchase order. All prices quoted by Emcore shall be F.O.B. Emcore's plant in Somerset, New Jersey or, in the case of Mode Items, F.O.B. Emcore's plant in Albuquerque, New Mexico. The quotations issued by Emcore for Products shall be valid for not less than ninety (90) days (unless otherwise specified in writing by Emcore). To be effective, all purchase orders must be accepted in writing by Emcore at its plant in Somerset, New Jersey.

4. PAYMENT TERMS.

4.1 EQUIPMENT. Hakuto shall pay for Equipment purchased under this Agreement as follows: [*] either (a) not later than one hundred eighty (180) days prior to the scheduled delivery date of the Equipment, or (b) within thirty (30) days after issuance of Hakuto's purchase order or Hakuto's letter of intent if delivery of the Equipment is scheduled thereafter sooner than one hundred eighty (180) days after the date of the purchase order or letter of intent. Any payment accompanying a letter of intent shall be refundable to Hakuto in the event that the anticipated purchase order is not issued by reason of the customer's change of plans or the

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SECURITIES AND EXCHANGE COMMISSION.
ASTERICKS DENOTE SUCH OMISSIONS.

customer's other business decision; and (2) [*] after shipment of the Equipment by Emcore and delivery of a bill of a lading evidencing such shipment.

4.2 SPARE PARTS. Hakuto shall remit payment in full to Emcore for all Spare Parts purchased under this Agreement within thirty (30) days after shipment by Hakuto to Hakuto's customer.

4.3 MODE ITEMS; PEGASUS ITEMS; E2M ITEMS. Hakuto shall remit payment in full to Emcore for all Mode Items, Pegasus Items and E2M Items purchased under this Agreement within sixty (60) days after delivery to Hakuto.

4.4 NO ADJUSTMENTS OR DEDUCTIONS. All payments for Products shall be in U.S. dollars without adjustment for any currency exchange or conversion rate changes and without deduction for any taxes at any time levied by any governmental authority.

5. SHIPMENT.

5.1 TAXES AND COSTS. All Products shall be shipped via carrier designated in the purchase order, F.O.B. Emcore's plant in Somerset, New Jersey or, in the case of Mode Items, F.O.B. Emcore's plant in Albuquerque, New Mexico. Hakuto shall bear and pay for all taxes of any nature (except for taxes assessed upon or due in connection with Emcore's income) imposed by any taxing authority after delivery to the carrier at the F.O.B. point. Hakuto shall also bear and pay for all charges for freight, shipping, consular fees, customs duties, and all costs and expenses incurred after delivery of the Products to the carrier at the F.O.B. point. Hakuto shall bear all risk of loss or damage to the Products after delivery to the carrier at the F.O.B. point.

5.2 SHIPPING DATES. Shipping dates, even though accepted by Emcore, shall be understood only as best estimates. Emcore shall attempt to respect all shipping dates, but, except as set provided in SECTION 7.5, shall not be liable to Hakuto for damages arising from any delay in shipment or delivery, however caused, except as otherwise expressly agreed by Emcore in writing on a case-by-case basis. If Emcore experiences shipping or production delays, Emcore shall not allocate Products to parties other than Hakuto, unless Hakuto is allocated Products on a pro-rata basis with such other parties.

5.3 SHORTAGE OR DEFECT. Except as provided in SECTION 7.5, Emcore shall not be liable for any obvious shortage of Products or for any patently obvious defect in Products discoverable by visual inspection with respect to any shipment received by Hakuto, unless Hakuto notifies Emcore in writing of such obvious shortage or patently obvious defect, prior to the earlier to occur of: (1) the expiration of sixty (60) days after receipt of such shipment by Hakuto; or (2) the expiration of twenty (20) days after Hakuto ships such Products to Hakuto's customer. Upon receipt of such notice, together with evidence that such obvious shortage or patently obvious defect exists, and subject to the provisions of SECTION 7.5, Emcore reserves the right, at its election, to replace Products found to be defective or short in quantity, to issue a credit to Hakuto for the prorated invoice amount relating to such shortage or defect, or to repair Products found to be defective, all such remedial action to be taken by Emcore promptly without material adverse effect upon Hakuto or its customer.

6. EQUIPMENT INSTALLATION AND SERVICE.

6.1 GENERAL. Except as set forth below with respect to warranty service, and except as provided in SECTION 7.5 and otherwise expressly provided in quotations for Equipment issued by Emcore, Hakuto shall be responsible at its own expense for the installation and service of all Equipment purchased under this Agreement. Hakuto shall maintain trained personnel and shall purchase and maintain an inventory of Spare Parts sufficient in volume and assortment to promptly and efficiently perform necessary installation and service functions for all Equipment in the Territory. Hakuto shall give due consideration to Emcore's suggested minimum inventories for various Spare Parts.

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6.2 INITIAL AND POST-INSTALLATION SERVICE FEES. Emcore shall make certain personnel available to assist Hakuto in the initial installation of Equipment at the customer's facility as well as in servicing Equipment after installation until such time as Hakuto personnel are fully trained and are capable, in Emcore's reasonable judgment, to perform such functions. The costs of initial installation shall be borne by Emcore (i.e., included in the sale price of the Equipment) unless other fee arrangements are agreed between Emcore and Hakuto on a specific transaction. Hakuto shall pay Emcore for post-installation servicing at the rate of [*] per person per day for field service engineers and [*] per person per day for material process engineers, plus travel and living expenses. Said reimbursement rates are based on the U.S. Consumer Price Index in effect on the effective date of this Agreement and shall be subject to adjustment on an annual basis to conform to any increase or decrease in said U.S. Consumer Price Index as of each anniversary date of this Agreement.

7. WARRANTY, INSURANCE AND INDEMNIFICATION.

7.1 WARRANTIES RELATING TO EQUIPMENT.

7.1.1 MATERIAL AND QUALITY. Subject to the disclaimers, limitations and exclusions set forth below, and subject to the provisions of SECTIONS 7.5 and 10.5, Emcore warrants to Hakuto and to the end user customer of the Equipment that the Equipment shall be free from defects in design, materials and quality. This warranty shall become effective upon delivery of the Equipment to the end user customer of Hakuto, and shall extend for a period of one (1) year from the date of acceptance of the Equipment by the end user customer. Hakuto shall notify Emcore from time to time of the installation completion and customer acceptance date of Equipment. With respect to any non-conforming Products as to which Emcore shall have received notification of such non-

conformance within twenty (20) days after discovery of same, Emcore shall, subject to the provisions of SECTIONS 7.5 and 10.5, at its election repair the same or provide a replacement Product at no cost to Hakuto or the end user. Subject to SECTIONS 7.5 and 10.5, Emcore shall not be liable for the cost of any labor or transportation charges incurred in the repair or replacement of any non-conforming Products, other than: (1) labor costs incurred by Emcore for Product repairs performed in the United States; (2) cost of transportation incurred by Emcore in the United States; and (3) upon Emcore's express written instructions only, costs of transportation by Hakuto to Emcore of Products to be repaired by Emcore in the United States.

7.1.2 WARRANTY AS TO SPECIFICATIONS. Emcore warrants that all Products shall conform to the published specifications of Emcore or the specifications of an end user customer approved and accepted by Emcore. With respect to any non-conforming Product under this warranty, Emcore shall perform all necessary re-engineering, rework or other procedures necessary to conform the Product to the agreed specifications. Specifically, Emcore shall be responsible for labor, travel and living costs of Emcore personnel whether incurred in the United States or in Japan.

7.1.3 EXCLUSIONS AND DISCLAIMER. Emcore's warranties set forth in SECTIONS 7.1.1 and 7.1.2 do not apply to expendable items, including those items listed in Exhibit B attached hereto. Also excluded from Emcore's foregoing warranties are any components identified by Emcore to Hakuto as being the subject of manufacturer's or licensor's warranties, which warranties shall be deemed assigned to Hakuto at the time title to the goods passes to Hakuto. With respect to all such components, subject to the provisions of SECTIONS 7.5 and 10.5, Hakuto's remedy shall be limited to the warranty and remedy provided by the manufacturer or the licensor of said components, and Emcore's liability obligation shall be limited to the exercise of its best efforts to assist Hakuto in obtaining the benefit of such manufacturer's or licensor's warranties. The foregoing limitation with respect to components shall not apply to Emcore manufactured or designed components.

THE FOREGOING IS IN LIEU OF AND EXCLUDES ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE AND, SUBJECT TO THE PROVISIONS OF SECTIONS 7.5 AND 10.5, SHALL CONSTITUTE THE SOLE REMEDY OF HAKUTO AND LIABILITY OF EMCORE WITH RESPECT TO ANY PRODUCTS DELIVERED PURSUANT TO THIS AGREEMENT. EXCEPT AS PROVIDED IN SECTIONS 7.5 AND 10.5, IN NO EVENT SHALL EMCORE BE LIABLE FOR DAMAGES OF ANY KIND OR NATURE RESULTING FROM IMPROPER OR NEGLIGENT USE OR OPERATION OF PRODUCTS, IMPROPER PREVENTATIVE MAINTENANCE, MODIFICATIONS FROM THE ORIGINAL SYSTEM CONFIGURATION OR REPAIR BY PERSONNEL OTHER THAN THOSE IN THE EMPLOY OF EMCORE, OR THOSE IN THE EMPLOY OF HAKUTO WHO HAVE BEEN TRAINED AND APPROVED BY EMCORE. EXCEPT AS PROVIDED IN SECTIONS 7.5 AND 10.5, IN NO EVENT SHALL EMCORE BE LIABLE FOR CONSEQUENTIAL DAMAGES, ANTICIPATED OR LOST PROFITS, INCIDENTAL DAMAGES OR LOSS OF TIME OR OTHER LOSSES OR EXPENSES INCURRED BY HAKUTO OR ANY END USER CUSTOMER, DIRECTLY OR INDIRECTLY, IN CONNECTION WITH THE SALE, HANDLING OR USE OF THE PRODUCTS COVERED BY EMCORE'S WARRANTY.

7.2 WARRANTIES RELATING TO MODE ITEMS, PEGASUS ITEMS AND E2M ITEMS.

7.2.1 MATERIAL, QUALITY AND SPECIFICATIONS. Subject to the provisions of SECTIONS 7.5 and 10.5, Emcore warrants to Hakuto and to the end user customer that for a period beginning upon delivery of the Applied Products to Hakuto or to the end user customer and continuing until the date one (1) year from the date of acceptance by the end user customer that any Applied Products delivered to Hakuto or the end user customer shall be free from defects in material, workmanship and quality and shall meet the specifications set forth in its specifications sheets or specifications as agreed formally with

the end user customer or as mutually agreed by Emcore and Hakuto from time to time hereafter.

7.2.2 EXCLUSIONS AND DISCLAIMER. THE EXPRESS WARRANTY GRANTED ABOVE SHALL EXTEND DIRECTLY TO AUTHORIZED DISTRIBUTORS AND, EXCEPT AS PROVIDED IN SECTIONS 7.5 AND 10.5, IS IN LIEU OF ALL OTHER WARRANTIES, WHETHER EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PARTICULAR PURPOSE. Except as provided in SECTION 7.5 and 10.5, Emcore will be liable under this warranty only for replacement of the defective Product or, at the option of Hakuto or the customer, credit of the Customer Price of the defective Product.

7.3 SPARE PARTS CONSIGNMENT INVENTORY. Emcore shall be responsible for supplying all Spare Parts necessary to satisfy Emcore's obligations under the foregoing warranties, and Hakuto shall be responsible for supplying all installation or service relating to the warranty program except as otherwise provided in SECTIONS 7.1.1 and 7.1.2 with respect to specification non-conformance. Emcore agrees to maintain with Hakuto, at such location in the Territory as Hakuto may designate, a consignment inventory of Spare Parts ("Consignment Inventory") determined by Emcore to be reasonably necessary for the prompt and efficient delivery of warranty service. Hakuto agrees to provide to Emcore periodic reports setting forth: (1) with respect to all warranty claims made during such month, the identity of the end user, the nature of the claim, the service provided and the Spare Parts used, if any, in providing such service; and (2) the current levels of all Spare Parts comprising the Consignment Inventory.

7.4 INSURANCE. Emcore shall maintain in force during the term of this Agreement, and for a period of five (5) years thereafter, product liability insurance based on an occurrence basis rather than a claims made basis, with respect to the Products, in an amount not less than Two Million Dollars ($2,000,000) per person and Two Million Dollars ($2,000,000) per occurrence. Such insurance policies shall name Hakuto as an additional insured, or shall contain coverage protecting Hakuto as a vendor of the Products. Emcore shall furnish Hakuto with properly executed Certificates of Insurance. Such insurance policies shall include the obligation of the

insurer to notify Hakuto, not less than thirty (30) days in advance, of any reduction, non-renewal or cancellation of the foregoing insurance. In the event that Emcore fails to purchase or maintain in force the above insurance, Hakuto may purchase such insurance on Emcore's account, and at Emcore's expense, and nothing herein shall waive Emcore's obligation to purchase and maintain such insurance.

7.5 INDEMNIFICATION. Emcore shall indemnify and, at its own expense and with diligence, defend and hold Hakuto, its subsidiaries and affiliates, and their respective customers, free and harmless from and against any and all claims, losses, damages, suits, causes of action, obligations and/or liabilities (and against all associated costs and expenses, including, without limitation, reasonable attorneys' fees and costs of litigation) whenever and wherever they may occur, arising directly or indirectly from the sale or use of the Products, provided, however, Emcore's obligation to indemnify Hakuto under this paragraph shall not extend to any claims, losses, damages, suits, causes of action, obligations and/or liabilities arising out of the gross negligence or intentional wrongful conduct of the claimant.

8. OBLIGATIONS OF HAKUTO.

8.1 GENERAL OBLIGATIONS. In addition to and not in limitation of any other obligations of Hakuto under this Agreement, Hakuto shall, at its own expense unless otherwise expressly provided herein:

8.1.1 exert its best efforts to vigorously promote the sale of the Products in the Territory and to develop a market demand for the Products in the Territory;

8.1.2 advertise the Products throughout the Territory in appropriate advertising media and in a manner insuring proper and adequate publicity for the Products, provided that Emcore shall be given the opportunity to review and approve all advertising prior to release by Hakuto;

8.1.3 prepare for Emcore's review and approval, and update not less than quarterly, a detailed marketing plan for the sale of the Products in the Territory;

8.1.4 establish and maintain within the Territory adequate business locations, including suitable facilities for the display, care and storage of the Products and provide adequate insurance against loss;

8.1.5 maintain within the Territory an inventory of Spare Parts (in addition to the Consignment Inventory) sufficient to meet expected demands for service and upgrading of the Equipment in the Territory;

8.1.6 maintain a trained technical sales force and sufficient other personnel qualified to promote, install and service the Equipment in the Territory and send appropriate personnel to Emcore for one week training on an annual basis;

8.1.7 offer the Products for sale (including all advertising and promotional activities) under the Emcore trademark as manufacturer and Hakuto's trademark as distributor;

8.1.8 assume full responsibility for the installation of the Equipment, and the warranty and post-warranty service and maintenance of the Equipment, in the Territory;

8.1.9 translate and prepare promotional and technical literature for use in the Territory;

8.1.10 obtain all import and regulatory approvals necessary for the promotion and sale of the Products in the Territory, supply Emcore with necessary customer import certificates, and otherwise advise and assist Emcore in

complying with U.S. regulations and with regulations and customs applicable in the Territory;

8.1.11 provide Emcore with periodic reports (but not less often than quarterly) in form and substance reasonably satisfactory to Emcore, setting forth detailed information for such period regarding sales, quotations, promotional efforts made, advertising, resale prices, competitors, activities in the Territory, installation and service activities performed, customer complaints, business trends and any other information likely to assist Emcore in evaluating the performance of Hakuto in the Territory;

8.1.12 establish and maintain complete and accurate records of all sales and service of the Products in the Territory;

8.1.13 refrain, without Emcore's prior written consent, from seeking customers outside the Territory or from promoting the sale of the Products outside the Territory;

8.1.14 refrain from purchasing or soliciting orders for goods which directly compete in any way with the Products; and

8.1.15 (1) immediately assign a full time sales manager; (2) within 60 days of the date of this Agreement, appoint an additional sales person to specialize in the distribution of Mode Items, Pegasus Items and E2M Items; and (3) within one year of the date of this Agreement, form a group to specialize in the distribution of Mode Items, Pegasus Items and E2M Items.

8.2 EQUIPMENT MINIMUM PURCHASE OBLIGATION. With respect to Equipment, Hakuto shall have a minimum purchase obligation during each year of the term of this Agreement

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("Contract Year"). Hakuto will submit to Emcore purchase orders during each of the [*]. For each succeeding Contract Year of the Agreement, Hakuto and Emcore shall mutually agree on a minimum purchase order amount for each such year prior to commencement of such Contract Year. In computing the value of the minimum purchase amount for each Contract Year, there shall be included the value of all

Equipment shipped during said Contract Year, the value of orders placed by Hakuto though not shipped by Emcore during the Contract Year, and the value of orders procured by Hakuto but canceled by Hakuto's customer by reason of Emcore's inability to perfect delivery of the Equipment within six (6) months from date of the order. The value of all of the foregoing orders which exceeds the minimum purchase commitment for any Contract Year shall be credited to Hakuto's minimum purchase order commitment for the subsequent Contract Year. "Contract Year" means the twelve (12) month period commencing on the date of this Agreement and each twelve (12) month period thereafter during the term of this Agreement or any renewal term thereafter.

9. OBLIGATIONS OF EMCORE. In addition to and not in limitation of any other obligations of Emcore under this Agreement, Emcore shall, at its own expense, provide Hakuto with periodic reports (but not less often than quarterly) in form and substance satisfactory to Hakuto, setting forth detailed information for such period regarding production costs and margins with respect to the Products and any other information likely to assist Hakuto in evaluating pricing options.

10. TRADEMARK AND PATENT RIGHTS.

10.1 LICENSE GRANT. Exhibit C attached hereto and made a part hereof identifies all registered, recorded or issued material intellectual property, including registered copyrights and trademarks, issued patents and applications for any of the foregoing, which have been, or, with respect to applications, may be issued to or registered by Emcore in the Territory (which listed items, together with other intellectual property in which Emcore claims a proprietary interest in

the Territory such as, inter alia, know-how and common law trademarks shall hereafter be referred to as "Intellectual Property"). Hakuto is hereby granted a license and privilege to use all of the Intellectual Property, including any improvements, modifications or functional equivalents, during the term of this Agreement in furtherance of the objectives of this Agreement. Hakuto shall not have the right to sublicense (except to Hakuto's subsidiaries and affiliates) the Intellectual Property or otherwise permit its use by third parties without Emcore's prior written consent. If Hakuto is required by law to register its licenses in Japan or, in its sole discretion, determines that registration hereof should be effected in order to protect the rights and interests of Hakuto hereunder, then Emcore shall cooperate with Hakuto to effect the same.

10.2 HAKUTO COOPERATION. Hakuto shall advise Emcore from time to time of any additional filings, registrations or other actions that may be necessary or desirable for the protection of Emcore's Intellectual Property in the Territory. Upon Emcore's request, Hakuto shall assist Emcore in connection with the issuance or registration of any new Emcore patents, copyrights, trademarks or other Intellectual Property in the Territory.

10.3 INFRINGEMENT. Hakuto shall at all times respect and protect Emcore's rights of total ownership of the Intellectual Property in the Territory. Hakuto shall promptly notify Emcore of any infringements of such rights of which Hakuto has notice and shall assist Emcore in taking such action against such infringement as Emcore may elect.

10.4 TERMINATION OF LICENSE. Upon termination of this Agreement for any reason, Hakuto shall promptly relinquish to Emcore any rights to the use of the Intellectual Property and shall thereafter refrain from using the same.

10.5 INFRINGEMENT INDEMNIFICATION. If Hakuto or its customers are served notice of alleged infringement of any patents, designs, copyrights and/or trademarks arising from the sale or use of any of the Products, Emcore shall, at its own expense and with diligence, defend and hold Hakuto and its customers free and harmless from and against any and all claims, loss, damage, suits, causes of action and/or liability (and against all associated costs and expenses, including, without limitation, reasonable attorneys' fees and costs of litigation) whenever and wherever they

may occur, on account of said alleged infringement; provided, however, that Emcore shall have no obligation to indemnify Hakuto or its customers to the extent the alleged infringement is due solely to: (a) a Product modification by Hakuto or the customer; (b) use of a Product in combination with any other device or thing; or (c) failure to use the Product in accordance with its customary use or in conformity with Emcore's instructions and operating guidelines. If Emcore shall fail or refuse to do so, Hakuto and its customers may take such action as Hakuto or its customer, or jointly, may deem necessary, and all costs, attorneys' fees, losses or damages as may be incurred by Hakuto or its customers shall be the obligation of Emcore to be recovered by Hakuto or its customers by suit or otherwise.

10.6 QUALITY CONTROL. In connection with any use hereunder by Hakuto of any registered or unregistered trademark owned by Emcore, Emcore shall have the right at all times to: (a) establish and require Hakuto's adherence to quality control standards governing the repair, sale and quality of the Products; and (b) establish and require Hakuto's adherence to standards governing the manner of display of any Emcore trademark in promotional, technical and informational materials. Emcore shall have the right to request, at reasonable intervals, inspection by Emcore or its designee of Hakuto's operations and of any materials used or created by Hakuto displaying any Emcore trademark, so that Emcore can verify to its satisfaction that the Products, services and display of trademarks conform to the appropriate standard of quality.

11. CONFIDENTIALITY. Each party hereto when receiving information from the other party (in such case, a "Receiving Party") agrees to use its best efforts to hold in strict confidence and not to disclose to others or use, for a period of three years after termination hereof, any technical or business information, manufacturing technique, process, experimental work, trade secret or other confidential matter relating to the business of the party in possession of such information (such party, a "Disclosing Party") or relating to the Products, in the case of Hakuto, or the other party's business ("Confidential Information"), except to the extent necessary to further the objectives of this Agreement. This SECTION 11 shall not apply to: (1) information known to the Receiving Party prior to disclosure by the Disclosing Party of Confidential Information; (2) Confidential Information which is, or becomes through no fault of the Receiving Party, generally known or available to the public; (3) Confidential Information which is received by the Receiving Party from

third parties who are not bound by confidentiality obligations; (4) Confidential Information which the Disclosing Party discloses to a third party who is not bound by confidentiality obligations, unless such third party is a subsidiary or affiliate of the Disclosing Party; and (5) information independently developed by the Receiving Party. The Receiving Party shall, upon request (and upon termination of this Agreement without request), deliver to the Receiving Party any and all drawings, notes, documents and materials received from the Receiving Party.

12. ASSIGNMENT. Neither party shall assign, transfer or otherwise dispose of this Agreement or any of its rights or obligations hereunder in whole or in part to any individual, firm or corporation without the prior written consent of the other party, and any attempted assignment in violation of this provision shall be null and void.

13. TERM AND TERMINATION.

13.1 TERM. This Agreement shall take effect on the effective date set forth on the first page hereof and shall remain in effect for a period of ten (10) years thereafter unless earlier terminated in accordance with the terms hereof. This Agreement may be terminated by either Party upon the expiration of the ten (10) year period by giving six (6) months' prior written notice to the other party of its intent not to extend the Agreement for further periods. Unless such notice of intent to terminate is given, this Agreement shall continue to remain in effect after the initial ten (10) year period for further consecutive periods of one (1) year each, subject, however, to the right of either party to terminate the Agreement during each such extended one-year period by giving six (6) months' prior written notice to the other party of its intent to terminate.

13.2 TERMINATION. In addition to the provisions of SECTION 13.1 above, either party may terminate this Agreement as follows:

13.2.2 immediately and without prior written notice if proceedings in bankruptcy or insolvency are instituted by or against the other party, a receiver is appointed or any substantial part of the assets of the other party is the subject of attachment, sequestration or other similar proceeding, and such proceeding is not vacated, terminated or stayed within sixty (60) days after its commencement or institution; or

13.2.3 immediately upon the occurrence of a default by the other party in the performance of its obligations under this Agreement, which default is not cured within thirty (30) days after receipt by such party of written notice of the default; or

13.2.4 immediately if either party is unable to obtain or renew any material permit, license, or other governmental approval necessary to such party's performance under this Agreement.

14. CONSEQUENCES UPON TERMINATION. Upon expiration or termination of this Agreement for any reason:

14.1 REPURCHASE OF SPARE PARTS. Emcore shall repurchase Hakuto's inventory of new and unused Spare Parts at Emcore's then effective list price for such Spare Parts or Hakuto's cost therefor, whichever is lower. Hakuto shall deliver such Spare Parts, together with the Consignment Inventory, at Emcore's expense, to Emcore at such location, in such manner and at such time as Emcore may direct.

14.2 RETURN OF MATERIALS. Hakuto shall return to Emcore all proprietary information and all sales and technical literature relating to the Products, and Hakuto shall deliver to Emcore Hakuto's list of all customers and prospective customers for the Products in the Territory, including names, addresses, telephone numbers and contact persons.

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14.3 NON-COMPETITION; CESSATION OF MARKETING AND USE OF EMCORE NAME. For a period of [*] after the date of termination of this Agreement, Hakuto shall not engage in the marketing, sales or distribution of any products which may be directly competitive with the Products, provided, however, nothing herein shall prohibit Hakuto from liquidating by sale or otherwise any Products remaining in Hakuto's inventory on the date of termination and not repurchased by Emcore. Hakuto shall cease marketing the Products and using Emcore's name and trademarks in the Territory, provided that all orders for Products accepted by Emcore prior to expiration or termination of this Agreement shall be completed in accordance with their terms. Hakuto shall thereafter, for such [*] period, refer to Emcore any and all inquiries, orders, correspondence and the like, whether in written or oral form, pertaining to Products in the Territory.

14.4 ASSUMPTION OF WARRANTY OBLIGATIONS. Emcore shall assume, commencing immediately upon termination of this Agreement, full responsibility for providing warranty service and post-warranty servicing of the Equipment to all customers theretofore serviced by Hakuto, and Emcore shall hold Hakuto free and harmless from all such obligations.

14.5 COMMISSIONS. Emcore shall pay to Hakuto a commission as follows: (1) with respect to Equipment, a commission equal to [*] purchase price of any Equipment sold by Emcore (i.e., orders received and approved by Emcore) or with respect to compensation or fees received by Emcore in connection with technology sharing arrangements in or for use in the Territory within twelve (12) months after expiration or termination of this Agreement; (2) with respect to Mode Items, [*]; (3) with respect to Pegasus Items, [*]; and (4) with respect to E2M Items, [*].

14.6 LIABILITY FOR TERMINATION. Provided that termination of this Agreement did not result by reason of the breach of or default under this

Agreement by either party, and except as

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provided in SECTION 15, neither party to this Agreement shall claim from the other party any indemnity, reimbursement, compensation or damages for alleged loss of clientele, good will, profits or anticipated sales or on account of expenditures, investments, leases or other commitments arising from the expiration or termination of this Agreement, each party acknowledging that it has made all decisions and investments in full awareness of the possibility of losses or damages arising from the expiration or termination of this Agreement.

15. CHANGE OF CONTROL. If, during the term of this Agreement, a Change of Control occurs, then Emcore shall either: (1) pay [*] to Hakuto; or (2) provide Hakuto with reasonable assurance that the New Control Party will assume the obligations of this Agreement and that the New Control Party will, or will cause Emcore to, manufacture and sell, in the Territory and pursuant to the terms of this Agreement, Mode Items, Pegasus Items and E2M Items at a level satisfactory to Hakuto.

16. MISCELLANEOUS.

16.1 NOTICES. All notices and other communications in connection with this Agreement shall be in writing, shall be sent to the respective parties at the following addresses, or to such other addresses as may be designated by the parties in writing from time to time, by registered or certified mail, telecopy or recognized overnight delivery service, and shall be effective upon receipt:

To Emcore:
Emcore Corporation
394 Elizabeth Avenue
Somerset, New Jersey 08873
Attention: William J. Kroll
Telephone: 908-271-9090
Fax: 908-271-9686

To Hakuto:
Hakuto Co. Ltd.
1-13 Shinjuku
1-chome, Shinjuku-ku
Tokyo 160, Japan
Attention: A. Nakazawa
Telephone: 3-3225-8910

Fax: 3-3225-9007

With Copy To: Masuda, Funai, Eifert & Mitchell, Ltd.
One East Wacker Drive, Suite 3200
Chicago, Illinois 60601-1802
Attention: Thomas P. McMenamin
Telephone: 312-245-7500
Fax: 312-245-7467

16.2 NO WAIVER. Any failure by any party hereto to enforce at any time any term or condition under this Agreement shall not be considered a waiver of that party's right thereafter to enforce each and every term and condition of this Agreement.

16.3 GOVERNING LAW; ARBITRATION. This Agreement is made and shall be construed according to the laws of the State of New Jersey, USA. All disputes, controversies, or differences which may arise between the parties, out of or in relation to or in connection with this contract, or the breach thereof, shall be finally settled by arbitration pursuant to the Japan-American Trade Arbitration Agreement, of September 16, 1952, by which each party hereto is bound. The arbitration proceeding shall be held in Somerset County, New Jersey, if Hakuto seeks arbitration and in Tokyo, Japan, if Emcore institutes such proceeding. Each party shall bear its own costs incurred in such arbitration proceeding.

16.4 MODIFICATION. This Agreement may be modified, amended or revised only by a written instrument duly executed by the parties hereto.

CONFORMED COPY OF EXECUTION ORIGINAL

16.5 COMPLIANCE WITH LAWS. In the conduct of its business under this Agreement, Hakuto shall comply with the applicable laws, regulations, orders and the like prevailing in the Territory.

16.6 ENTIRE AGREEMENT. This Agreement, the exhibits and duly executed addenda thereto, all approved purchase orders issued pursuant hereto, shall contain the entire and only agreement between the parties relating to the subject matter hereof, and any representations, terms or conditions relating thereto but not incorporated herein shall not be binding upon either party. This Agreement cancels, voids and supersedes any agreement heretofore entered into between the parties with respect to the subject matter hereof, except as otherwise expressly provided herein.

16.7 SEVERABILITY. Any provision of this Agreement which is prohibited or unenforceable in any jurisdiction shall, as to such jurisdiction, be ineffective to the extent of such prohibition or unenforceability without invalidating the remaining provisions or affecting the validity or enforceability of any provision in any other jurisdiction.

16.8 SUCCESSORS AND ASSIGNS. Subject to SECTION 12 hereof, all terms and provisions of this Agreement shall be binding upon and inure to the benefit of the parties and their respective permitted transferees, successors and assigns.

16.9 COUNTERPARTS. This Agreement may be executed by duly authorized representatives of the respective parties hereto in any number of counterparts, each of which, when fully executed, shall be deemed an original. This Agreement may be translated into any other language and such translation may be initialed, but only this Agreement in the English language shall be deemed the original. If any conflict exists between the English language and any translation thereof, the English language version shall control.

CONFORMED COPY OF EXECUTION ORIGINAL

IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of the day and year first above written.

EMCORE CORPORATION

By: /s/ WILLIAM J. KROLL
Name: William J. Kroll
Title: Executive Vice President

HAKUTO CO. LTD.

By: /s/ SHIGEO TAKAYAMA
Title: President & CEO

Exhibit 10.15

EMCORE CORPORATION
PURCHASE AGREEMENT

November 30, 1998

Hakuto Co., Ltd.
1-13 Shinjuku
1-chome, Shinjuku-ku
Tokyo, Japan

Uniroyal Technology Corporation
Two North Tamiami Trail, Suite 900
Sarasota, Florida 34236

Union Miniere Inc.
13847 West Virginia Drive
Lakewood, Colorado 80228
Attn: Richard Laird

Dear Sirs:

EMCORE Corporation, a New Jersey corporation (the "Company"), proposes to issue and sell to each of Hakuto Co., Ltd., Uniroyal Technology Corporation and Union Miniere Inc. (each a "Purchaser" and collectively the "Purchasers") the number of shares of its Series I Redeemable Convertible Preferred Stock (the "Preferred Stock") listed on Exhibit A hereto. The Preferred Stock will be convertible at the option of the holders thereof, unless previously redeemed, into shares of common stock, no par value per share, of the Company (the "Underlying Common Stock" and, together with the Preferred Stock, the "Securities") at an initial conversion price of $14.00 per share of Common Stock, subject to adjustment in certain events. The Preferred Stock is redeemable, in whole or in part, at the option of the Company at any time if the last reported sales price of the Company's common stock, no par value per share (the "Common Stock") is $28.00 per share or greater for 30 consecutive trading days, at a price of $14.00 per share, plus accrued and unpaid dividends, if any, to the redemption date. Upon the occurrence of a Change in Control (as defined below), the Company will be obligated either to offer to purchase all or any part of each holder's Shares at a price equal to $14.14 per Share, plus accrued and unpaid dividends, or to adjust the conversion price, as described herein. The Shares of Preferred Stock are subject to mandatory redemption by the Company on November 17, 2003.

The Securities will be offered without being registered under the Securities Act of 1933, as amended (the "Securities Act"), in reliance on exemptions therefrom. Resale of the Underlying Common Stock shall be registered in the future pursuant to the terms of a

Registration Rights Agreement to be dated as of the date hereof (the "Registration Rights Agreement") between the Company and the Purchasers.

In connection with the offer and sale of the Securities, the Company has prepared a private placement memorandum (the "Memorandum") setting forth or including a description of the Securities, the terms of the offering, a description of the Company and any material developments relating to the Company occurring after the date of the most recent financial statements included therein. As used herein, the term "Memorandum" shall include in each case the documents incorporated therein by reference.

1. REPRESENTATIONS AND WARRANTIES OF THE COMPANY. The Company

represents and warrants to you, and agrees with you, that as of the date hereof and as of the closing date:

(a) (i) Each document, if any, filed or to be filed pursuant to the Exchange Act and incorporated by reference in the Memorandum has complied or will comply when so filed in all material respects with the Exchange Act and the applicable rules and regulations thereunder and (ii) the Memorandum does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements therein, in the light of the circumstances under which they were made, not misleading.

(b) The Company has been duly incorporated and is validly existing as a corporation in good standing under the laws of the jurisdiction of its incorporation, has the corporate power and authority to own its property and to conduct its business as it is currently being conducted and as described in the Memorandum and is duly qualified to transact business and is in good standing in each jurisdiction in which the conduct of its business or its ownership or leasing of property requires such qualification, except to the extent that the failure to be so qualified or be in good standing would not have a material adverse effect on the Company and its subsidiary, taken as a whole.

(c) The Company's only subsidiary is MicroOptical Devices, Inc. Such subsidiary has been duly incorporated, is validly existing as a corporation and is in good standing under the laws of the jurisdiction of its incorporation, has the corporate power and authority to own its property and to conduct its business as described in the Memorandum and is duly qualified to transact business and is in good standing in each jurisdiction in which the conduct of its business or its ownership or leasing of property requires such qualification, except to the extent that the failure to be so qualified or be in good standing would not have a material adverse effect on the Company and its subsidiary, taken as a whole.

(d) The Preferred Stock has been duly authorized and, when issued to and paid for by the Purchasers, will be validly issued, fully paid and non-assessable and will not be subject to any preemptive rights or similar rights. The Preferred Stock shall have the rights, preferences and privileges and restrictions set forth in the form of Certificate of Amendment attached hereto as Exhibit C (the "Certificate of Designation").

(e) The Underlying Common Stock reserved for issuance upon conversion of the Preferred Stock has been duly authorized and reserved and its issuance in accordance with the Certificate of Designation has been approved, and, when issued upon conversion of such Preferred Stock, will be validly issued, fully paid and non-assessable and will not be subject to any preemptive rights or similar rights.

(f) Each of this Agreement, the Registration Rights Agreement, the Certificate of Designation and any other agreement to which the Company is a party contemplated hereby (the "Transaction Documents") has been duly authorized by the Company and, when executed and delivered by the Company, will be a valid and binding agreement of the Company, enforceable in accordance with its terms except as (x) the enforceability thereof may be limited by bankruptcy, insolvency or similar laws affecting creditors' rights generally and (y) rights of acceleration, if applicable, and the availability of equitable remedies may be limited by equitable principles of general applicability.

(g) The execution and delivery by the Company of, and the performance by the Company of its obligations under, each of the Transaction Documents will not (1)(A) contravene any provision of applicable law or the certificate of incorporation or by-laws of the Company or any agreement or other instrument binding upon the Company or its subsidiary that is material to the Company and its subsidiary, taken as a whole, or any judgment, order or decree of any governmental body, agency or court having jurisdiction over the Company or any subsidiary, (B) or result in a breach of or constitute (upon notice or lapse of time or both) a default under any indenture, mortgage, agreement, contract or other material instrument binding upon the Company or its subsidiary that is material to the Company and its subsidiary, taken as a whole, or result in the creation or imposition of any lien, security interest, mortgage, pledge,

charge or other encumbrance, of any material nature whatsoever, upon any properties or assets of the Company, and (2) no consent, approval, authorization or order of, or qualification with, any governmental body or agency or other party (other than consent by First Union National Bank which has been obtained) is required for the performance by the Company or its subsidiary of its obligations under this Agreement or the Registration Rights Agreement except such as may be required by and has been obtained (except in connection with the resale of the Underlying Common Stock) pursuant to the securities or Blue Sky laws of the various states in connection with the offer and sale of the Securities.

(h) Since the respective dates as of which information is given in the Memorandum, and except as described in the Memorandum, there has not occurred any material adverse change, or any development involving a prospective material adverse change, in the condition, financial or otherwise, or in the earnings, business or operations of the Company and its subsidiary, taken as a whole, from those set forth in the Memorandum.

(i) There are no legal or governmental proceedings pending or, to the best of the Company's knowledge, threatened and to the best of the Company's knowledge investigations by any governmental body pending to which the Company or its subsidiary is a party or to which any of the properties of the Company or its subsidiary is subject, or related to environmental or discrimination matters, or which could have an adverse effect on the power or

ability of the Company to perform its obligations under this Agreement or the Registration Rights Agreement or to consummate the transactions contemplated by the Memorandum, other than proceedings accurately described in all material respects in the Memorandum and proceedings that would not have a material adverse effect on the Company and its subsidiary, taken as a whole.

(j) The Company has not directly, or through any agent, (i) sold, offered for sale, solicited offers to buy or otherwise negotiated in respect of either the Securities or any security (as defined in the Securities Act) which is or will be integrated with the sale of the Securities in a manner that would require the registration under the Securities Act of the Securities or (ii) engaged in any form of general solicitation or general advertising or similar conduct in connection with the offering and sale of the Securities (as those terms are used in Regulation D under the Securities Act) or in any manner involving a public offer or sale within the meaning of Section 4 (2) of the Securities Act. The Company is selling the Securities in compliance with an exemption from the Securities Act. Notwithstanding the above, the Company shall register the resale of the Underlying Common Stock pursuant to the terms of the Registration Rights Agreement.

(k) The Company has not been advised, and has no reason to believe, that either it or any of its subsidiaries is not conducting its business in compliance with all applicable laws, rules and regulations of the jurisdictions in which it is conducting business, including, without limitation, all applicable local, state and federal environmental laws and regulations; except where failure to be so in compliance would not materially adversely affect the condition (financial or otherwise), business, results of operations or prospects of the Company and its subsidiary.

(l) The authorized capital stock of the Company consists of 23,529,411 shares of Common Stock, of which 9,379,411 shares are issued and outstanding as of November 23, 1998 and 5,882,353 shares of preferred stock of which 2,000,000 shares are designated as Series I Preferred Stock, and no shares of preferred stock are issued and outstanding prior to the consummation of the transactions contemplated by this Agreement. Each outstanding share of capital stock of the Company is validly authorized and issued, fully paid and nonassessable, without any personal liability attaching to the ownership thereof, and has not been issued and is not owned or held in violation of any preemptive or similar rights of shareholders. There is no commitment, plan or arrangement to issue, and no outstanding option, warrant or other instrument which by its terms is convertible into, or exercisable for, preferred stock or Common Stock, except as may be properly described in the Memorandum.

(m) All of the outstanding shares of the subsidiary of the Company have been duly authorized and validly issued and are fully paid and nonassessable, without any personal liability attaching to the ownership thereof. The Company's ownership of the subsidiary is as set forth in the Memorandum, and the shares of such subsidiary owned by the Company are owned of record and beneficially by the Company, directly, free and clear of any security interests, liens, encumbrances, equities or other claims.

(n) Except as disclosed in the Memorandum, to the knowledge of the Company, the Company and/or its subsidiary own or possess adequate licenses or other rights to use, free and clear of all liens, charges and encumbrances and restrictions of any kind whatsoever other than existing licenses granted by the Company and/or its subsidiary, all patents, patent rights, inventions, trade secrets, licenses, know-how, proprietary techniques, including processes and substances, trademarks, service marks, trade names, and copyrights that are described in the Memorandum. The Company is not aware of any claim by a third party regarding infringement on such party's intellectual property. The Company requires all employees, agents, consultants and independent contractors to execute confidentiality and non-disclosure agreements prior to being granted access to the Company's facilities or being exposed to any confidential information in the Company's custody or control.

(o) Except as set forth in the financial statements included in the Memorandum, neither the Company nor its subsidiary is aware of any material liability (whether asserted or unasserted, absolute or contingent, accrued or unaccrued, liquidated or unliquidated, and whether due or to become due).

(p) The Company and its subsidiary have filed or caused to be filed, in a timely manner, all income tax returns, all material tax returns, reports and declarations which are required to be filed by it in the ordinary course of business and in accordance with all applicable laws and regulations. All information in such tax returns, reports and declarations is complete and accurate in all material respects. The Company and its subsidiary has paid or caused to be paid all taxes due and payable or claimed due and payable in any assessment received by it, and has collected, deposited and remitted in accordance with all applicable laws, all sales and/or use taxes applicable to the conduct of its business, except taxes the validity of which are being contested in good faith by appropriate proceedings diligently pursued and available to the Company or its subsidiary, as the case may be, and with respect to which adequate reserves have been set aside on the Company's or its subsidiary's books. Adequate provision has been made for the payment of all accrued and unpaid federal, state, local, foreign and other taxes whether or not yet due and payable and whether or not disputed.

(q) The Company represents and warrants that the information contained in the following documents is true and correct in all material respects as of their respective filing dates:

(i) the Company's Annual Report on Form 10-K for the fiscal year ended September 30, 1997;

(ii) the Company's Quarterly Reports on Form 10-Q required to be filed with the SEC for the three-month periods ended December 31, 1997, March 31, 1998 and June 30, 1998;

(iii) the Company's Current Reports on Form 8-K filed with the SEC since September 30, 1997, if any; and

(iv) Notice of Annual Meeting and Proxy Statement for

the Company's 1998 Annual Meeting of Stockholders.

(r) The Company has filed with the Commission all reports ("SEC Reports") required to be filed by its under the Securities Exchange Act of 1934, as amended (the "Exchange Act"). All of the SEC Reports filed by the Company comply in all material respects with the requirements of the Exchange Act. None of the SEC Reports contains, as of the respective dates thereof, any untrue statement of a material fact or omits to state any material fact required to be stated therein or necessary to make the statements therein not misleading in light of the circumstances under which they were made. All financial statements contained in the Memorandum and the SEC Reports have been prepared in accordance with generally accepted accounting principles consistently applied ("GAAP"). Each balance sheet presents fairly in accordance with GAAP the financial position of the Company or its subsidiary, as applicable, as of the date of such balance sheet, and each statement of operations, of stockholders' equity and of cash flows presents fairly in accordance with GAAP the results of operations, the stockholders' equity and the cash flows of the Company or its subsidiary, as applicable, for the periods then ended.

(s) The Company is not aware of any Year 2000 non-compliance issues internal to the Company and its subsidiary, including but not limited to liability on the part of the Company or its subsidiary, remediation costs, or risks associated with non-compliance by information technology and non-information technology systems of the Company, that are likely to result in any material, adverse effect on the business, financial condition or results of operations of the Company or its subsidiary. To the Company's knowledge, without independent investigation, no third party Year 2000 non-compliance is reasonably likely to have a material adverse effect on the Company.

2. REPRESENTATIONS AND WARRANTIES OF THE PURCHASERS. Each Purchaser hereby represents and warrants to the Company, and agrees with the Company, that as of the date hereof:

(a) Such Purchaser is a corporation duly organized, validly existing and in good standing under the laws of the jurisdiction of its incorporation and has full right and power to execute and deliver this Agreement and all other agreements and instruments contemplated hereby to which such Purchaser is a party, and to perform its obligations hereunder and thereunder. The execution, delivery and performance of this Agreement and all other agreements and instruments contemplated hereby to which such Purchaser is a party have been duly authorized by all necessary corporate action by such Purchaser.

(b) No consent, approval or authorization of any persons or entities is required in connection with such Purchaser's execution or delivery of this Agreement or consummation of the transactions contemplated hereby.

(c) The Securities are being purchased for such Purchaser's own account, for investment purposes only, not for the account of any other person, and not with a view to distribution, assignment or resale to others or fractionalization, contrary to applicable securities

laws. Such Purchaser further acknowledges that the offering and sale of the Preferred Stock has not been filed with or reviewed by the Securities and Exchange Commission because of the Company's representations that this is intended to be a nonpublic offering pursuant to Section 4(2) and Rule 506 of Regulation D of the Securities Act.

(d) Such Purchaser agrees that it will not sell, transfer or otherwise dispose of any of the Securities unless they are registered under the Securities Act or unless an exemption from such registration is available. To transfer the Preferred Stock or the Underlying Common Stock if no registration statement is then available, a Purchaser may, at the request of the Company, submit to the Company an opinion of counsel reasonably satisfactory to the Company that the proposed sale, transfer or disposition does not result in a violation of the Securities Act or any applicable "blue sky" laws (collectively, the "Securities Laws"); provided, HOWEVER, that the Company will not require opinions of counsel for transactions made pursuant to Rule 144 as long as the

Purchaser provides the Company with an appropriate broker's letter.

(e) Such Purchaser represents that it is an "accredited investor" as such term is defined in Rule 501 of Regulation D promulgated under the Securities Act.

(f) Such Purchaser has evaluated the Memorandum including the "Risk Factors" contained therein.

3. PURCHASE AND DELIVERY. The Company hereby agrees to sell to each Purchaser, and each Purchaser, upon the basis of the representations and warranties herein contained, but subject to the conditions hereinafter stated, agrees to purchase from the Company the number of shares of Preferred Stock listed on Exhibit A for an aggregate purchase price as listed on Exhibit A.

Payment for the Preferred Stock shall be made against delivery of the Preferred Stock at a closing to be held at such time and on such date, not later than November __, 1998, as shall be agreed to by the Purchasers and the Company. The time and date of such payment are herein referred to as the "Closing Date." Payment for the Preferred Stock shall be made by wire transfer of immediately available funds to the bank account to be specified in writing to you.

Certificates for the Preferred Stock shall be in definitive form and registered in such names and in such denominations as you shall request. The certificates evidencing the Preferred Stock shall be delivered to you on the Closing Date with any transfer taxes payable in connection with the transfer of the Preferred Stock to the Purchasers duly paid by the Company, against payment of the purchase price therefor.

4. CONDITIONS TO CLOSING. The obligations of each Purchaser under this Agreement to purchase the Preferred Stock will be subject to satisfaction, on or before the Closing Date, of each of the following conditions unless waived in writing by such Purchaser:

(a) The Company shall deliver to each Purchaser a certificate, dated the Closing Date and signed by an executive officer of the Company, to the effect that the representations and warranties of the Company contained in this Agreement are true and correct

as of the Closing Date and that the Company has complied with all of the agreements and satisfied all of the conditions on its part to be performed or satisfied on or before the Closing Date. The officer signing and delivering such certificate may rely upon the best of his knowledge as to proceedings that are threatened.

(b) The Company shall have executed the Registration Rights Agreement.

(c) Thomas Russell, The AER Trust 1997, Reuben Richards, Robert Louis-Dreyfus and Gallium Enterprises, Inc. shall have executed the Tag-Along Rights Agreement, dated as of the date hereof between them and the Purchasers.

(d) Purchasers shall have received from counsels to the Company, opinion letters addressed to the Purchasers, dated as of the Closing Date, in form and substance reasonably satisfactory to counsel for the Purchasers.

(e) The Company shall deliver to such Purchaser a copy of the agreement of First Union National Bank (the "Bank") to extend the termination of the Company's revolving credit facility with the Bank beyond November 30, 1998, which agreement shall be satisfactory in form and substance to Purchasers.

(f) The Company shall have received the Consent of the Bank, and each other party whose consent is required, to the use of the proceeds of

the sale of shares contemplated hereunder.

(g) The Purchasers shall have received evidence of filing of the Certificate of Designation.

(h) The Purchasers shall have agreed to purchase an aggregate of at least 1,550,000 shares of Preferred Stock on the Closing Date.

5. COVENANTS OF THE COMPANY. In further consideration of the agreements of the Purchasers contained in this Agreement, the Company covenants as follows:

(a) The Company shall distribute to the registered holders of Preferred Stock such reports, proxy statements and other financial information as the Company provides to any stockholder, generally or are currently provided by the Company to any stockholder and such non-confidential information which a Purchaser shall reasonably request and reasonable access to the executive officers of the Company.

(b) Except as set forth in the Registration Rights Agreement, neither the Company nor any Affiliate will sell, offer for sale or solicit offers to buy or otherwise negotiate in respect of any security (as defined in the Securities Act) which could be integrated with the sale of the Securities in a manner which would require the registration of the Securities under the Securities Act.

(c) Not to solicit any offer to buy or offer or sell the Securities by means of any form of general solicitation or general advertising (as those terms are used in Regulation D under the Securities Act) or in any manner involving a public offering within the meaning of Section 4 (2) of the Securities Act.

(d) Each certificate representing shares of Preferred Stock will bear the legend contained in Exhibit B hereto.

(e) To list timely the Underlying Common Stock for trading on the Nasdaq National Market in accordance with the rules of the National Association of Securities Dealers, Inc.

(f) The Company shall use the proceeds from the sale of the Preferred Stock hereunder in the manner set forth under the "Use of Proceeds" section of the Memorandum.

(g) The Company shall place a stop order with the transfer agent for the Company's Common Stock with respect to the shares subject to the Tag-Along Rights Agreement dated as of the date hereof, between the Purchasers, Thomas Russell, The AER Trust 1997, Robert Louis-Dreyfus, Gallium Enterprises, Inc. and Reuben Richards (the "Tag-Along Rights Agreement"), prohibiting transfers of such shares except in compliance with the Tag-Along Rights Agreement and the Company agrees not to effect a transfer of any of the shares subject to the Tag-Along Rights Agreement on its books, except in compliance with the terms of the Tag-Along Rights Agreement.

6. SURVIVAL OF REPRESENTATIONS, WARRANTIES AND AGREEMENTS. Notwithstanding any investigation made by any party to this Agreement, all representations and warranties made by the Company and each Purchaser herein and in the certificates for the securities delivered pursuant hereto shall survive for a period of 45 days following the distribution of the Company's audited financials for fiscal 1999, except for those representations and warranties contained in Section 1(d), (e), (f) and (g) hereof which shall survive indefinitely. The covenants contained herein shall survive indefinitely.

7. INDEMNIFICATION.

(a) The Company shall not be required to indemnify a Purchaser under Section 7(b) until such Purchaser's indemnifiable damages, individually or

in the aggregate, exceed $300,000 (the "HURDLE RATE"), at which point the Company shall be responsible for all indemnifiable damages that may arise, irrespective of the Hurdle Rate; and provided that indemnifiable damages shall accumulate until such time as they exceed the Hurdle Rate, whereupon the Purchaser shall be entitled to seek indemnification for the full amount of such damages.

(b) INDEMNIFICATION BY COMPANY. Subject to paragraph (a) above, the Company agrees to, and shall, indemnify the Purchasers and their respective officers, directors, employees, shareholders, representatives, controlling persons and agents and hold each of them harmless at all times after the date of this Agreement, against and in respect of any and all

damage, loss, deficiency, liability, obligation, commitment, cost or expense (including the fees and expenses of counsel) resulting from, or in respect of, any misrepresentation, omission, breach of warranty, or non-fulfillment of any obligation on the part of the Company under this Agreement.

8. MISCELLANEOUS.

(a) This Agreement may be signed in any number of counterparts, each of which shall be an original, with the same effect as if the signatures thereto and hereto were upon the same instrument.

(b) All notices and other communications provided for or permitted hereunder shall be made in writing and shall be deemed given (i) when made, if made by hand delivery, (ii) upon confirmation, if made by telecopier or (iii) one business day after being deposited with a reputable next day courier postage prepaid, to the parties as follows:

(x) if to a Purchaser, at the address listed in the heading of this agreement; and

(y) if to the Company, to:

EMCORE Corporation
394 Elizabeth Avenue
Soberest, New Jersey 08873
Attention: Thomas G. Werthan
Telephone: (732) 271-9090
Telecopy: (732) 271-0477

with a copy to:

White & Case LLP
200 South Biscayne Boulevard
Miami, Florida 33131
Attention: Jorge L. Freeland, Esq.
Telephone: (305) 995-5247
Telecopy: (305) 358-5744

or such other address as such person may have furnished to the party giving notice or other communication to this agreement in writing.

(c) This Agreement shall be governed by and construed in accordance with the laws of the State of New York without regard to conflict of laws principles thereof.

(d) The Company and each of the Purchasers hereby irrevocably submit to the jurisdiction of the state or federal courts located in New York County, New York in connection with any suit, action or proceeding arising out of or relating to this Agreement and the transactions contemplated hereby; the foregoing shall in no way be deemed to constitute, or shall it be a general consent by any party hereto, to the jurisdiction of any court in New York, either

generally or specifically, with respect to matters not arising out of, or related to, this Agreement and the transactions contemplated hereby.

(e) The headings of the sections of this Agreement have been inserted for convenience of reference only and shall not be deemed a part of this Agreement.

(f) This Agreement may not be amended except in writing signed by the party against which enforcement is sought.

(g) This Agreement may not be assigned by the Company.

[signature page follows]

Please confirm your agreement to the foregoing by signing in the space provided below for that purpose and returning to us a copy hereof, whereupon this Agreement shall constitute a binding agreement between us.

Very truly yours,

EMCORE CORPORATION

By: /s/ THOMAS G. WERTHAN

Thomas G. Werthan,
Vice-President

Agreed, November 30, 1998

HAKUTO CO., LTD.

By: /s/ SHIGEO TAKAYAMA

Name: Shigeo Takayama
Title: President

UNIROYAL TECHNOLOGY CORPORATION

By: /s/ HOWARD R. CURD

Name: Howard R. Curd
Title: Chairman and Chief Executive Officer

UNION MINIERE INC.

By: /s/ A. GODEFROID

Name: A. Godefroid
Title: Director

By: /s/ M. VAN SANDE

Name: M. Van Sande
Title: Director

EXHIBIT A

PURCHASER	NUMBER OF SHARES	AGGREGATE PURCHASE PRICE
HAKUTO CO., LTD.		$3,700,004.00
UNIROYAL TECHNOLOGY CORPORATION		$8,999,998.0
UNION MINIERE, INC.		$8,999,998.00

Exhibit 10.16

REGISTRATION RIGHTS AGREEMENT

THIS REGISTRATION RIGHTS AGREEMENT (the "Agreement") is made and entered into as of November 30, 1998 by and between EMCORE Corporation, a New Jersey corporation (the "Company"), and Hakuto Co. Ltd., Uniroyal Technology Corporation and Union Miniere Inc. (each a "Purchaser" and collectively, the "Purchasers") pursuant to the Purchase Agreement, dated as of November 30, 1998 ("the Purchase Agreement"), between the Company and the Purchasers. In order to induce the Purchasers to enter into the Purchase Agreement, the Company has agreed to provide the registration rights set forth in this Agreement. The execution of this Agreement is a condition to the closing under the Purchase Agreement.

The Company agrees as follows:

1. DEFINITIONS. Capitalized terms used herein without definition shall have their respective meanings set forth in the Purchase Agreement. As used in this Agreement, the following terms shall have the following meanings:

AFFILIATE: "Affiliate" means, with respect to any specified person, (i) any other person directly or indirectly controlling or controlled by, or under direct or indirect common control with, such specified person or (ii) any officer or director of such other person. For purposes of this definition, the term "control" (including the terms "controlled by" and "under common control with") of a person means the possession, direct or indirect, of the power (whether or not exercised) to direct or cause the direction of the management and policies of a person, whether through the ownership of voting securities, by contract, or otherwise.

BUSINESS DAY: Each Monday, Tuesday, Wednesday, Thursday and Friday that is not a day on which banking institutions in the City of New York are authorized or obligated by law or executive order to close.

CERTIFICATE OF DESIGNATION: The Certificate of Amendment to Designate the Series I Preferred Stock, filed with the Secretary of State of New Jersey on November 19, 1998.

COMMON STOCK: The shares of common stock, no par value per share, of the Company and any other shares of common stock as may constitute "Common Stock," in each case, as issuable or issued upon conversion of the Series I Preferred Stock.

DAMAGES ACCRUAL PERIOD: See Section 2(a)(v) hereof.

DAMAGES PAYMENT DATE: The first day of each month.

DEFERRAL PERIOD: See Section 2(a)(iv) hereof.

DEMAND REGISTRATION: See Section 2(b)(i) hereof.

DEMAND REQUEST: See Section 2(b)(i) hereof.

EFFECTIVENESS PERIOD: The period commencing with the date hereof and ending on the earlier of (a) November 17, 2003 plus such number of days as is contained in all Damages Accrual Periods hereunder, or (b) the date that all Registrable Securities have ceased to be Registrable Securities.

EVENT: See Section 2(a)(v) hereof.

EVENT DATE: See Section 2(a)(v) hereof.

EXCHANGE ACT: The Securities Exchange Act of 1934, as amended, and the rules and regulations of the SEC promulgated thereunder.

FILING DATE: See Section 2(a)(i) hereof.

HOLDERS: The holders from time to time of the Series I Preferred Stock and of the Common Stock issued upon conversion of the Series I Preferred Stock.

INDEMNIFIED PARTY: See Section 5(c) hereof.

INDEMNIFYING PARTY: See Section 5(c) hereof.

PROSPECTUS: The prospectus included in the Registration Statement (including, without limitation, a prospectus that discloses information previously omitted from a prospectus filed as part of an effective registration statement in reliance upon Rule 430A promulgated under the Securities Act), as amended or supplemented by any amendment or prospectus supplement, including post-effective amendments, and all material incorporated by reference or deemed to be incorporated by reference in such Prospectus.

PURCHASE AGREEMENT: See the first paragraph of this Agreement.

RECORD HOLDER: the registered holder of shares of Series I Preferred Stock or Common Stock on the record date.

REGISTRABLE SECURITIES: The Common Stock of the Company into which the Series I Preferred Stock is convertible or converted, whether or not such Series I Preferred Stock has been converted (and associated rights), and at all times subsequent thereto, and any equity security issued or issuable with respect thereto upon any stock dividend, split, merger, consolidation or similar event until, in the case of any such equity security, (i) it is effectively registered under the Securities Act and disposed of in accordance with the Registration Statement covering it, (ii) it is saleable by the holder thereof pursuant to Rule 144(k) or (iii) it is sold to the public pursuant to Rule 144, and, as a result of the event or circumstance described in any of the foregoing clauses (i) through (iii), the legends with respect to transfer restrictions required under the Purchase Agreement are removed or removable.

REGISTRATION STATEMENT: A registration statement of the Company which covers the Registrable Securities pursuant to the provisions of this Agreement, including the Prospectus, amendments and supplements to such registration statement, including post-effective

amendments, all exhibits, and all material incorporated by reference or deemed to be incorporated by reference in such registration statement.

RULE 144: Rule 144 under the Securities Act, as such Rule may be amended from time to time, or any similar rule or regulation hereafter adopted by the SEC.

RULE 144A: Rule 144A under the Securities Act, as such Rule may be amended from time to time, or any similar rule or regulation hereafter adopted by the SEC.

RULE 144(K): Rule 144(k) under the Securities Act, as such Rule may be amended from time to time, or any similar rule or regulation hereafter adopted by the SEC.

SEC: The Securities and Exchange Commission.

SECURITIES ACT: The Securities Act of 1933, as amended, and the rules and regulations promulgated by the SEC thereunder.

SERIES I PREFERRED STOCK: The Series I Redeemable Convertible Preferred Stock of the Company being issued and sold pursuant to the Purchase Agreement and the Certificate of Designation, and any Series I Preferred Stock issued with respect thereto upon any stock dividend or stock split of the Series I Preferred Stock.

SHELF REGISTRATION: See Section 2(a)(i) hereof.

UNDERWRITER: A securities dealer who purchases any Registrable Securities as principal and not as part of such dealer's market-making activities.

2. REGISTRATION RIGHTS.

(a) SHELF REGISTRATION.

(i) The Company shall prepare and file with the SEC, as soon as practicable but in any event on or prior to the date ninety (90) days following the date hereof (the "Filing Date"), a Registration Statement for an offering to be made on a continuous basis pursuant to Rule 415 under the Securities Act (the "Shelf Registration Statement") registering the resale of the Registrable Securities from time to time by the Holders of all of the Registrable Securities (the "Shelf Registration"). The Shelf Registration shall be on Form S-1 or S-3 (as appropriate) or another appropriate form permitting registration of the resale of the Common Stock. The Company shall use its reasonable best efforts to cause the Shelf Registration to be declared effective under the Securities Act as soon as practicable and to keep the Shelf Registration continuously effective under the Securities Act until the expiration of the Effectiveness Period.

(ii) If the Shelf Registration ceases to be effective for any reason as a result of the issuance of a stop order by the SEC at any time during the Effective Period, the Company shall use its reasonable best efforts to obtain the prompt withdrawal of any order suspending the effectiveness thereof, and in any event shall within thirty (30) days of such

cessation of effectiveness amend the Shelf Registration in a manner reasonably expected to obtain the withdrawal of the order suspending the effectiveness thereof.

(iii) The Company shall supplement and amend the Shelf Registration if required by
the rules, regulations or instructions applicable to the registration form used by the Company for such Shelf Registration, if required by the Securities Act or if reasonably requested by a majority of the Holders of the Registrable Securities covered by such Registration Statement.

(iv) In the event (A) of the happening of any event of the kind described in Section 3(b)(ii), 3(b)(iii), 3(b)(iv), 3(b)(v) or 3(b)(vi) hereof or (B) that, in the judgment of the Company, it is advisable to suspend use of the Prospectus for a discrete period of time due to pending material corporate developments or similar materials that have not yet been publicly disclosed and as to which the Company in good faith believes public disclosure is reasonably likely to be detrimental to the Company, the Company shall deliver a certificate in writing, signed by an authorized executive officer of the Company, to the Holders to the effect of the foregoing and, upon such notice, the Company may suspend use of the Registration Statement until a supplemented or amended Prospectus is filed with the SEC, or until the Holders are advised in writing by the Company that the Prospectus may be used, and the Holders have received copies of any additional or supplemental filings that are incorporated or deemed incorporated by reference in such Prospectus. The Company will use its reasonable best efforts to ensure that the use of the Prospectus may be resumed, and the use of the Registration Statement will commence, as soon as practicable and, in the case of a pending development or event referred to in this Section, as soon as the earlier of (x) public disclosure of such pending material corporate development or similar material event or (y) the date upon which, in the good faith judgment of the Company, public disclosure of such material corporate development or similar material event would not be reasonably likely to be detrimental to the Company. Notwithstanding the foregoing, the Company shall not under any circumstances be entitled to exercise its right under this Section 2(a)(iv) to suspend the use of the Registration Statement except as follows: The Company may suspend the use of the Registration Statement in accordance with this Section 2(a)(iv) for a period (such period being "Deferral Period") not to exceed (i) an aggregate of 45 days (in no more than two separate periods) in any three-month period and (ii) an aggregate of 90 days (in no more than four separate periods) in any 12-month period, and the period

in which the use of the Registration Statement is suspended shall not exceed fifteen (15) days unless the Company shall deliver to the Holders a second notice to the effect set forth above, which shall have the effect of extending the period during which the use of the Registration Statement is deferred by up to an additional fifteen (15) days, or such shorter period of time as is specified in such second notice.

(v) The parties hereto agree that the Holders of Registrable Securities will suffer damages, and that it would not be feasible to ascertain the extent of such damages with precision, if (A) the Shelf Registration has not been filed on or prior to the Filing Date, (B) the Shelf Registration is not declared effective within 90 days after the Filing Date, (C) prior to the end of the Effectiveness Period, the SEC shall have issued a stop order suspending the effectiveness of the Shelf Registration or proceedings have been initiated with respect of the Shelf Registration under Section 8(d) or 8(e) of the Securities Act or (D) the aggregate number of

days in any Deferral Period exceeds the number permitted pursuant to Section 2(a)(iv) hereof (each of the events of a type described in any of the foregoing clauses (A) through (D) are individually referred to herein as an "Event," and the Filing Date in the case of clause (A), the 90th day after the Filing Date, in the case of clause (B), the date on which the effectiveness of the Shelf Registration has been suspended or proceedings with respect to the Shelf Registration under Section 8(d) or 8(e) of the Securities Act have been commenced in the case of clause (C), and the date on which the number of days in any Deferral Period exceeds the number permitted by Section 2(a)(iv) hereof in the case of clause (D), being referred to herein as an "Event Date"). Events shall be deemed to continue until the date of the termination of such Event, which shall be the following dates with respect to the respective types of Events: the date the Registration Statement is filed in the case of an Event of the type described in clause (A), the date the Shelf Registration becomes effective, in the case of an Event described in clause (B), the date that all stop orders suspending effectiveness of the Shelf Registration have been removed and the proceedings initiated with respect to the Shelf Registration under Section 8(d) or 8(e) of the Securities Act have terminated, as the case may be, in the case of Events of the types described in clause (C), and termination of the Deferral Period which caused the aggregate number of days in any Deferral Period to exceed the number permitted by Section 2(a)(iv) to be exceeded in the case of Events of the type described in clause (D).

Accordingly, upon the occurrence of any Event and until such time as there are no Events which have occurred and are continuing (a "Damages Accrual Period"), commencing on the Event Date on which such Damages Accrual Period began, the Company agrees to pay, as liquidated damages, and not as a penalty, an additional amount (the "Specified Damages"): (A) to each holder of Series I Preferred Stock, accruing at a rate equal to one-half of one percent per annum (50 basis points) calculated on an amount equal to the product of (x) the Liquidation Preference (as defined in the Certificate of Designation) times (y) the number of shares of Series I Preferred Stock held by such holder; and (B) if the Damages Accrual Period continues for a period in excess of thirty (30) days from the Event Date, from and after the end of such (30) day period until such time as there are no Events which have occurred and are continuing, to each holder of Series I Preferred Stock, accruing at a rate equal to three quarters of one percent per annum (75 basis points) calculated on an amount equal to the product of (x) the Liquidation Preference (as defined in the Certificate of Designation) times (y) the number of shares of Series I Preferred Stock held by such holder. Notwithstanding the foregoing, no Specified Damages shall accrue under clause (A) of the preceding sentence during any period for which Specified Damages accrue under clause (B) of the preceding sentence or as to any Registrable Securities from and after the earlier of (x) the date such securities are no longer Registrable Securities and (y) expiration of the Effectiveness Period. The rate of accrual of the Specified Damages with respect to any period shall not exceed the rate provided for in this paragraph notwithstanding the occurrence of multiple concurrent Events.

The Specified Damages due shall be paid by the Company to the Record Holders on each Damages Payment Date by wire transfer of immediately available funds to the accounts specified by them or by mailing checks to their registered addresses as they appear in the register of the Company for the

Registrable Securities or Common Stock, if no such accounts have been specified on or before the Damages Payment Date.

(b) DEMAND REGISTRATION.

(i) A Holder or Holders holding not less than 50% of the Registrable Securities may make a written request (a "Demand Request") for registration under the Securities Act of all or part of its Registrable Securities in a "firm commitment" underwritten offering (a "Demand Registration"); PROVIDED that the Company shall not be obligated (A) to effect a Demand Registration for the registration of Registrable Shares, the market value of which is less than $15 million (as determined by the average of the closing price for the Registrable Securities for the 20 trading dates immediately prior to the delivery of notice to the Company), (B) to effect a registration of any Registrable Securities within 180 days after any underwritten offering of equity securities by the Company or (C) to effect a Demand Registration on more than one occasion. Such request will specify the number of shares of Registrable Securities proposed to be sold. Subject to Section 2(b)(iii), the Company shall file a registration statement with respect to the Demand Registration as soon as practicable thereafter and in any event within 90 days after receiving a Demand Request (such 90th day being referred to herein as the "REQUIRED FILING DATE") and shall use its best efforts to cause the same to be declared effective by the Commission as promptly as practicable after such filing.

(ii) The Company shall deliver notice to all other Holders within fifteen business days of receiving a Demand Request. Holders receiving such notice may elect to participate in the request by notifying the party or parties who delivered such notice within fifteen business days of the receipt thereof of the intention to participate and the number of shares of Registrable Securities such Holder wants to sell.

(iii) The Holders of a majority of the Registrable Securities to be registered pursuant to the Demand Registration shall select the managing Underwriters and any additional investment bankers and managers to be used in connection with the offering; PROVIDED that such managing Underwriters and additional investment bankers must be reasonably satisfactory to the Company.

(iv) The Company may, in its sole discretion, decline to grant a Demand Request on one occasion. In such event, the Demand Request shall be deemed not to have been made for the purpose of Section 2(b)(i) hereof, provided, however, that the holders may not make another request within 120 days following the denial by the Company to grant such Demand Request.

(v) Notwithstanding anything contained herein, if the managing underwriter of an offering described in Section 2(b)(i) above delivers a written opinion to the Company that marketing considerations require a limitation on the number of shares offered pursuant to any registration statement, then the Company shall include in such registration (A) first, the securities being offered for the account of the Holders of Registrable Securities, (B) second, the number of equity securities that the Company wishes to include, and (C) third, the number of equity securities requested by holders of equity securities with registration rights that in the opinion of such underwriter, can be sold, pro rata among such holders on the basis of the amount of equity securities requested to be included by each such holders.

(vi) A registration pursuant to this Section will not be deemed to have been "effected" if it is withdrawn at the request of the holders of the majority of the Registrable Securities to be included therein.

(c) PIGGYBACK REGISTRATION.

(i) If the Company proposes to file a registration statement under the Securities Act with respect to an underwritten offering of equity securities (A) for the Company's own account or (B) for the account of any of the holders of its equity securities, then the Company shall give written notice of such proposed filing to each Holder as soon as practicable (but in no event less than 20 business days before the anticipated filing date), and such notice shall offer such Holder the opportunity to register such number of shares of Registrable Securities as such Holder may request on the same terms and conditions as the Company's or such holder's equity securities (a "Piggyback Registration"). Each Holder who desires to have its Registrable Securities included in such registration statement shall so advise the Company in writing (stating the number of shares of Common Stock desired to be registered) within 15 business days after the date of such notice from the Company. Any Holder shall have the right to withdraw such request for inclusion of such Holder's Registrable Securities in any registration statement pursuant to this section by giving written notice to the Company of such withdrawal prior to the effective date of the Registration Statement. Subject to Section 2(c)(ii) below, the Company shall include in such registration statement all such Registrable Securities requested to be included therein; PROVIDED, HOWEVER, that the Company may at any time withdraw or cease proceeding with any such registration if it shall at the same time withdraw or cease proceeding with the registration of all other securities originally proposed to be registered.

(ii) Notwithstanding anything contained herein, if the managing Underwriter of an offering described in Section 2(c)(i) above delivers a written opinion to the Company that marketing considerations require a limitation on the number of shares offered pursuant to any registration statement, then the Company shall include in such registration (A) first, the securities being offered for the account of the Company, and (B) second, the number of Registrable Securities requested to be included that, in the opinion of such Underwriter, can be sold, pro rata among the Holders on the basis of the amount of Registrable Securities requested to be included by each Holder.

3. REGISTRATION PROCEDURES. In connection with the Company's registration obligations under Section 2 hereof, the Company shall as expeditiously as possible:

(a) Prepare and file with the Commission a registration statement on any form for which the Company then qualifies and which counsel for the Company shall deem appropriate and available for the sale of the Registrable Securities to be registered thereunder in accordance with the intended method of distribution thereof (including in a Rule 415 offering), and use its reasonable efforts to cause such filed registration statement to become effective as promptly as practicable, and thereafter prepare and file with the Commission such amendments and supplements to such registration statement and the prospectus used in connection therewith as may be necessary to keep such registration statement effective (i) for a period of not less than 120 days in the case of any registration other than the Shelf Registration plus the period of any

delay or suspension of use of a prospectus pursuant to Section 2(a)(iv) hereof, and (ii) in the case of the Shelf Registration through the Effectiveness Period plus the period of any delay or suspension of use of a prospectus pursuant to Section 2(a)(iv) hereof.

(b) Notify the Holders, promptly, and confirm such notice in writing, (i) when a Prospectus, any Prospectus supplement, a Registration Statement or a post-effective amendment to a Registration Statement has been filed with the SEC, and, with respect to the Registration Statement or any post-effective amendment, when the same has become effective, (ii) of any request by the SEC or any other federal or state governmental authority for amendments or supplements to the Registration Statement or related Prospectus or for additional information, (iii) of the issuance by the SEC or any other federal or state governmental authority of any stop order suspending the effectiveness of the Registration Statement or the initiation or threatening of any proceedings for that purpose, (iv) of the receipt by the Company of any notification with respect to the suspension of the qualification or exemption from qualification of any of the Registrable Securities for sale in any

jurisdiction or the initiation or threatening of any proceeding for such purpose, (v) of the existence of any fact or happening of any event which makes any statement of a material fact in the Registration Statement or related Prospectus or any document incorporated or deemed to be incorporated therein by reference untrue or which would require the making of any changes in the Registration Statement or Prospectus in order that, in the case of the Registration Statement, it will not contain any untrue statement of a material fact or omit to state any material fact required to be stated therein or necessary to make the statements therein not misleading, and that in the case of the Prospectus, it will not contain any untrue statement of a material fact or omit to state any material fact required to be stated therein or necessary to make the statements therein, in light of the circumstances under which they were made, not misleading, and (vi) of the Company's good faith determination that a post-effective amendment to the Registration Statement would be appropriate.

(c) Use its reasonable best efforts to obtain the withdrawal of any order suspending the effectiveness of the Registration Statement, or the lifting of any suspension of the qualification (or exemption from qualification) of any of the Registrable Securities for sale in any jurisdiction, at the earliest possible moment.

(d) Prior to filing a Registration Statement or any amendment or supplement thereto, furnish to each selling Holder, copies thereof, and thereafter furnish to each such Holder such number of copies of such registration statement, amendment and supplement thereto (in each case including all exhibits thereto and documents incorporated by reference therein) and the prospectus included in such registration statement (including each preliminary prospectus) as each such Holder may reasonably request from time to time in order to facilitate the sale of the Registrable Securities.

(e) Prior to any public offering of Registrable Securities, to register or qualify (or obtain an exemption from such registration or qualification of) such Registrable Securities for offer and sale under the securities or Blue Sky laws of such jurisdictions within the United States as any Holder reasonably requests in writing, keep each such registration or qualification (or exemption therefrom) effective during the period the Registration Statement is required to be kept effective and do any and all other acts or things necessary or advisable to enable the

disposition in such jurisdictions of the Registrable Securities covered by the Registration Statement; PROVIDED, that the Company shall not be required to (A) qualify generally to do business in any jurisdiction where it is not then so qualified or (B) take any action that would subject it to general service of process in suits or to taxation in any such jurisdiction where it is not then so subject.

(f) Throughout the Effectiveness Period (other than during a Deferral Period), immediately upon the existence of any fact or the occurrence of any event as a result of which the Registration Statement shall contain any untrue statement of a material fact or omit to state any material fact required to be stated therein or necessary to make the statements therein not misleading, or a Prospectus shall contain any untrue statements of a material fact or omit to state any material fact or omit to state any material fact required to be stated therein or necessary to make each statement therein not misleading, promptly prepare and file a post-effective amendment to the Registration Statement or a supplement to the related Prospectus or any document incorporated therein by reference or file any other required document (such as a current Report on Form 8-K) that would be incorporated by reference into the Registration Statement so that the Registration Statement shall not contain any untrue statement of a material fact or omit to state any material fact required to be stated therein or necessary to make the statements therein not misleading, and so that the Prospectus will not contain any untrue statement of a material fact or omit to state any material fact required to be stated therein or necessary to make the statements therein, in the light of the circumstances under which they were made, not misleading, as thereafter delivered to the Holders, and, in the case of a post-effective amendment to the Registration Statement, use its reasonable best efforts to cause it to become effective as soon as practicable.

(g) Comply with all applicable rules and regulations of the SEC and make generally available to the holders of its securities earnings statements (which need not be audited) satisfying the provisions of Section 11(a) of the Securities Act and Rule 158 thereunder (or any similar rule promulgated under the Securities Act) no later than 45 days after the end of any 12-month period (or 90 days after the end of any 12-month period if such period is a fiscal year) (i) commencing at the end of any fiscal quarter in which Registrable Securities are sold to Underwriters in a firm commitment or best efforts underwritten offering, and (ii) if not sold to Underwriters in such an offering, commencing on the first day of the first fiscal quarter of the Company commencing after the effective date of the Registration Statement, which statements shall cover said 12-month period.

(h) Cooperate with the Holders of Registrable Securities to facilitate the timely preparation and delivery of certificates representing Common Stock to be issued and not bearing any restrictive legends; and enable such Registrable Securities to be in such denominations and registered in such names as such Holders may request.

(i) Cause the Common Stock covered by the Registration Statement to be listed and registered on each national securities exchange or quoted on the automated quotation system of a national securities association on which the Company's "Common Stock" is then listed, no later than the effective date of the Registration Statement and, in connection therewith,

to the extent applicable, to make such filings under the Exchange Act (e.g., the filing of a Registration Statement on Form 8-A) and to have such filings declared effective thereunder.

(j) Cooperate and assist in any filings required to be made with the National Association of Securities Dealers, Inc.

(k) If reasonably requested by the managing underwriter or underwriters or a Holder of Registrable Securities being sold in connection with an underwritten offering, promptly incorporate in a prospectus supplement or post-effective amendment such information as the managing underwriters and the Holders of a majority of the Registrable Securities (on a Common Stock equivalent basis) being sold in such underwritten offering agree should be included therein relating to the sale of the Registrable Securities, including, without limitation, information with respect to the aggregate number of shares of Registrable Securities being sold to such underwriters, the purchase price being paid therefor by such underwriters and with respect to any other terms of the underwritten offering of the Registrable Securities to be sold in such offering; and promptly make all required filings of such prospectus supplement or post-effective amendment.

(l) Cooperate with the selling Holders of Registrable Securities and the managing underwriters, if any, to facilitate the timely preparation and delivery of certificates representing Registrable Securities to be sold and not bearing any restrictive legends; and enable such Registrable Securities to be in such denominations and registered in such names as the managing underwriters may request at least two Business Days prior to any sale of Registrable Securities to the underwriters.

(m) In the case of a Demand registration under Section 2(b):

(i) enter into such customary agreements (including underwriting agreements in customary form) and take all such other actions as the holders of a majority of the Registrable Securities being sold or the underwriters, if any, reasonably request in order to expedite or facilitate the disposition of such Registrable Securities (including, without limitation, effecting a stock split or a combination of shares);

(ii) at the request of any seller of Registrable Securities, use its best efforts to furnish on the date that Restricted Securities are delivered to the underwriters for sale pursuant to such registration an opinion dated such date of counsel representing the Company for the purposes of such registration, addressed to the underwriters and to such seller, stating that such registration statement has become effective under the

Securities Act and that (A) to the best knowledge of such counsel, no stop order suspending the effectiveness thereof has been issued and no proceedings for that purpose have been instituted or are pending or contemplated under the Securities Act, (B) the registration statement, the related prospectus and each amendment or supplement thereof comply as to form in all material respects with the requirements of the Securities Act (except that such counsel need not express any opinion as to financial statements contained therein) and (iii) to such other effects as reasonably may be requested by counsel for the underwriters or by such Holder or its counsel;

(iii) make available for inspection by any seller of Registrable Securities, any underwriter participating in any disposition pursuant to such registration statement, and any attorney, accountant or other agent retained by any such seller or underwriter, all financial and other records, pertinent corporate documents and properties of the Company, and cause the Company's officers, directors, employees and independent accountants to supply all information reasonably requested by any such seller, underwriter, attorney, accountant or agent in connection with such registration statement; and

(iv) obtain a cold comfort letter from the Company's independent public accountants in customary form and covering such matters of the type customarily covered by cold comfort letters as the holders of a majority of the Registrable Securities being sold reasonably request (provided that such Registrable Securities constitute at least 10% of the securities covered by such registration statement).

(n) In the case of any nonunderwritten offering: (1) obtain opinions of counsel to the Company at the time of effectiveness of such Registration Statement covering such offering and updates thereof of customary frequency, addressed to each Holder of any Registrable Securities participating in such offering and covering matters that are no more extensive in scope than would be customarily covered in opinions obtained in secondary underwritten offerings by issuers with similar market capitalization and reporting and financial histories; (2) obtain "cold comfort" letters from the independent certified public accountants of the Company at the time of effectiveness of such Registration Statement and, upon the request of the Holders of a majority of the Registrable Securities (on a Common Stock equivalent basis) covered by such registration statement, updates thereof of customary frequency, in each case addressed to each Holder of Registrable Securities participating in such offering and covering matters that are no more extensive in scope than would be customarily covered in "cold comfort" letters and updates obtained in secondary underwritten offerings by issuers with similar market capitalization and reporting and financial histories, PROVIDED that any letter or update described in this clause (2) shall only be required to the extent such letters are being issued in respect of nonunderwritten secondary offerings under then prevailing accounting practices; and (3) deliver a certificate of a senior executive officer of the Company at the time of effectiveness of such Registration Statement and, upon the request of the Holders of a majority of the Registrable Securities (on a Common Stock equivalent basis) covered by such Registration Statement, updates thereof of customary frequency, such certificates to cover matters no more extensive in scope than those matters customarily covered in officer's certificates delivered in connection with underwritten offerings by issuers with similar market capitalization and reporting and financial histories. Notwithstanding anything to the contrary in this Agreement, the Purchaser or Purchasers requesting any of the items in clause (1) or (2) hereof shall pay all costs, fees and expenses related thereto.

4. REGISTRATION EXPENSES. All fees and expenses incident to the Company's performance of or compliance with this Agreement shall be borne by the Company whether or not the Registration Statement becomes effective, provided, however, that with respect to any Registration Statement filed pursuant to Section 2(b) hereof all reasonable fees and out-of-pocket expenses other than fees and expenses described in clause (vii) below shall be borne by the selling Holders in proportion to the number of shares of Registrable Securities to be registered by

each. Such fees and expenses shall include, without limitation, (i) all registration and filing fees (including, without limitation, fees and expenses (x) with respect to filings required to be made with the SEC or the National Association of Securities Dealers, Inc. and (y) relating to compliance with federal securities or Blue Sky laws (including, without limitation, fees and disbursements of counsel in connection with Blue Sky qualifications of the Registrable Securities under laws of such jurisdictions as may be required under Section 3(e) hereof or as the Holders of a majority of the Registrable Securities being sold may designate), (ii) all expenses incurred in connection with the preparation, word processing, printing and distribution of the Registration Statement, any Prospectus, any amendments or supplements thereto, and other documents relating to the performance of and compliance with this Agreement, (iii) the reasonable fees and disbursements of the registrar and transfer agent for the Common Stock (iv) messenger, telephone and delivery expenses relating to the performance of the Company's obligations hereunder, (v) reasonable fees and disbursements of counsel for the Company in connection with the Registration Statement, (vi) fees and disbursements of all independent certified public accountants related to the preparation of the Registration Statement, any Prospectus, or any amounts or supplements thereto and (vii) Securities Act liability insurance obtained by the Company in its sole discretion. In addition, in all circumstances the Company shall pay its internal expenses (including, without limitation, all salaries and expenses of its officers and employees performing legal or accounting duties), the expense of any annual audit, the fees and expenses incurred in connection with the listing of the securities to be registered on any securities exchange on which similar securities issued by the Company are then listed.

5. INDEMNIFICATION AND CONTRIBUTION.

(a) INDEMNIFICATION BY THE COMPANY - REGISTRABLE SECURITIES. The Company agrees to indemnify and hold harmless each selling Holder and each Person, if any, who controls each selling Holder within the meaning of either Section 15 of the Securities Act or Section 20 of the Exchange Act, and the officers, directors, Affiliates, employees and agents of each of the foregoing, from and against any and all losses, claims, judgments, damages and liabilities (including reasonable fees, disbursements and other charges of counsel) arising out of or based upon any untrue statement or alleged untrue statement of a material fact contained in any Registration Statement (as amended or supplemented if the Company shall have furnished any amendments or supplements thereto) or any preliminary or final Prospectus contained therein or arising out of or based upon any omission or alleged omission to state in any such Registration Statement or Prospectus a material fact required to be stated therein or necessary to make the statements therein (as to a preliminary or final prospectus), in light of the circumstances under which they were made, not misleading, and any failure by the Company to fulfill any undertaking in any Registration Statement, except insofar as such losses, claims, judgments, damages or liabilities arise out of or are based upon any such untrue statement or omission or alleged untrue statement or omission made in conformity with information relating to such Holder or the plan of distribution of Registrable Securities to be sold by such Holder, in each case furnished in writing to the Company by such Holder expressly for use therein; PROVIDED that the foregoing indemnity agreement with respect to any preliminary prospectus shall not inure to the benefit of a selling Holder with respect to any loss, claim, damage or liability relating to a purchaser if a copy of the final prospectus was furnished to such selling Holder and was not

provided to such purchaser and such final prospectus would have cured the defect giving rise to such loss, claim, damage or liability. The Company agrees to reimburse the Purchasers for reasonable fees and expenses incurred investigating claims subject to indemnification under this Section 5(a). The Company also agrees to indemnify any Underwriters of the Registrable Securities, their

officers and directors and each person who controls such Underwriters on substantially the same basis as that of the indemnification of the selling Holders provided in this Section 5(a).

(b) INDEMNIFICATION BY SELLING HOLDERS - REGISTRABLE SECURITIES. Each selling Holder agrees severally and not jointly to indemnify and hold harmless the Company, and each person, if any, who controls the Company within the meaning of either Section 15 of the Securities Act or Section 20 of the Exchange Act, and the officers, directors, Affiliates, employees and agents of each of the foregoing, from and against any and all losses, claims, judgments, damages and liabilities (including reasonable fees, disbursements and other charges of counsel) arising out of or based upon any untrue statement or alleged untrue statement of a material fact contained in any Registration Statement (as amended or supplemented if the Company shall have furnished any amendments or supplements thereto) or any preliminary or final Prospectus contained therein, or arising out of or based upon any omission or alleged omission to state therein a material fact required to be stated therein or necessary to make the statements therein, in light of the circumstances under which they were made, not misleading, but only insofar as such losses, claims, judgments, damages or liabilities arise out of or are based upon any such untrue statement or omission or alleged untrue statement or omission made in conformity with information relating to such Holder or the plan of distribution of Registrable Securities to be sold by such Holder, in each case furnished in writing to the Company by such Holder expressly for use therein. Each Holder, by exercising its registration rights hereunder, also agrees to indemnify and hold harmless any Underwriters of the Registrable Securities, their officers and directors and each person who controls such Underwriters on substantially the same basis as that to the indemnification of the Company provided in this Section 5(b) subject to the limitations set forth in 5(e).

(c) CONDUCT OF INDEMNIFICATION PROCEEDINGS. In case any proceeding (including any governmental investigation) shall be instituted involving any person in respect of which indemnity may be sought pursuant to Sections 5(a) or (b), such person (the "Indemnified Party") shall promptly notify the person against whom such indemnity may be sought (the "Indemnifying Party") in writing of such proceeding; provided, that the failure to notify the Indemnifying Party shall not relieve it from any liability that it may have to an Indemnified Party on account of the indemnity agreement contained in Sections 5(a) or (b) above except to the extent that the Indemnifying Party was actually prejudiced by such failure, and in no event shall such failure relieve the Indemnifying Party from any other liability that it may have to such Indemnified Party. If the Indemnified Party, at its option, elects to defend any such proceeding with counsel retained by it, the Indemnifying Party shall pay the fees and disbursements of such counsel related to such proceeding. Upon the request of the Indemnified Party, the Indemnifying Party shall retain counsel reasonably satisfactory to such Indemnified Party to represent such Indemnified Party and any others the Indemnifying Party may designate in such proceeding and shall pay the fees and disbursements of such counsel related to such proceeding. If, pursuant to

the immediately preceding sentence, the Indemnified Party shall have requested the Indemnifying party to retain counsel to represent such Indemnified Party with respect to any such proceeding, any Indemnified party shall have the right to retain its own counsel, but the fees and expenses of such counsel shall be at the expense of such Indemnified Party unless (i) the Indemnifying Party and the Indemnified Party shall have mutually agreed to the retention of such counsel or (ii) the named parties to any such proceeding (including any impleaded parties) include both the Indemnified Party and the Indemnifying Party and representation of both parties by the same counsel would be inappropriate due to actual or potential differing interests between them. It is understood that the Indemnifying Party shall not, in connection with any proceeding or related proceedings in the same jurisdiction, be liable for the fees and expenses of more than one separate firm of attorneys (in addition to any local counsel) at any time for all such Indemnified Parties, and that all such fees and expenses shall be reimbursed as they are incurred. Any Indemnifying Party against whom indemnity may be sought under this Section 5(c) shall not be liable to indemnify any Indemnified Party if such Indemnified Party settles such claim or action without the consent of the Indemnifying Party which shall not be unreasonably withheld. The Indemnifying Party may not agree to any settlement of any such

claim or action, other than solely for monetary damages for which the Indemnifying Party shall be responsible hereunder and with a full release of the Indemnified Party, resulting in any remedy or relief applied to or against the Indemnified Party, without the prior written consent of the Indemnified Party.

(d) CONTRIBUTION - - OFFERINGS. If the indemnification provided for in Sections 5(a) or (b) is unavailable to an Indemnified Party in respect of any losses, claims, judgments, damages or liabilities referred to herein, then each such Indemnifying Party, in lieu of indemnifying such Indemnified Party, shall contribute to the amount paid or payable by such Indemnified Party as a result of such losses, claims, judgments, damages or liabilities in such proportion as is appropriate to reflect the relative fault of the Company, the selling Holders and the Underwriters in connection with the statements or omissions that resulted in such losses, claims, judgments, damages or liabilities, as well as any other relevant equitable considerations. The relative fault of the Company, the selling Holders and the underwriters shall be determined by reference to, among other things, whether the untrue or alleged untrue statement of a material fact or the omission or alleged omission to state a material fact relates to information supplied by such party and the parties' relative intent, knowledge, access to information and opportunity to correct or prevent such statement or omission. If the allocation provided for above is not permitted by applicable law, such contribution shall be based on such equitable considerations as a court may determine to be relevant.

The Company and the selling Holders agree that it would not be just and equitable if contribution pursuant to this Section 5(d) were determined by pro rata allocation (even if the Underwriters were treated as one entity for such purpose) or by any other method of allocation that does not take account of the equitable considerations referred to in the immediately preceding paragraph. The amount paid or payable by an Indemnified Party as a result of the losses, claims, damages or liabilities referred to in the immediately preceding paragraph shall be deemed to include, subject to the limitations set forth above, any legal or other expenses reasonably incurred by such Indemnified Party in connection with investigating or defending any such action or claim.

(e) Notwithstanding the provisions of this Section 5, no Underwriter shall be required to contribute or indemnify any amount in excess of the amount by which the total price at which the Securities underwritten by it and distributed to the public were offered to the public exceeds the amount of any damages which such Underwriter has otherwise been required to pay by reason of such untrue or alleged untrue statement or omission or alleged omission, and no selling Holder shall be required to contribute or indemnify any aggregate amounts in excess of the amount by which the net proceeds of the offering (before deducting expenses) received by such selling Holder exceeds the amount of any damages which such selling Holder has otherwise been required to pay by reason of such untrue or alleged untrue statement or omission or alleged omission. No person guilty of fraudulent misrepresentation (within the meaning of Section 11(f) of the Securities Act) shall be entitled to indemnification or contribution under this Section 5 from any Person who was not guilty of such fraudulent misrepresentation.

6. ADDITIONAL REGISTRATION RIGHTS PROVISIONS.

(a) PARTICIPATION IN REGISTRATIONS. No Person may participate in any underwritten registered offering contemplated hereunder unless such Person (a) agrees to sell its securities on the basis provided in any customary underwriting arrangements approved by the Persons entitled hereunder to approve such arrangements and (b) completes and executes all questionnaires, powers of attorney, indemnities, customary underwriting agreements and other documents reasonably required under the terms of such underwriting arrangements and these Registration Rights. No Person may participate in a registered offering pursuant to the Shelf Registration unless such Person provides information reasonably requested by the Company customarily required to effect registration of the resale of the Common Stock. Notwithstanding the above, with respect to a Piggyback Registration, the Holders shall not be required to provide indemnification except to the extent provided pursuant to this Agreement. The Holders shall only be required to give representations and warranties that are

customary for selling shareholders.

(b) LOCKUP AGREEMENTS. Each Holder, by exercising its registration rights hereunder, agrees not to offer, sell, contract to sell or otherwise dispose of any Registrable Securities, or any securities convertible into or exchangeable or exercisable for such securities, during the 14 days prior to, and during the 90-day period (or such lesser period as the lead or managing underwriters may permit) beginning on, the effective date of such Registration Statement (or the commencement of the offering to the public of such Registrable Securities in the case of Rule 415 offerings) other than (i) the Registrable Securities to be sold pursuant to such Registration Statement or (ii) in a transaction not involving a public offering, provided that the purchaser (or purchasers) of such shares agrees to be bound by such lock-up restrictions for the remainder of the lock-up period.

(c) With a view to making available to the holders of Registrable Securities the benefits of certain rules and regulations of the SEC which may permit the sale of the Registrable Securities to the public without registration, the Company agrees to use its reasonable best efforts to:

(i) make and keep current public information available, within the meaning of Rule 144 or any similar or analogous rule promulgated under the Securities Act, at all times;

(ii) file with the SEC, in a timely manner, all reports and other documents required under the Securities Act and Exchange Act; and

(iii) so long as any party hereto owns any Registrable Securities, furnish to such Person forthwith upon request a written statement as to its compliance with the reporting requirements of said Rule 144, the Securities Act and the Exchange Act; a copy of its most recent annual or quarterly report; and such other reports and documents as such Person may reasonably request in availing itself of any rule or regulation of the SEC allowing it to sell such securities without registration.

(d) The Company will provide to any holder of a Registrable Security, upon such persons' request, the information required by paragraph (d)(4) of Rule 144A.

7. MISCELLANEOUS.

(a) REMEDIES. In the event of a breach by the Company of its obligations under this Agreement, each Holder of Registrable Securities, in addition to being entitled to exercise all rights granted by law, including recovery of damages, will be entitled to specific performance of its rights under this Agreement. The Company agrees that monetary damages would not be adequate compensation for any loss incurred by reason of a breach by it of any of the provisions of this Agreement and hereby further agrees that, in the event of any action for specific performance in respect of such breach, it shall waive the defense that remedy of law would be adequate.

(b) NO CONFLICTING AGREEMENTS. The Company has not, as of the date hereof, and shall not, on or after the date of this Agreement, enter into any agreement with respect to its securities which conflicts with the rights granted to the Holders of Registrable Securities in this Agreement. The Company represents and warrants that the rights granted to the Holders of Registrable Securities hereunder do not in any way conflict with the rights granted to the holders of the Company's securities under any other agreements.

(c) AMENDMENTS AND WAIVERS. The provisions of this Agreement, including the provisions of this sentence, may not be amended, modified or supplemented, and waivers to or departures from the provisions hereof may not be given, unless the Company has obtained the written consent of holders of a majority of the then outstanding Common Stock constituting Registrable Securities (with holders of Series I Preferred Stock deemed to be the holders, for purposes of this Section, of the number of outstanding shares of Common Stock into which such Series I Preferred Stock is convertible); provided,

however, that, if a Purchaser or its affiliates own at least 50% of the number of shares of Preferred Stock such Purchaser purchased on the date hereof (shares of Common Stock issued upon conversion of the Preferred Stock shall be included in this calculation as shares of Preferred Stock), the provisions of this Agreement may not be amended, modified or supplemented and waivers to or departures from the provisions

hereof may not be given without the written consent of such Purchaser. Notwithstanding the foregoing, a waiver or consent to depart from the provisions hereof with respect to a matter that relates exclusively to the rights of Holders of Registrable Securities whose securities are being sold pursuant to the Registration Statement and that does not directly or indirectly affect the rights of other Holders of Registrable Securities may be given by Holders of at least a majority of the Registrable Securities being sold by such Holders; PROVIDED, that the provisions of this sentence may not be amended, modified or supplemented except in accordance with the provisions of the immediately preceding sentence.

(d) NOTICES. All notices and other communications provided for or permitted hereunder shall be made in writing and shall be deemed given (i) when made, if made by hand delivery, (ii) upon confirmation, if made by telecopier or (iii) one business day after being deposited with a reputable next-day courier, postage prepaid, to the parties as follows:

(x) if to a Holder of Registrable Securities, at the most current address given by such Holder to the Company in accordance with the provisions of Section 7(e); and

(y) if to the Company, to:

EMCORE Corporation
394 Elizabeth Avenue
Soberest, New Jersey 08873
Attention: Thomas G. Werthan
Telephone: (732) 271-9090
Telecopy: (732) 271-0477

with a copy to:

White & Case LLP
200 South Biscayne Boulevard
Miami, Florida 33131
Attention: Jorge L. Freeland, Esq.
Telephone: (305) 995-5247
Telecopy: (305) 358-5744

or such other address as such person may have furnished to the other persons identified in this Section 7(d) in writing in accordance herewith.

(e) OWNER OF REGISTRABLE SECURITIES. The Company will maintain, or will cause its registrar and transfer agent to maintain, a register with respect to the Registrable Securities in which all transfers of Registrable Securities of which the Company has received notice will be recorded. The Company may deem and treat the person in whose name Registrable Securities are registered in such register of the Company as the owner thereof for all purposes, including, without limitation, the giving of notices under this Agreement.

(f) APPROVAL OF HOLDERS. Whenever the consent or approval of Holders of a specified percentage of Registrable Securities is required hereunder, Registrable Securities held

by the Company or its affiliates (other than Holders of Registrable Securities

or Preferred Stock if such Holders are deemed to be such affiliates solely by reason of their holdings of such Registrable Securities or Preferred Stock and other than the Purchasers) shall not be counted in determining whether such consent or approval was given by the Holders of such required percentage.

(g) SUCCESSORS AND ASSIGNS. Any person who purchases any Registrable Securities from the Purchaser shall be deemed, for purposes of this Agreement, to be an assignee of the Purchaser. This Agreement shall inure to the benefit of and be binding upon the successors and assigns of each of the parties and shall inure to the benefit of and be binding upon each Holder of any Registrable Securities. This Agreement may not be assigned by the Company without the prior written consent of the Purchasers.

(h) COUNTERPARTS. This Agreement may be executed in any number of counterparts and by the parties hereto in separate counterparts, each of which when so executed shall be deemed to be the original and all of which taken together shall constitute one and the same agreement.

(i) HEADINGS. The headings in this Agreement are for convenience of reference only and shall not limit or otherwise affect the meaning hereof.

(j) GOVERNING LAW. This agreement shall be governed by and construed in accordance with the laws of the state of New York, as applied to contracts made and performed within the state of New York without regard to principles of conflicts of laws.

(k) SEVERABILITY. If any term, provision, covenant or restriction of this Agreement is held to be invalid, illegal, void or unenforceable, the remainder of the terms, provisions, covenants and restrictions set forth herein shall remain in full force and effect and shall in no way be affected, impaired or invalidated thereby, and the parties hereto shall use their best efforts to find and employ an alternative means to achieve the same or substantially the same result as that contemplated by such term, provision, covenant or restriction. It is hereby stipulated and declared to be the intention of the parties that they would have executed the remaining terms, provisions, covenants and restrictions without including any of such which may be hereafter declared invalid, illegal, void or unenforceable.

(l) ENTIRE AGREEMENT. This Agreement is intended by the parties as a final expression of their agreement and is intended to be a complete and exclusive statement of the agreement and understanding of the parties hereto in respect of the subject matter contained herein and the registration rights granted by the Company with respect to the Registrable Securities. Except as provided in the Purchase Agreement there are no restrictions, promises, warranties or undertakings, other than those set forth or referred to herein, with respect to the registration rights granted by the Company with respect to the Registrable Securities. This Agreement supersedes all prior agreements and understandings among the parties with respect to such registration rights.

(m) ATTORNEYS' FEES. In any action or proceeding brought to enforce a provision of this Agreement, or where any provision hereof is validly asserted as a defense, the prevailing party, as determined by the court, shall be entitled to recover reasonable attorneys' fees in addition to any other available remedy.

(n) FURTHER ASSURANCES. The Company shall use all reasonable efforts to take, or cause to be taken, all appropriate action, do or cause to be done all things reasonably necessary, proper or advisable under applicable law, and execute and deliver such documents and other papers as may be required to carry out of the provisions of this Agreement and the other documents contemplated hereby and consummate and make effective the transactions contemplated hereby.

(o) TERMINATION. This Agreement and the obligations of the parties hereunder shall terminate upon the end of the Effectiveness Period,

except for any liabilities or obligations under Sections 4, 5 or 6 hereof and the obligations to make payments of and provide for Specified Damages under Section 2(a)(v) hereof to the extent such damages accrue prior to the end of the Effectiveness Period, each of which shall survive termination of this Agreement.

(p) INFORMATION AVAILABLE. So long as the Shelf Registration Statement is effective, the Company shall furnish to each holder of Registrable Securities:

(i) as soon as practicable after available (but in the case of the Company's Annual Report to Stockholders, within 120 days after the end of each fiscal year of the Company), one copy of (i) its Annual Report to Stockholders (which Annual Report shall contain financial statements audited in accordance with generally accepted auditing standards certified by a national firm of certified public accountants); (ii) its Annual Report on Form 10-K; (iii) its quarterly reports on Form 10-Q (the foregoing, in each case, excluding exhibits); and (iv) its current reports on Form 8-K, if any; and

(ii) upon the request of the Holder, all exhibits excluded by the parenthetical to subparagraph (p)(iii) of this Section 7, in the form generally available to the public.

IN WITNESS WHEREOF, the parties have executed this Registration Rights Agreement as of the date first written above.

EMCORE CORPORATION

By: /s/ THOMAS WERTHAN

Name: Thomas Werthan
Title: CFO

Accepted as of the date first above written:

HAKUTO CO., LTD.

By: /s/ SHIGEO TAKAYAMA

Name: Shigeo Takayama
Title: President

UNIROYAL TECHNOLOGY CORPORATION

By: /s/ HOWARD R. CURD

Name: Howard R. Curd
Title: Chairman and Chief Executive Officer

UNION MINIERE INC.

By: /s/ A. GODEFROID

Name: A. Godefroid
Title: Director

By: /s/ M. VAN SANDE

Name: M. Van Sande
Title: President

Exhibit 10.17

S-622773-JSS
Long-Term Purchase Agreement

IN CONSIDERATION OF THE PROMISES HEREINAFTER SET FORTH, THE PARTIES AGREE AS FOLLOWS:

SCHEDULE

This Long-Term Purchase Agreement Number S-622773-JSS, hereinafter referred to as the "Agreement", is entered into between SPACE SYSTEMS/LORAL, INC., (hereinafter referred to as "Buyer" or "SS/L"), a corporation organized and existing under the laws of the State of Delaware, and having its principal offices and place of business at 3825 Fabian Way, Palo Alto, California, 94303, and EMCORE CORPORATION, (hereinafter referred to as "Subcontractor" or "EMCORE"), with offices located at 10420 Research Road SE, Albuquerque, NM 87123.

This Agreement is contemplated by the following:

1. Buyer's AUTHORIZATION TO PROCEED (ATP) NO. S-622735-JSS, dated September 3, 1998.

2. The MEMORANDUM OF UNDERSTANDING (MOU) between the parties, dated October 6, 1998.

This Agreement supersedes the ATP and the MOU in their entirety and therefore constitutes the entire agreement between the parties. Any action taken pursuant to the ATP and the MOU shall be considered as action taken and costs incurred in the performance of this Agreement.

This Agreement is entered into on November 16, 1998, and shall expire on December 31, 2002, unless extended by mutual agreement of the parties.

This Agreement consists of the SCHEDULE, the TERMS AND CONDITIONS, and the SIGNATURE PAGE.

ARTICLE I - SCOPE OF WORK

This Agreement provides for the procurement of COMPOUND SEMICONDUCTOR MULTI-JUNCTION HIGH-EFFICIENCY SOLAR CELLS (with by-pass diode), hereinafter also referred to as Hardware, and Subcontractor agrees to provide the personnel, services, materials, equipment, and facilities necessary for the accomplishment of the tasks specified in the Exhibits cited below and any other requirements identified elsewhere in this Agreement.

The following Exhibits are listed in their order of precedence. In the event of a conflict or inconsistency between an Exhibit and an Article of this Agreement, the Article shall take precedence.

Exhibit A SS/L Document No. E177493, entitled HIGH EFFICIENCY, DUAL-JUNCTION SOLAR CELL STATEMENT OF WORK (PRELIMINARY), redlined dated September 2, 1998.

Exhibit B SS/L Document No. E177495, entitled MULTI-JUNCTION SOLAR CELL

SOURCE CONTROL DRAWING (PRELIMINARY).

Exhibit C SS/L Document No. E177492, entitled HIGH EFFICIENCY, DUAL-JUNCTION, SOLAR CELL PERFORMANCE SPECIFICATION. (PRELIMINARY), redlined September 2, 1998.

Exhibit D SS/L Document No. E032894, entitled SUBCONTRACTOR PRODUCT ASSURANCE REQUIREMENTS, Revision A, Amendment No. 1, release date March 28, 1996.

Exhibit E SS/L Document No. SH-E023988, entitled DATA REQUIREMENTS INSTRUCTIONS (DRI) FOR SPACECRAFT SUBCONTRACTORS, release date October 4, 1993.

Exhibit F SS/L Document No. E060042, entitled ENVIRONMENTAL REQUIREMENTS SPECIFICATION, release date March 27, 1995.

Exhibit G SS/L Document No. LG-E080742, DIRECT BROADCAST SATELLITES (DBS) (FOR APSTAR, MABUHAY AND TELSTAR) PROGRAM AUTHORIZED PARTS LIST (PAPL), Revision N/C, release date May 26, 1995.

Exhibit H SS/L Document No. LG-E076310, TELSTAR PROGRAM AUTHORIZED MATERIALS LIST (PAML), Revision N/C, release date June 1, 1995.

Exhibit I SS/L Document No. LG-E076311, TELSTAR Program Authorized Process List (PAPRL), Revision N/C, release date June 1, 1995.

ARTICLE II - PROVISIONS AND INFORMATION APPLICABLE TO PURCHASE RELEASES

Qualification and procurement of Hardware by Buyer pursuant to this Agreement shall be accomplished by the issuance of Purchase Releases to the extent sanctioned by the initial publication of this Agreement and amendments to same. Subcontractor shall qualify, fabricate, test, and deliver Hardware in accordance with Exhibit A through Exhibit I of Article I (SCOPE OF WORK).

Buyer may issue Purchase Releases for work, services and/or Hardware at any time during the effective term of this Agreement and Subcontractor shall fulfill all requirements of such orders accordingly.

As a minimum, each Purchase Release for Hardware shall set forth the following:

1. Long-Term Purchase Agreement (LTPA) Number.

2. Purchase Release Number.

3. Description of work, services and/or quantity of Hardware ordered.

4. Program/Project Name, if applicable, associated with the Hardware.

5. Configuration, applicable documentation, part numbers and description.

6. Firm Fixed Prices in accordance with Article IV (OPTIONS).

7. Delivery of Hardware in accordance with Article IV (OPTIONS).

8. Payment stipulations pursuant to Article IV (OPTIONS).

9. Related specific and miscellaneous instructions.

ARTICLE III - PURCHASE RELEASES

PURCHASE RELEASE NO. 1

This initial Purchase Release is issued to record and definitize Buyer's Authorization to Proceed (ATP) to Subcontractor No. S-622735-JSS, dated September 3, 1998, for the Development and Qualification effort associated with the High-Efficiency Solar Cell- reference JSS-EMC/98-001, September 3, 1998.

Unless otherwise indicated herein this Agreement, Subcontractor's successful

completion of the Qualification program imposes no obligation upon Buyer to procure Hardware from Subcontractor.

This initial Purchase Release is issued by Buyer under authority of the Agreement and sanctions Subcontractor for the QUALIFICATION OF THE HIGH-EFFICIENCY SOLAR CELL (HESC). Pursuant to the provisions of this Purchase Release, Subcontractor shall undertake and complete all requirements of the qualification program in accordance with Exhibit A through Exhibit I, and any other work herein described, as follows:

[*] Confidential information omitted and filed separately with the Securities and Exchange Commission. Asterisks denote such omissions.

A. PRICE

Subcontractor shall provide all personnel, material and resources necessary for the proper accomplishment of the Qualification Program tasks for the FIRM FIXED PRICE OF [*].

B. PERFORMANCE AND DELIVERY

Subcontractor shall commence the qualification effort on or about September 2, 1998 and complete all work and tasks in accordance with the following schedule:

ITEM NO.	DESCRIPTION	COMPLETION DATE
1	Develop process and tooling of High-Efficiency Solar Cell process	[*]
2	Demonstrate High-Efficiency Solar Cell Meet specifications	[*]
3	Deliver [*] Solar Cells processed at RTI to Buyer for Radiation Space Qualification	[*]
4	Deliver [*] Subcontractor processed Solar Cells for Space Qualification Coupon	[*]
5	Critical Design Review (CDR)	[*]
6	Deliver [*] Subcontractor processed Solar Cells for further space qualification	[*]
7	Material Readiness Review (MRR) / Final Design Review (FRR)	[*]
8	Publication of Final Qualification Program Report	[*]

C. PAYMENT

This Purchase Release provides for Milestone Payments as follows:

1	Develop process and tooling of High-Efficiency Solar Cell. Deliver Mask Data.	September 15, 1998	[*]
2	a) Deliver [*] Solar Cells processed at RTI for radiation space qualification		

[*] Confidential information omitted and filed separately with the Securities and Exchange

Commission. Asterisks denote such omissions.

	b)	Deliver [*] Solar Cells processed at Subcontractor's facility for space qualification coupon	December 21, 1998	[*]
	c)	Closure of Subcontractor CDR Action Items	December 31, 1998	[*]
3	a)	Deliver [*] Solar Cells processed at Subcontractor's facility for further space qualification.		
	b)	Closure of Subcontractor MRR/FDR Action Items.	March 30, 1999	[*]
4	Buyer Approval of Subcontractor Final Qualification Program Report		April 7, 1999	[*]
		Total Milestone Payments		[*]

1. All material and work covered by Milestone Payments shall become the sole property of Buyer.

2. Upon completion of a Milestone, Subcontractor may submit an invoice for the amounts specified provided, however, Buyer reserves the right to inspect or otherwise verify Subcontractor's progress to determine that performance relative to each payment has been satisfactorily completed.

3. Subcontractor shall submit an original and one copy of invoices to:

Space Systems/Loral, Inc. Attention: Accounts Payable
P.O. Box 10825 M/S AC-1
Palo Alto, California 94303-4697

Each invoice shall cite the LTPA Number, the Purchase Release number, and the number and description of the milestone.

4. Payment terms shall be net 30 days after receipt of invoice, actual milestone completion date or scheduled milestone completion date, whichever is later.

D. ADDITIONAL UNDERSTANDINGS AND REQUIREMENTS

1. Subcontractor shall demonstrate successful qualification of the High-Efficiency Solar Cell at the Manufacturing Readiness Review (MRR), currently scheduled for March 15, 1999.

[*] Confidential information omitted and filed separately with the Securities and Exchange Commission. Asterisks denote such omissions.

2. Successful qualification of the laydown of the High-Efficiency Solar Cell on a substrate furnished by Buyer is a requirement of this process.

The qualification of the laydown will be done by a supplier to be named by Buyer.

Qualification of the laydown of the HESC will be demonstrated at a joint MRR between the substrate supplier and Subcontractor.

3. Upon Subcontractor's demonstration that it has met the requirements of this Qualification Program to the satisfaction of Buyer, Buyer will issue and activate Purchase Release No. 2

by written notice to Subcontractor in accordance with the stipulations of Article IV (OPTIONS). Pending Buyer's documented ratification, Buyer assumes no liability or obligation to Subcontractor with respect to Purchase Release No. 2.

In the event Subcontractor is unsuccessful in achieving the requirements of the Qualification Program, Buyer has no obligation to procure hardware from Subcontractor.

E. EXCLUSIVITY

All information and data developed under this Qualification program shall be deemed proprietary to Buyer and therefore shall be provided to Buyer on an exclusive basis. Subcontractor shall have the right to use this proprietary information and data for its own purposes. Subcontractor shall not disclose information proprietary to Buyer to a third party absent the written consent of Buyer.

PURCHASE RELEASE NO. 2

PURCHASE RELEASE NO. 2 IS HEREIN DOCUMENTED BY THE INITIAL PUBLICATION OF THE AGREEMENT SOLELY FOR THE PURPOSE OF RECORDING BUYER'S INTENT TO PROCURE HARDWARE AS DEPICTED BELOW. AT THIS WRITING, PURCHASE RELEASE NO. 2 IS NOT A CONFIRMATION OF PURCHASE AS BUYER'S VALIDATION OF THE RELEASE IS SUBJECT TO THE CONTINGENCY AND ANY ASSOCIATED CONDITIONS STIPULATED IN PURCHASE RELEASE NO. 1, PARAGRAPH D.3.

Pursuant to the provisions of this Purchase Release, Subcontractor shall fabricate, test and deliver Hardware and perform related work and services in accordance with the requirements of Exhibit A through Exhibit I and the stipulations of this Release.

A. PRICE

Subcontractor shall provide all Hardware, services and documentation specified in this Purchase Release for the Firm Fixed Price of [*], as follows:

[*] Confidential information omitted and filed separately with the Securities and Exchange Commission. Asterisks denote such omissions.

Solar Cell P/n	Description	Solar Cell Efficiency Rating	Total Quantity Solar Cells	Unit Price	Total Price
TBD	Compound Semiconductor Multi-Junction HESC	[*] %	[*]	[*]	[*]

B. DELIVERY

Subcontractor shall deliver Hardware and complete any work or services procured by this Release in accordance with the following:

P/n	Quantity	Date	Destination
TBD	[*]	1 Month ABNQ(1)	TBD
TBD	[*]	2 Months ABNQ	TBD
TBD	[*]	3 Months ABNQ	TBD
TBD	[*]	4 Months ABNQ	TBD

(1) ABNQ = After Buyer Notification of Qualification

ARTICLE IV - OPTIONS

All Hardware procured under Article III (PURCHASE RELEASES) shall be deemed to be ordered as Options. Accordingly, in consideration of the award of this Agreement, Subcontractor grants to Buyer unilateral and irrevocable Options to purchase Hardware throughout the effective term of this Agreement. Any order for optional Hardware shall be accomplished by an authorized Purchase Release conveyed and confirmed by an amendment to this Agreement.

Except as expressly provided for, nothing in this Agreement shall be construed as a commitment that Buyer shall purchase Hardware.

A. PRICE

The Firm Fixed Option Prices, by Calendar Year and Solar Cell Efficiency Rating, and associated conditions applicable to Hardware ordered under this Agreement is as follows:

Calendar Year	Solar Cell Efficiency Rating	Solar Cell Quantity Range	Unit Price
1999	[*] %	[*]	[*]
		[*]	[*]
		[*]	[*]
		[*]	[*]
2000	[*] %	[*]	[*]
		[*]	[*]
		[*]	[*]
		[*]	[*]
2001	[*] %	[*]	[*]
		[*]	[*]
		[*]	[*]
		[*]	[*]
2002	[*] %	[*]	[*]
		[*]	[*]
		[*]	[*]
		[*]	[*]

[*] Confidential information omitted and filed separately with the Securities and Exchange Commission. Asterisks denote such omissions.

1. The foregoing Hardware unit prices are:

a. [*]

b. [*]

2. ADJUSTMENTS TO PURCHASE RELEASE UNIT PRICES

Modifications to Unit Prices shall be made on the basis of the following:

a. If in a Calendar Year, and within a three-month period, Buyer places a Purchase Release(s) which, when added to a previous Purchase Release(s), in the aggregate increases the quantity

of Hardware purchased such that a higher Solar Cell Quantity Range is achieved, the Unit Price(s) for all effected Releases will be modified to reflect the cumulative quantity of Hardware so purchased under these conditions.

b. If in a Calendar Year, for a incremental Purchase Release(s) which does not fall within the three-month stipulation of Subparagraph a., above, no adjustment will be made to the Unit Price of the prior Purchase Release; the Unit Price applicable to the incremental Purchase Release will, however, be adjusted provided that (1) in the aggregate a higher Solar Cell Quantity Range is achieved, and (2) continuity of monthly Subcontractor delivery is maintained.

c. In the event Hardware with a higher Solar Cell Efficiency Rating is not available during a Calendar Year as identified in this provision, Buyer may purchase available rated Hardware in accordance with the stipulations of Subparagraph a. and b., above. Under such conditions, any Hardware aggregate limitation imposed by the definition of a Calendar Year is waived.

Examples applicable to these subparagraphs can be found in APPENDIX I to this Agreement.

[*] Confidential information omitted and filed separately with the Securities and Exchange Commission. Asterisks denote such omissions.

Any Purchase Release and associated conditions effected by Unit Price adjustments will be modified accordingly.

B. [*]

C. DELIVERY / SUBCONTRACTOR CAPACITY

1. Subcontractor shall provide for the allocation of resources to ensure Buyer the capacity to fabricate and deliver Hardware not-to-exceed the following:

Calendar Year	Solar Cells Per Month
1999	[*]
2000	[*]
2001	[*]
2002(1)	[*]

(1) Through completion of orders

2. Subcontractor is not required to commence delivery of Hardware earlier than April 1999.

D. MINIMUM ORDER QUANTITY

Except as otherwise indicated in this Agreement, each purchase release will consist of no less than [*] Solar Cells.

E. HARDWARE REQUIREMENTS COVENANT

In consideration of the accords recorded in this Agreement, Buyer shall, during the effective term of this Agreement, procure from Subcontractor its requirements for Compound Semiconductor GaAs Multi-Junction High-Efficiency Solar Cells as expressly defined by the technical documentation cataloged in Article I (SCOPE OF WORK) of this Agreement, provided that Subcontractor (1) perform satisfactorily in

the manufacture, test and delivery of the Hardware purchased by Buyer, (2) sustain a level of technical and product quality competence equal to or greater than acceptable industry standards, and (3) preserve the guarantee declared in Paragraph B, above. In the event Subcontractor fails to satisfy the foregoing or any other stipulation of this Agreement, Buyer has the right to terminate this Agreement in accordance with the terms and conditions of same.

F. DOCUMENTATION

Documentation shall be delivered in accordance with the schedule appearing in the Subcontract Data Requirements List (SDRL) of Exhibit A to the delivery point identified in Article VIII (DELIVERABLE REPORTS AND DOCUMENTATION).

If a SDRL requirement has been submitted and approved by Buyer in conjunction with a prior Purchase Release issued under this Agreement, Subcontractor shall submit complete reference information from the from each submission for review and confirmation by Buyer. If a prior SDRL submittal has been approved by Buyer, yet subsequently updated or modified by Subcontractor in any manner whatsoever, such SDRL submittal shall be conveyed in its entirety for review and approval by Buyer. SUBCONTRACTOR IS RESPONSIBLE FOR CONFIRMING THAT ANY DOCUMENTATION REQUIRING THE APPROVAL OF BUYER IS RECEIVED BY BUYER.

ARTICLE V - PAYMENT

All payment due for Hardware ordered by this Agreement shall be made in accordance with the following:

A. Subcontractor may submit invoices on a monthly basis in accordance with the completion of the monthly delivery stipulations of a Purchase Release.

B. PROPERTY RIGHTS

All Hardware, work and services covered by invoice payments shall become the sole property of Buyer or Buyer's Customer. This provision shall not be construed as relieving Subcontractor from the sole responsibility of all Hardware upon which payments have been made or the restoration of any defective work in accordance with the Warranty provisions of this Agreement, or as waiving the right of Buyer to require fulfillment of all terms of this Agreement.

C. INVOICES

Subcontractor may, upon completion of monthly delivery requirements, submit invoices for the amounts specified, provided however that Buyer reserves the right to inspect or otherwise verify that Hardware for which payment is requested complies with the requirements of this Agreement. Payment for Hardware delivered does not relieve Subcontractor of any obligation hereunder.

Subcontractor shall submit an original and one copy of invoices to:

SPACE SYSTEMS/LORAL, INC.
3825 Fabian Way
Palo Alto, California 94303-4604

Attention: Accounts Payable M/S AC-1

D. PAYMENT TERMS

Payment terms are Net 30 days after receipt of invoice, scheduled delivery date, or completion of actual delivery requirements.

E. The California Resale Registration Number for Space Systems/Loral applicable to this transaction is SY GH 24-91636.

ARTICLE VI - INSPECTION AND ACCEPTANCE

A. The inspection of the work to be performed under this Agreement shall be in accordance with the requirements of Exhibit A through Exhibit I and Clause No. 19 (INSPECTION AND ACCEPTANCE) of the Terms and Conditions. The inspection period shall culminate at such time that Buyer provides written notice of Final Acceptance of the work performed.

B. Authorization to make delivery of the hardware hereunder shall occur at Subcontractor's plant upon successful completion of inspections and testing in accordance with the requirements of Exhibit A through Exhibit I. Subcontractor shall have demonstrated, by properly documented inspection and test results, full compliance with the performance requirements herein including correction by the Subcontractor of all deficiencies and all discrepancies pertaining to such inspections and testing and including completion of further retesting as may be necessary to demonstrate same. The hardware hereunder shall have been inspected by Buyer and determined to be in full compliance with the requirements of the Agreement including correction by Subcontractor of all deficiencies and discrepancies pertaining to such inspection. Satisfying the requirements of Exhibit A through Exhibit I shall not constitute waiver or release the Subcontractor from the responsibility of meeting all of the provisions herein.

Any waiver of a requirement granted by Buyer or acceptance of an out-of-spec condition applies only to the specific unit(s) identified. Said waiver or acceptance of an out-of-spec condition does not constitute a change to or waiver of any requirement of this Agreement.

C. Final acceptance of documentation hereunder shall occur at Space Systems/Loral, Palo Alto, California, after review and determination of its compliance with requirements of this Agreement, including correction by the Subcontractor of all deficiencies and discrepancies pertaining to such items.

D. Buyer and Buyer's Customer accompanied by Buyer shall have access to Subcontractor's facilities, drawings, specifications and descriptions of standards or production processes for hardware or software to be delivered hereunder to the extent necessary to ensure compliant performance. Notice of visit by Buyer and/or Buyer's customer(s) will be provided within 48 hours of the anticipated visit to Subcontractor's facility and such visit will be on a non-interference basis to Subcontractor's operations.

E. The work to be performed under this Agreement is subject to the on-going technical monitoring and pre-shipment inspection of Buyer and Buyer's Customer accompanied by

Buyer on a non-interference basis. Any review, concurrence or approval by Buyer of activities performed by Subcontractor including, but not limited to, any SDRL item submittals in connection with the work shall not relieve Subcontractor from fulfilling its obligations in meeting the requirements of this Agreement.

ARTICLE VII - TERMS OF HARDWARE DELIVERY AND SHIPMENT

All shipment of Hardware shall be in accordance with the following:

A. Buyer's Purchase Release(s) shall identify the quantity and destination of Hardware items procured under this Agreement.

B. The Initial and Final destination of all Hardware items to be delivered hereunder is as follows:

- Initial Destination Point - International Freight Services (for Space Systems/Loral)
  1610 Rollins Road
  Burlingame, CA 94010
  Attention: Mr. Achim Biller
  Phone: 650 259-5106

- Final Destination Point - TOSHIBA

  Toshiba Corporation
  Komukai Works
  1, Komukai, Toshiba-Cho, 210
  Saiwai-Ku, Kawasaki, 210 Japan

  Attention: Mr. Isao Takahashi,
  Space Products Manufacturing
  Department: Parts Acceptance Center
  Building No. 7-1, 1ST Floor

- Final Destination Point - MELCO

  Mitsubishi Electric Corporation
  Kamakura Works
  325 Kamimachiya, Kamakura
  Kanagawa 247, Japan

  Attention: Mr. Hideo Uemura,
  Space Systems Section
  Planning & Marketing Department

- Final Destination Point - SS/L

  Space Systems/Loral, Inc.
  Receiving/Distribution Center
  1145 Hamilton Court
  Menlo Park, California 94025

  Attention: Mr. Naresh Makhijami,
  Mail Stop G-44

  Mark With: LTPA S-612773-JSS

C. The FOB and Delivery Point is Carrier, as designated by Buyer, at Subcontractor's dock,

Albuquerque, New Mexico. Subcontractor shall be responsible for all costs associated with transportation and insurance of Hardware to the Delivery Point.

D. Buyer shall be responsible for all arrangements and costs associated with the transportation and insurance of Hardware- including the preparation and execution of any and all documentation, obtaining all necessary permits, licenses and clearances required by either the United States Government or the Government of Japan, the payment of Duties, Taxes and Fees, or other such charges which may be levied by these governments- from the Delivery Point set forth in Paragraph C, above, to the Destination Points noted in Paragraph B, above, or to any other delivery point within Japan required by Buyer.

E. If, by law or regulation, Buyer is required to obtain any permit, license or clearance in its capacity as Buyer under this Agreement, Buyer shall undertake all reasonable efforts to do so. If Buyer is either (1) unsuccessful in obtaining any regulatory mandated sanctions, or (2) the pursuit of same is delayed to the extent such as to endanger the intent and purpose of this Agreement, Buyer may terminate this Agreement.

Under such circumstances, Buyer's liability and obligation with respect to this Agreement shall not exceed the aggregate amount of Purchase

Releases authorized by Buyer at that time.

In the event of a conflict between this paragraph and any other stipulation appearing in this Agreement, the former shall prevail.

F. Confirmation of all shipment of Hardware, including a copy of the packing list, shall be faxed to Buyer immediately after delivery to the Carrier. The Carrier's delivery receipt, executed and dated by Carrier, shall be considered as evidence of the satisfaction of delivery requirements. This notice shall be directed to Buyer's cognizant Subcontract Administrator as designated in Article XIV, WITH AN INFORMATION COPY TO BUYER'S TRAFFIC DEPARTMENT FAX NO. (415) 852-6440.

G. Title to Hardware deliverable hereunder and risk of loss associated therewith shall be assumed by Buyer when said Hardware is placed into the hands of the Carrier at the Delivery Point noted herein and confirmed in accordance with the requirements of Paragraph F, above.

ARTICLE VIII - DELIVERABLE REPORTS AND DOCUMENTATION

Subcontractor agrees to prepare and submit all technical and other documentation, including documentation as required in the Subcontract Data Requirement List (SDRL) of Article I, Exhibit A, as follows:

A. Unless otherwise directed by a Purchase Release, all documentation required by this Agreement shall be delivered FOB Buyer's Facility, Palo Alto, California, addressed as follows:

SPACE SYSTEMS/LORAL, INC. Attention: Data Bank
3825 Fabian Way Mail Stop: V-86
Palo Alto, CA 94303

The transmittal letter with each item of deliverable documentation shall reference the Agreement Number, Statement of Work Number, Document Title, and SDRL Item Number.

B. This Agreement requires submittal of documentation, including but not limited to design, analysis, drawings, materials and parts lists and processes which require Buyer approval. Buyer approval, however, does not in any manner constitute relief of the Subcontractor's responsibility for either determining the adequacy of said items for their intended use or Subcontractor's responsibility for satisfying all requirements of this Agreement.

C. Subcontractor shall deliver with "unlimited" rights all technical data and software which Subcontractor provides to Buyer in accordance with the Subcontractor Data Requirements List set for in Article I, Exhibit A.

D. SDRL items which require Fax submittal shall be sent to the attention of Buyer's Data Bank at Fax (650) 852-4788, and Buyer's cognizant Subcontract Administrator in accordance with Article XIV.

E. Subcontractor shall submit SS/L Form 1266 (FINAL RELEASE, COMPLETION AND ROYALTY CERTIFICATION) with the final invoice submitted under this Agreement.

ARTICLE IX - NON-DISCLOSURE OF INFORMATION

A. Neither Party, nor their employees, will disclose to any third person any information it has acquired under, or as a result of this Agreement or negotiations leading to it concerning a Party's plans, business objectives, customers, personnel, products, processes, work or services without the prior written consent of the other Party, unless such information becomes generally known without fault of the disclosing Party, or is obtainable from other sources; nor shall either Party disclose or release for public dissemination any information concerning

this Agreement in advertising without prior written approval of the other Party.

B. Subcontractor agrees to make no use of drawings, specifications and technical information or data

(1) furnished by Buyer, or (2) prepared by Subcontractor or its employees and agents during the course of performance of work under this Agreement, except as required to perform hereunder.

C. Neither Party shall disclose any funding, authorization, price and schedule details of this Agreement to anyone other than Loral Space and Communications, Inc., or its customers, without the written consent of the other Party, or as might be directed by a court of law.

ARTICLE X - TECHNICAL ASSISTANCE

With the exception of the requirements of Purchase Release No. 1, Buyer makes no implication of intent nor any representation by this Agreement that it will provide any technical assistance to Subcontractor in order for Subcontractor to satisfy the requirements of this Agreement.

ARTICLE XI - ADVANCE TECHNOLOGY SUPPORT

Subcontractor will provide Buyer, free of charge, a mutually agreeable and reasonable level of engineering support in the event Buyer elects to pursue any advance technology associated with the hardware identified in this Agreement.

ARTICLE XII - PERIODIC REVIEW OF AGREEMENT

In the interest of maintaining a good-faith, long-term relationship between Buyer and Subcontractor as contemplated by this Agreement, Buyer and Subcontractor shall convene no less than an annual review each calendar year to discuss the agenda items suggested below:

1. Subcontractor's and Buyer's past performance.

2. Buyer's business projections.

3. Possible opportunities for cost savings to both parties.

4. Potential for the extension of the Agreement.

5. Other matters as deemed applicable and appropriate by the parties.

ARTICLE XIII - KEY SUBCONTRACTOR PERSONNEL CLAUSE

With respect to this Agreement and any effort leading to same, Buyer has relied upon Subcontractor's representation that Dr. Hong Hou is designated Subcontractor's primary technical representative for the work and tasks required by this Agreement.

Accordingly, in the event that the above named individual becomes unavailable to further participate in the work and tasks required by this Agreement, Subcontractor shall replace this individual with another of a comparable level of experience, qualifications and ability, and Subcontractor shall obtain Buyer's written approval prior to the replacement of the individual herein named.

ARTICLE XIV - AMENDMENTS AND NOTICES

Sole authority to make changes in or amendments to this Agreement, and to effect waivers or deviations from the work herein specified is hereby vested in Buyer's authorized Subcontract Department representative. Except as otherwise specifically provided for herein, any notices to be furnished by Subcontractor to Buyer, or by Buyer to Subcontractor, shall be sent by mail or fax addressed respectively, as follows:

SPACE SYSTEMS/LORAL, INC. 3825 Fabian Way Palo Alto, California 94303	Attention: Joseph S. Szander	Phone No. (650) 852-6506 Fax No. (650) 852-7969 Mail Station: Z53
EMCORE CORPORATION 10420 Research Road, SE Albuquerque, NM 87123	Attention: Karen L. Schneider	Phone No. (505) 332-5008 Fax No. (505) 332-5038

TERMS AND CONDITIONS

In addition to the provisions set forth in the SCHEDULE of this Agreement, Fixed Price Procurement Order Terms and Conditions SS/L P-10S Rev. 7/98 are applicable and are incorporated herein. In the event of a conflict between these stipulations and the provisions of the SCHEDULE, the latter shall prevail.

SIGNATURE PAGE

IN WITNESS WHEREOF, the parties hereto have entered into this Agreement as of the day and year first written below:

SPACE SYSTEMS/LORAL, INC.

By: /s/ JOSEPH S. SZANDER

Joseph S. Szander
Title: Subcontract Administrator

Date: November 24, 1998

EMCORE CORPORATION

By: /s/ KAREN L. SCHNEIDER

Karen L. Schneider
Title: Director of Business & Administration

Date: NOVEMBER 25, 1998

Exhibit 10.18

EXECUTION

PROMISSORY NOTE

(REVOLVING LINE OF CREDIT)

$8,000,000.00

June 22, 1998

EMCORE CORPORATION
394 Elizabeth Avenue
Somerset, New Jersey 08873
(Hereinafter referred to as the "Borrower")

FIRST UNION NATIONAL BANK
550 Broad Street
Newark, New Jersey 07102
(Hereinafter referred to as the "Bank")

Borrower promises to pay to the order of Bank, in lawful money of the United States of America, at its office indicated above or wherever else Bank may specify, the sum of EIGHT MILLION AND NO/100 DOLLARS ($8,000,000.00) or such sum as may be advanced and outstanding from time to time with interest on the unpaid principal balance at the rate and on the terms provided in this Promissory Note (including all renewals, extensions or modifications hereof, this "Note").

SECURITY. This Note is secured by the Unconditional Guaranty dated the date hereof, made by Thomas J. Russell, Jr., individually and the TJR Holding Trust (collectively, the "Note Guarantors") and by the Collateral described in the Pledge and Assignment Agreement of even date herewith made by the Note Guarantors in favor of the Bank (collectively, the "TJR Documents").

INTEREST RATE. Interest shall accrue on the unpaid principal balance of each Revolving Loan (defined herein) under this Note from the date such Revolving Loan is made available to the Borrower at the at a rate equal to one month LIBOR plus three-quarters of one percent (3/4%) per annum ("LIBOR-BASED RATE"), as determined by the Bank prior to the commencement of each Interest Period. The LIBOR-Based Rate shall remain in effect, subject to the provisions hereof, for the entire Interest Period for which it is determined. Borrower acknowledges that the LIBOR- Based Rate is not represented or intended to be the lowest or most favorable rate of interest offered by Bank. "LIBOR" is the rate for U.S. dollar deposits of that many months maturity as reported on Telerate page 3750 as of 11:00 a.m., London time, on the second London business day before the relevant Interest Period begins (or if not so reported, then as determined by Bank from another recognized source of interbank quotation). The term

"Interest Period" means, initially, the period commencing on the date hereof and ending June 30, 1998, and thereafter, each period commencing on the last day of the immediately preceding Interest Period and ending one month thereafter, but in no event after the Maturity Date; subject, however, to the following provisions: (i) if any Interest Period would otherwise end on a day which is not a New York business day, that Interest Period shall be extended to the next succeeding New York business day unless the result of such extension would be to carry such Interest Period into another calendar month, in which event such Interest Period shall end on the immediately preceding New York business day; and (ii) any Interest Period that begins on the last New York business day of a

calendar month (or on a day for which there is no numerically corresponding day in the calendar month at the end of such Interest Period) shall end on the last New York business day of a calendar month.

DEFAULT RATE. In addition to all other rights contained in this Note, if a Default (defined herein) occurs and as long as a Default continues, (a) Borrower shall no longer have the option to request a LIBOR-Based Rate and (b) all outstanding Obligations shall bear interest at the Lending Rate (s such term is defined in the Credit Agreement) plus 3% ("Default Rate"). The Default Rate shall also apply from acceleration until the Obligations or any judgment thereon is paid in full.

INDEMNIFICATION. The Borrower shall indemnify the Bank against the Bank's loss or expense in employing deposits as a consequence of (i) the Borrower's failure to make any payment when due under this Note, or (ii) any prepayment of the Loan on a date other than the last day of an Interest Period ("INDEMNIFIED LOSS OR EXPENSE").

ADDITIONAL COSTS. If, at any time, a new, or a revision in any existing law or interpretation or administration (including reversals) thereof by any government authority, central bank or comparable agency imposes, increases or modifies any reserve or similar requirement against assets, deposits or credit extended by the Bank, or subjects the Bank to any tax, duty or other charge (except tax on the Bank's net income), and any of the foregoing increase the cost to the Bank of maintaining its commitment or reduce the amount of any sum received or receivable by the Bank under this Note, within 15 days after demand by the Bank, the Borrower agrees to pay the Bank such additional amounts as will compensate the Bank for such increased costs or reductions ("ADDITIONAL COSTS").

MATCH FUNDING. The amount of such (i) Indemnified Loss or Expense, or (ii) Additional Costs outlined above shall be determined, in the Bank's sole discretion, based upon the assumption that the Bank funded 100% of that portion of the Loan to which the LIBOR-Based Rate applies in the applicable London interbank market.

UNAVAILABILITY OF INTEREST RATE. If, at any time, (i) the Bank shall determine that, by reason of circumstances affecting foreign exchange and interbank markets generally, LIBOR deposits in the applicable amounts are not being offered to the Bank; or (ii) a new, or a revision in any existing law or interpretation or administration (including reversals) thereof by any government authority, central bank or comparable agency shall make it unlawful or impossible for the Bank to honor its obligations under this Note, then (A) the Bank's

obligation, if any, to make or maintain a Revolving Loan at the LIBOR-Based Rate shall be suspended, and (B) the applicable LIBOR-Based Rate shall, for the remainder of the term of the Loan, immediately be converted to (x) the Lending Rate (as such term is defined in the Credit Agreement) or (y) if the undersigned has hedged the LIBOR-Based Rate by entering into an interest rate swap agreement with the Bank, the rate of interest payable to the undersigned by the Bank as a Floating Rate Payer under the terms of said swap agreement (plus the percentage added to LIBOR above if not included in said rate of interest payable by the Bank).

INTEREST AND FEE(S) COMPUTATION. (ACTUAL/360). Interest and fees, if any, shall be computed on the basis of a 360-day year for the actual number of days in the applicable period ("Actual/360 Computation"). The Actual/360 Computation determines the annual effective yield by taking the stated (nominal) rate for a year's period and then dividing said rate by 360 to determine the daily periodic rate to be applied for each day in the applicable period. Application of the Actual/360 Computation produces an annualized effective rate exceeding that of the nominal rate.

REPAYMENT TERMS. This Note shall be due and payable in consecutive monthly payments of accrued interest only commencing on July 1, 1998, and on the first day of each month thereafter until fully paid. In any event, all principal and accrued interest hereunder shall be due and payable on the earlier to occur of (i) the day the Revolving Loans are accelerated due to

the occurrence of a Default, or (ii) December 31, 1999 (the "Maturity Date").

MANDATORY PREPAYMENTS. Upon the receipt of Net Cash Proceeds (as defined below) from any sale or issuance of any shares of Borrower's common stock or any class of its preferred stock, any securities convertible into or exchangeable for shares of any such stock, or any warrants, rights or options to acquire shares of such stock, Borrower will prepay the Obligations in an amount equal to 100% of such Net Cash Proceeds, and (notwithstanding any provision of this Note or any other Loan Document) such prepayment shall be applied in the following manner:

FIRST: to pay the principal balance of any outstanding Revolving Loans (defined herein), together with any accrued and unpaid interest thereon, and SECOND to pay the principal balance of any outstanding Revolving Loans incurred under the Credit Agreement (defined herein), together with any accrued and unpaid interest thereon.

The maximum amount available to be advanced under this Note shall be permanently reduced by an amount equal to the amount applied to reduce the principal balance of the Revolving Loans pursuant to clause First above. As used herein "Net Cash Proceeds" means the aggregate amount of cash received from time to time (whether as initial consideration a through payment or disposition of deferred compensation) by or on behalf of Borrower in connection with any sale or issuance of equity securities contemplated above, after deduction therefrom only (i) reasonable and customary brokerage commissions, underwriting fees and discounts, legal fees and other similar fees and expenses, and (ii) the amount of taxes payable in connection with, or as a result of, such transaction; but in each case only to the extent that such amounts are deducted upon receipt of such cash proceeds and actually paid to persons or entities,

other than Borrower, Note Guarantors or any Affiliate of Borrower or Note Guarantors. For the avoidance of doubt, Borrower acknowledges that (i) the foregoing shall not be deemed or construed as a consent by Bank to any such equity sale or issuance which would otherwise be prohibited by the terms of the Loan Documents and (i) this Section, as it relates to the reduction of Borrower's Obligations under the Credit Agreement, shall survive the payment in full and/or termination of Borrower's Obligations hereunder. In connection with any prepayment required hereunder, Bank shall cooperate with Borrower to mitigate any Indemnified Loss of Expense otherwise payable hereunder and similar charges payable under the Credit Agreement.

APPLICATION OF PAYMENTS. Monies received by Bank from any source for application toward payment of the Obligations shall be applied first to fees, penalties, accrued interest and then to principal. If a Default occurs, monies may be applied to the Obligations in any manner or order deemed appropriate by Bank. If any payment received by Bank under this Note or other Loan Documents is rescinded, avoided or for any reason returned by Bank because of any adverse claim or threatened action, the returned payment shall remain payable as an obligation of all persons liable under this Note or other Loan Documents as though such payment had not been made.

LOAN DOCUMENTS AND OBLIGATIONS. The term "Loan Documents" used in this Note and other Loan Documents refers to all documents executed in connection with the loan evidenced by this Note and any prior notes which evidence all or any portion of the loan evidenced by this Note, and may include, without limitation, this Note, the TJR Documents, the Credit Agreement (as such term is defined below), guaranty agreements, security agreements, security instruments, financing statements, mortgage instruments, letters of credit and any renewals or modifications, whenever any of the foregoing are executed, but does not include swap agreements (as defined in 11 U.S.C. ss. 101).

The term "Obligations" used in this Note refers to any and all indebtedness and other obligations under this Note, all other obligations under any other Loan Document(s), and all obligations under any swap agreements as defined in 11 U.S.C. ss. 101 between Borrower and Bank whenever executed.

LATE CHARGE. If any payments are not timely made, Borrower shall also pay to Bank a late charge equal to 3% of each payment past due for 10 or more days. Acceptance by Bank of any late payment without an accompanying

late charge shall not be deemed a waiver of Bank's right to collect such late charge or to collect a late charge for any subsequent late payment received.

ATTORNEYS' FEES AND OTHER COLLECTION COSTS. Borrower shall pay all of Bank's reasonable expenses incurred to enforce or collect any of the Obligations, including, without limitation, reasonable arbitration, paralegals', attorneys' and experts' fees and expenses, whether incurred without the commencement of a suit, in any trial, arbitration, or administrative proceeding, or in any appellate or bankruptcy proceeding.

USURY. Regardless of any other provision of this Note or other Loan Documents, if for any reason the effective interest should exceed the maximum lawful interest,

the effective interest shall be deemed reduced to, and shall be, such maximum lawful interest, and (i) the amount which would be excessive interest shall be deemed applied to the reduction of the principal balance of this Note and not to the payment of interest, and (ii) if the loan evidenced by this Note has been or is thereby paid in full, the excess shall be returned to the party paying same, such application to the principal balance of this Note or the refunding of excess to be a complete settlement and acquittance thereof.

DEFAULT. If any of the following occurs, a default ("Default") under this Note shall exist: NONPAYMENT; NONPERFORMANCE. The failure of timely payment or performance of the Obligations or Default under this Note or any other Loan Documents or failure of any party to comply with any other term, condition or agreement set forth in this Note or any other Loan Document, beyond any applicable grace period, if any. FALSE WARRANTY. A warranty or representation made or deemed made in the Loan Documents or furnished Bank in connection with the loan evidenced by this Note proves materially false, or if of a continuing nature, becomes materially false. CROSS DEFAULT. At Bank's option, any default in payment or performance of any obligation under any other loans, contracts or agreements of Borrower, any Subsidiary or Affiliate of Borrower, any general partner of or the holder(s) of the majority ownership interests of Borrower with Bank or its affiliates ("Affiliate" shall have the meaning as defined in 11 U.S.C. ss. 101, except that the term "debtor" therein shall be substituted by the term "Borrower" herein; "Subsidiary" shall mean any corporation of which more than 50% of the issued and outstanding voting stock is owned directly or indirectly by Borrower). CESSATION; BANKRUPTCY. The dissolution of, termination of existence of, loss of good standing status by, appointment of a receiver for, assignment for the benefit of creditors of, or commencement of any bankruptcy or insolvency proceeding by or against the Borrower, its Subsidiaries or Affiliates, if any, or any general partner of or the holder(s) of the majority ownership interests of Borrower, or any party to the Loan Documents. NOTE GUARANTORS. If (i) any Note Guarantor fails to comply with any payment obligation set forth in the Guaranty or if any Note Guarantor fails to comply with any of the covenants or other agreements set forth in the Guaranty or any other Loan Document to which it is a party beyond any applicable grace period provided for therein, or (ii) any representation or warranty made or deemed made by Note Guarantor in the Guaranty or any other Loan Document to which it is a party or which is contained in any exhibit, schedule or any other document or other statement furnished at any time under or in connection with the Guaranty or any of the other Loan Documents shall prove to have been incorrect in any material respect on or as of the date made or deemed made, or (iii) if Note Guarantor shall terminate, purport to terminate or take any steps which have the effect of decreasing its liability under the Guaranty.

REMEDIES UPON DEFAULT. If a Default occurs under this Note or any Loan Documents, Bank may at any time thereafter, take the following actions: BANK LIEN. Foreclose its security interest or lien against Borrower's accounts without notice. ACCELERATION UPON DEFAULT. Accelerate the maturity of this Note

and all other Obligations, and all of the Obligations shall be immediately due and payable. CUMULATIVE. Exercise any rights and remedies as provided under the Note and other Loan Documents, or as provided by law or equity.

FINANCIAL AND OTHER INFORMATION. Borrower shall deliver to Bank such information as required under the Credit Agreement and other Loan Documents.

AUTOMATIC DEBIT OF CHECKING ACCOUNT FOR LOAN PAYMENT. Borrower authorizes Bank to debit its demand deposit account number 002030000135558 or any other account with Bank for any payments due under this Note. Borrower further certifies that Borrower holds legitimate ownership of this account and preauthorizes this periodic debit as part of its right under said ownership.

REVOLVING LOANS. Borrower may borrow, repay and reborrow, and Bank may advance and readvance under this Note respectively from time to time (each a "Revolving Loan" and together the "Revolving Loans"), so long as the total indebtedness outstanding at any one time does not exceed the principal amount stated on the face of this Note (as such availability may be reduced pursuant to the Section captioned Mandatory Prepayments hereunder). Bank's obligation to make Revolving Loans under this Note shall terminate if there is a Default.

ADDITIONAL COVENANTS, REPRESENTATIONS AND WARRANTIES. All of the agreements, covenants, representations and warranties made by the Borrower in the Revolving Loan and Security Agreement dated March 31, 1997 between the Borrower and the Bank as the same may be amended from time to time (the "Credit Agreement") and the other Loan Documents (as such term is defined in the Credit Agreement) are deemed incorporated herein in their entirety as if fully and completely set forth herein. All capitalized terms used herein and not otherwise defined herein shall have the meanings ascribed to such terms in the Credit Agreement. For the avoidance of doubt, Borrower acknowledges all terms and provisions of the Credit Agreement incorporated by reference into this Note shall be so incorporated as such terms exist as of the date hereof and shall remain so incorporated herein irrespective of the termination or expiration of the Credit Agreement.

WAIVERS AND AMENDMENTS. No waivers, amendments or modifications of this Note and other Loan Documents shall be valid unless in writing and signed by an officer of Bank. No waiver by Bank of any Default shall operate as a waiver of any other Default or the same Default on a future occasion. Neither the failure nor any delay on the part of Bank in exercising any right, power, or remedy under this Note and other Loan Documents shall operate as a waiver thereof, nor shall a single or partial exercise thereof preclude any other or further exercise thereof or the exercise of any other right, power or remedy.

Each Borrower or any person liable under this Note waives presentment, protest, notice of dishonor, demand for payment, notice of intention to accelerate maturity, notice of

acceleration of maturity, notice of sale and all other notices of any kind. Further, each agrees that Bank may extend, modify or renew this Note or make a novation of the loan evidenced by this Note for any period and grant any releases, compromises or indulgences with respect to any collateral securing this Note, or with respect to any other Borrower or any other person liable under this Note or other Loan Documents, all without notice to or consent of each Borrower or each person who may be liable under this Note or other Loan Documents and without affecting the liability of Borrower or any person who may be liable under this Note or other Loan Documents.

MISCELLANEOUS PROVISIONS.

ASSIGNMENT. This Note and other Loan Documents shall inure to the benefit of and be binding upon the parties and their respective heirs, legal representatives, successors and assigns. Bank's interests in and rights under this Note and other Loan Documents are freely assignable, in whole or in part, by Bank. In addition, nothing in this Note or any of the Loan

Documents shall prohibit Bank from pledging or assigning this Note or any of the Loan Documents or any interest therein to any Federal Reserve Bank. Borrower shall not assign its rights and interest hereunder without the prior written consent of Bank, and any attempt by Borrower to assign without Bank's prior written consent is null and void. Any assignment shall not release Borrower from the Obligations. APPLICABLE LAW; CONFLICT BETWEEN DOCUMENTS. This Note and other Loan Documents shall be governed by and construed under the laws of the state where Bank first shown above is located without regard to that state's conflict of laws principles. If the terms of this Note should conflict with the terms of the loan agreement or any commitment letter that survives closing, the terms of this Note shall control. BORROWER'S ACCOUNTS. Except as prohibited by law, Borrower grants Bank a security interest in all of Borrower's accounts with Bank and any of its affiliates. JURISDICTION. Borrower irrevocably agrees to non-exclusive personal jurisdiction in the state in which the office of Bank first shown above is located. SEVERABILITY. If any provision of this Note or of the other Loan Documents shall be prohibited or invalid under applicable law, such provision shall be ineffective but only to the extent of such prohibition or invalidity, without invalidating the remainder of such provision or the remaining provisions of this Note or other such document. NOTICES. Any notices to Borrower shall be sufficiently given, if in writing and mailed or delivered to the Borrower's address shown above or such other address as provided hereunder, and to Bank, if in writing and mailed or delivered to Bank's office address shown above or such other address as Bank may specify in writing from time to time. In the event that Borrower changes Borrower's address at any time prior to the date the Obligations are paid in full, Borrower agrees to promptly give written notice of said change of address by registered or certified mail, return receipt requested, all charges prepaid. PLURAL; CAPTIONS. All references in the Loan Documents to Borrower, guarantor, person, document or other nouns of reference mean both the singular and plural form, as the case may be, and the term "person" shall mean any individual, person or entity. The captions contained in the Loan Documents are inserted for convenience only and shall not affect the meaning or interpretation of the Loan Documents. BINDING CONTRACT. Borrower by execution of and Bank by acceptance of this Note agree that each party is bound to all terms and provisions of this Note. REVOLVING LOANS. Bank in its sole discretion may make other Revolving Loans under this Note pursuant hereto. POSTING OF PAYMENTS. All payments received

during normal banking hours after 2:00 p.m. local time at the office of Bank first shown above shall be deemed received at the opening of the next banking day. FEES AND TAXES. Borrower shall promptly pay all documentary, intangible recordation and/or similar taxes on this transaction whether assessed at closing or arising from time to time.

ARBITRATION. Upon demand of any party hereto, whether made before or after institution of any judicial proceeding, any dispute, claim or controversy arising out of, connected with or relating to this Note and other Loan Documents ("Disputes") between or among parties to this Note shall be resolved by binding arbitration as provided herein. Institution of a judicial proceeding by a party does not waive the right of that party to demand arbitration hereunder. Disputes may include, without limitation, tort claims, counterclaims, disputes as to whether a matter is subject to arbitration, claims brought as class actions, claims arising from Loan Documents executed in the future, or claims arising out of or connected with the transaction reflected by this Note.

Arbitration shall be conducted under and governed by the Commercial Financial Disputes Arbitration Rules (the "Arbitration Rules") of the American Arbitration Association (the "AAA") and Title 9 of the U.S. Code. All arbitration hearings shall be conducted in the city in which the office of Bank first stated above is located. The expedited procedures set forth in Rule 51 ET SEQ. of the Arbitration Rules shall be applicable to claims of less than $1,000,000.00. All applicable statutes of limitation shall apply to any Dispute. A judgment upon the award may be entered in any court having jurisdiction. The panel from which all arbitrators are selected shall be comprised of licensed attorneys. The single arbitrator selected for expedited procedure shall be a retired judge from the highest court of general jurisdiction, state or federal, of the state where the hearing will be conducted or if such person is not available to serve, the single arbitrator may be a licensed attorney.

Notwithstanding the foregoing, this arbitration provision does not apply to disputes under or related to swap agreements.

PRESERVATION AND LIMITATION OF REMEDIES. Notwithstanding the preceding binding arbitration provisions, Bank and Borrower agree to preserve, without diminution, certain remedies that any party hereto may employ or exercise freely, independently or in connection with an arbitration proceeding or after an arbitration action is brought. Bank and Borrower shall have the right to proceed in any court of proper jurisdiction or by self-help to exercise or prosecute the following remedies, as applicable: (i) all rights to foreclose against any real or personal property or other security by exercising a power of sale granted under Loan Documents or under applicable law or by judicial foreclosure and sale, including a proceeding to confirm the sale; (ii) all rights of self-help including peaceful occupation of real property and collection of rents, set-off, and peaceful possession of personal property; (iii) obtaining provisional or ancillary remedies including injunctive relief, sequestration, garnishment, attachment, appointment of receiver and filing an involuntary bankruptcy proceeding; and (iv) when applicable, a judgment by confession of judgment. Preservation of these remedies does not limit the power of an arbitrator to grant similar remedies that may be requested by a party in a Dispute.

Borrower and Bank agree that they shall not have a remedy of punitive or exemplary damages against the other in any Dispute and hereby waive any right or claim to punitive or exemplary damages they have now or which may arise in the future in connection with any Dispute whether the Dispute is resolved by arbitration or judicially.

CONDITIONS PRECEDENT. This Note shall not be deemed in full force and effect and no Revolving Loans shall be made hereunder until the Bank has received the following:

(1) This Note, duly executed and delivered by the Borrower;

(2) All of the TJR Documents fully executed by the parties thereto; and

(3) A Year 2000 Computer Compliance Questionnaire fully completed by the Borrower, in form and substance satisfactory to the Bank.

IN WITNESS WHEREOF, Borrower, on the day and year first above written, has caused this Note to be executed under seal.

EMCORE CORPORATION

CORPORATE SEAL

By: /s/ REUBEN F. RICHARDS

Name: Reuben F. Richards
Title: President and CFO

Exhibit 10.19

EXECUTION COPY

SECOND AMENDMENT TO REVOLVING LOAN AND SECURITY AGREEMENT

THIS SECOND AMENDMENT TO REVOLVING LOAN AND SECURITY AGREEMENT (this "Second Amendment"), dated as of November 30, 1998, is entered into by and between EMCORE CORPORATION, a New Jersey corporation (the "Borrower") and FIRST UNION NATIONAL BANK (the "Bank").

RECITALS:

A. The Borrower and the Bank are parties to a certain Revolving Loan and Security Agreement, dated as of March 31, 1997, as amended by a certain Consent and Amendment Agreement, dated as of December 5, 1997 (the "First Amendment") and as further modified pursuant to a certain Extension Letter dated September 29, 1998 issued by the Bank and accepted by the Borrower (the "Extension Letter", said loan agreement, as amended by the First Amendment and the Extension Letter is hereinafter referred to as the "Loan Agreement").

B. The Revolving Loan Commitment is due to expire on November 30, 1998 and, therefore, the Borrower has requested a renewal and extension thereof to October 1, 1999.

C. The Bank is willing to amend the Loan Agreement to reflect the parties understanding with respect to the renewal and extension of the Revolving Loan Commitment to October 1, 1999 subject to, and in accordance with, the terms and conditions set forth herein.

NOW, THEREFORE, in consideration of the premises and the covenants and agreements set forth herein, and for value received by each party, the parties hereto agree as follows:

SECTION 1. DEFINITIONS

1.1 EXISTING DEFINITIONS. Unless otherwise defined herein, capitalized terms used herein shall have the meanings set forth in the Loan Agreement. Upon the effectiveness of this Second Amendment, the following defined terms shall be amended as set forth herein and such amended definitions shall apply wherever such defined terms are used in the Loan Documents.

(a) The defined term "Commitment Expiration Date" is hereby amended and restated to read as follows:

"Commitment Expiration Date" means October 1, 1999, unless extended in accordance with Section 2.5 hereof."

(b) The first sentence of the defined term "Lending Rate" is hereby amended and restated to read as follows:

"Lending Rate" means, with respect to each Revolving Loan, the Prime Rate PLUS 50 basis points.

(c) The defined term "Loan Documents" is hereby amended and restated to read as follows:

"Loan Documents" means, collectively, this Agreement, the Revolving Note, the Guaranty, the Security Agreement, the Note Stock Pledge Agreements, the NM Facility Mortgage, the NM Facility Bond Pledge, the New Guaranty, the New Pledge Agreement, and all other documents, instruments and agreements delivered in connection herewith and therewith, as the same from time to time may be amended, renewed, restated, supplemented or otherwise modified."

1.2 ADDITIONAL DEFINITIONS. For purposes of the Loan Agreement and the

other Loan Documents, the following terms are hereby incorporated into Section 1 of the Loan Agreement in their respective appropriate alphabetical order:

"Consent Letter" means that certain Consent Letter issued by the Bank to the Borrower on November 24, 1998, pursuant to which the Bank provided its consent to the Specified Circumstances (as defined therein) as such circumstances relate to the issuance by the Borrower of its New Preferred Stock."

"New Guaranty" means that certain Unconditional Guaranty, in substantially the form of EXHIBIT "A" attached hereto, given by Thomas J. Russell, Jr., and TJR Holding Trust in favor of the Bank."

"New Preferred Stock" means the 1,550,000 shares of Series I Redeemable Convertible Preferred Stock, $.0001 par value per share issued by the Borrower on November 30, 1998."

"New Pledge Agreement" means that certain Pledge and Assignment Agreement, in substantially the form of EXHIBIT "B" attached hereto, given by Thomas J. Russell, Jr. and TJR Holding Trust in favor of the Bank."

"NM Facility" means that certain real property and improvements located in the City of Albuquerque, County of Bernalillo, State of New Mexico, as more fully described in the NM Facility Mortgage, which is occupied by the Borrower pursuant to a certain long term lease dated June 1, 1998, by and between the Borrower and the City of Albuquerque, New Mexico."

"NM Facility Bond Pledge" means that certain Bond Pledge Agreement, in substantially the form of EXHIBIT "C" attached hereto, given by EMCORE IRB Company, Inc. in favor of the Bank with respect to the pledge of certain New Mexico taxable industrial revenue bonds issued by the City of Albuquerque, New Mexico in connection with the development of the NM Facility.

"NM Facility Mortgage" means that certain Mortgage and Security Agreement, in substantially the form of EXHIBIT "D" attached hereto, given by the Borrower in favor of the Bank with respect to the Bank's first priority mortgage lien upon the NM Facility."

"Supplemental Revolver" means that certain $8,000,000.00 revolving credit facility made available by the Bank to the Borrower pursuant to a certain $8,000,000.00 Promissory Note dated June 22, 1998 made by the Borrower and payable to the Bank."

1.3 DELETION OF CERTAIN DEFINITIONS. As of the effectiveness of this Second Amendment, the term "Tangible Capital Funds" shall be deleted from the Loan Agreement and the Loan Documents wherever it may appear and, for the avoidance of doubt, it is hereby acknowledged that the term "Effective Tangible Net Worth" as defined in Section 10.14(b) of the Loan Agreement (as such section shall be amended hereby) shall be inserted in its place.

SECTION 2. EXISTING OBLIGATIONS

2.1 ACKNOWLEDGMENT OF EVENTS OF DEFAULT, AMOUNTS OUTSTANDING.

(a) The Borrower acknowledges that it has failed to comply with certain of the terms and conditions of the Loan Agreement, specifically the Fixed Charge Ratio set forth in Section 10.14(a) of the Loan Agreement (all as more particularly described on SCHEDULE I annexed hereto (the "Specified Default") and that, as a result of the Borrower's failure to perform and satisfy its obligations under the Loan Agreement, an Event of Default existed thereunder. The Bank acknowledges that the Specified Default has been waived pursuant to, and in accordance with, a certain Waiver Letter dated August 14, 1998 extended by the Bank to the Borrower. The Bank further acknowledges its consent to certain Specified Circumstances (as defined in the Consent Letter) pursuant to the terms and conditions of the Consent Letter. The Borrower

represents and warrants to the Bank that no Events of Default or Unmatured Events of Default (other than the Specified Default) have occurred and are continuing.

(b) The Borrower further acknowledges and agrees that, as of the date hereof, the aggregate principal amount outstanding under the Revolving Loans is $9,950,000 (without giving effect to the reduction required pursuant to Section 4.1(a) of this Second Amendment) plus accrued and unpaid interest and late charges, if any. The Borrower acknowledges and agrees that such amounts outstanding under the Revolving Loans are the valid and binding obligations of the Borrower, enforceable against the Borrower in accordance with the terms of the Loan Documents, and that, as of the date hereof, there are no claims, set-offs or defenses to the payment thereof.

2.2 WAIVER OF CLAIMS AND DEFENSES; RELEASE.

(a) The Borrower agrees that, as of the date hereof, it has no claim, counterclaim, cause of action or defense of any kind by way of offset or otherwise to the payment and satisfaction in full of the Revolving Loans. The foregoing notwithstanding, to the extent that any such a claim or defense may or does exist, as of the date hereof, the Borrower waives and releases any and all such claims, counterclaims, causes of action and defenses.

(b) The Borrower further waives and releases and affirmatively agrees not to allege or otherwise pursue, in any manner, any and all defenses, affirmative defenses, counterclaims, claims, causes of action, set-offs or other rights that it may have as of the date

hereof to contest: (i) the Specified Default; (ii) any provisions of the Loan Agreement and other Loan Documents; (iii) the rights of the Bank to all rents, issues, profits, products and proceeds of the Collateral for the Revolving Loans; (iv) the liens for the benefit of the Bank in any property (whether real or personal, tangible or intangible), right or other interest, now or hereafter arising in connection with the Collateral for the Revolving Loans; and (v) any and all acts or omissions of the Bank in administering the amounts outstanding under the Loan Agreement or otherwise; and the Borrower fully and forever releases and discharges the Bank from any and all claims or liability of any kind or nature with respect to the foregoing.

2.3 REAFFIRMATION OF SECURITY INTEREST AND LIENS. The Borrower acknowledges and agrees that the security interests and other liens granted to the Bank in the Collateral described in Section 7 of the Loan Agreement are and remain valid and first priority liens on the assets subject thereto. The Borrower further represents and warrants that (i) such collateral includes, but is not limited to, all such Collateral located , or arising as a result of operations, at the NM Facility and (ii) there are no claims, set-offs or defenses to the Bank's exercise of any rights or remedies available to it as a creditor in realizing upon such collateral under the terms and conditions of the Loan Documents. The Borrower further acknowledges that the obligations secured by and under the Loan Agreement include, but are not limited to, all such obligations of the Borrower related to the Revolving Loans as modified hereby.

SECTION 3. LOANS

3.1 RENEWAL OF REVOLVING LOAN COMMITMENT. Upon satisfaction of the conditions to effectiveness set forth in Section 4 of this Second Amendment, the Revolving Loan Commitment made available by the Bank to the Borrower pursuant to the Loan Agreement shall be extended and renewed through and including October 1, 1999. In consideration of the renewal and extension of the Revolving Loan Commitment, the Borrower shall pay to the Bank a non-refundable renewal fee in an amount to one-half of one percent (.50%) of the Revolving Loan Commitment, which shall be due and payable upon execution and delivery of this Second Amendment.

SECTION 4. CONDITIONS PRECEDENT

4.1 CONDITIONS TO THIS SECOND AMENDMENT. This Second Amendment shall become effective as of the date first written above upon fulfilment of the following conditions precedent, all as determined by the Bank, in its sole and

absolute discretion:

(a) The Borrower shall have consummated its private placement of certain of its New Preferred Stock yielding gross proceeds of not less than $21,700,000 on terms on conditions contemplated in the Consent Letter, and shall have caused that portion of said proceeds not designated for a specific use to be applied to the payment of the outstanding principal balance of the Revolving Loans;

(b) The Borrower shall have caused to be executed and delivered to the Bank the New Guaranty and the New Pledge Agreement;

(c) The Borrower shall have provided the Bank with a first mortgage lien all of the Borrower's right, title and interest in and to the NM Facility pursuant to the NM Facility Mortgage and such other mortgage documentation acceptable to the Bank, its general outside counsel and its local counsel; and in connection with the NM Facility Mortgage, the Borrower shall have caused the following materials to be delivered to the Bank, in each case, in form and substance satisfactory to the Bank, its general outside counsel and its local counsel:

(i) a mortgagee's title insurance policy or marked-up unconditional binder for such insurance in the form of an ALTA Loan Policy from a title company acceptable to the Bank in its sole and absolute discretion, said policy shall be (x) in an amount not less than $5,000,000, (y) insure the NM Facility Mortgage as a valid first lien on the NM Facility, and (z) contain such endorsements and other forms of affirmative insurance as the Bank may request in its reasonable discretion;

(ii) a land survey of the perimeter or boundaries of the site of the NM Facility certified to the Bank and acceptable to the title company issuing the title policy described in clause (i) above, said survey to show in addition to metes and bounds of the perimeter, all set-back and dimension restrictions imposed by local zoning authorities, dimensions and locations of all improvements, easements, rights of way, encroachments and the lines, distances to, and the names of the nearest intersecting streets providing ingress and egress to the NM Facility, and other details as the Bank may request;

(iii) certified copies of the bond transcript pertaining to the issuance and sale of the taxable industrial revenue bonds issued by the City of Albuquerque related to the acquisition and development of the NM Facility and the pledge of said bonds to pursuant to the NM Facility Bond Pledge;

(d) The Borrower shall have paid and/or reimbursed the Bank for all costs and expenses incurred in connection with the Consent Letter and the extension herein contemplated, including, without limitation, all appraisal fees related to Bank ordered appraisals of the NM Facility and certain other assets of the Borrower, recording and filing charges, legal fees and disbursements (including fees and disbursements of general outside counsel and local counsel in New Mexico), search charges and other incidental out-of-pocket expenses;

(e) The Borrower shall have caused to be delivered by the Guarantor of a Guarantor Agreement, in substantially the form of EXHIBIT "E" attached hereto, duly executed and delivered by the Guarantor to the Bank;

(f) The Borrower shall have provided to the Bank resolutions of the boards of directors of the Borrower and the Guarantor, certified by the secretary of each of them as of the date hereof to be duly adopted and in full

force and effect on such date, authorizing the consummation of each of the transactions contemplated by this Second Amendment (including, but not limited to, the execution and delivery of the NM Facility Mortgage);

(g) The Borrower shall have provided to the Bank certificates of the appropriate governmental authorities, dated the most recent practicable date prior to the date hereof, showing that Borrower and the Guarantor are in good standing in the States of New Jersey and New Mexico, and in such other jurisdictions as the Bank shall reasonably request;

(h) The Borrower shall have caused to be delivered to the Bank opinions of counsel to the Borrower and the Guarantor, in form and substance satisfactory to the Bank and its counsel, regarding such matters as the Bank may reasonable request in connection with the transactions contemplated in this Second Amendment (including, but not limited to, the recordability, validity, and enforceability of the NM Facility Mortgage);

(i) The Borrower shall have caused to be delivered to the Bank UCC financing statements and other filings or recordings deemed necessary by the Bank in order to perfect its security interests in the Collateral, including, without limitation, such financing statements and other filings and written assurances, as the Bank deems necessary or appropriate with respect to the any such Collateral located, or arising from operations, at the NM Facility;

(j) The Borrower shall have caused to be delivered to the Bank evidence that the insurance policies provided for in Section 10.7 of the Loan Agreement are in full force and effect, with appropriate loss payee and additional insured clauses in favor of the Bank, certified by the insurer;

(k) The Borrower shall have caused to be delivered to the Bank payment of the renewal fee referenced in Section 3.1 hereof;

(l) The Borrower shall have satisfied all other conditions to the extension contemplated herein set forth in that certain extension commitment letter dated November 23, 1998 provided by the Bank to the Borrower; and

(m) Such additional information and documents as the Bank may request.

SECTION 5. RATIFICATION AND AMENDMENT OF REPRESENTATIONS, WARRANTIES AND COVENANTS

5.1 RATIFICATION. Borrower hereby ratifies, confirms and restates, as if set forth herein in their entirety, all representations, warranties, covenants, acknowledgments and agreements set forth in Section 8 of the Loan Agreement, as amended prior the date hereof, at and as of the date hereof (other than representations, warranties and covenants which expressly speak only as of a different date), and affirmatively states that all of the same are true and accurate and shall be and remain in full force and effect, subject only to changes effected by this Second Amendment and/or changes previously disclosed to the Bank in writing. In addition, Borrower represents and warrants to the Bank that:

(a) the Borrower has the power and authority to enter into this Second Amendment;

(b) the Borrower's unaudited consolidated financial statements as of June 30, 1998, which were furnished previously to the Bank, were prepared in accordance with GAAP consistently applied throughout the period involved, and present fairly the financial position of the Borrower as at the date thereof and

the results of operations and cash flows of the Borrower for the period then ended;

(c) no changes having a material adverse effect have occurred since the date of such financial statements referred to in Section 5.1(b) above;

(d) the execution, delivery and performance of this Second Amendment and the instruments and agreements executed and delivered in connection herewith by the Borrower have been duly authorized by all requisite corporate action and this Second Amendment and the instruments and agreements executed and delivered in connection herewith constitute the legal, valid and binding obligations of the Borrower, enforceable against it in accordance with their terms;

(e) the Borrower is not in default with respect to any judgment, writ, injunction, decree, rule or regulation of any court or other governmental authority which would have a material adverse effect;

(f) there have been no changes to the certificate of incorporation or by-laws of any of the Borrower or the Guarantor since the date of the First Amendment, other than the amendments thereto effected in connection with the issuance of the New Preferred Stock; and

(g) no Event of Default or Unmatured Event of Default has occurred and is continuing or will result from the execution, delivery and performance of this Second Amendment and the instruments and agreements executed and delivered in connection herewith.

5.2 AMENDMENT OF CERTAIN PROVISIONS OF LOAN AGREEMENT.

(a) Section 4.1 of the Loan Agreement is hereby amended and restated in its entirety to read as follows:

"4.1 INTEREST RATE. With respect to each Revolving Loan, the Borrower promises to pay interest on the unpaid principal amount thereof for the period commencing on the date of such Revolving Loan until such Revolving Loan is paid in full at a rate per annum equal to the Lending Rate. Notwithstanding anything contained in this Agreement or the Revolving Note to the contrary, with respect to each Revolving Loan, after the maturity thereof on upon the occurrence and during the continuance of an Event of Default, the Borrower shall pay interest to the Bank at a rate per annum equal to the Default Rate.

(b) Section 10.14 of the Loan Agreement is amended and restated in its entirety to read as follows:

"10.14 Financial Covenants.

(a) FIXED CHARGE RATIO. Borrower shall not permit the Fixed Charge Coverage Ratio to be less than 1.2 to 1 at the end of any fiscal quarter commencing with the fiscal quarter ending March 31, 1999.

(b) EFFECTIVE TANGIBLE NET WORTH. The Borrower shall maintain an Effective Tangible Net Worth (i) as at September 30, 1998 of not less than $10,000,000.00 , (ii) as at December 31, 1998 of not less than $29,000,000.00, (iii) as at March 31, 1999 of not less than $29,000,000.00 and (iv) as at May 15, 1999 and all times thereafter of not less than $54,000,000.00. "Effective Tangible Net Worth" means total assets MINUS total liabilities as determined in accordance with GAAP, applied on a consistent basis. For purposes of this computation, the aggregate amount of any assets classified as Intangibles shall be subtracted from total assets and total liabilities shall not include the Borrower's obligations with respect to the New Preferred Stock to the extent that such obligations are otherwise classified as liabilities of the Borrower in accordance with GAAP."

(c) Section 10.21 of the Loan Agreement is amended and restated to read as follows:

"10.21 DIVIDENDS. The Borrower shall not declare any dividends (other than dividends payable solely in stock of Borrower) on, or make any payment on account of , any shares of any class of stock of the Borrower, whether now or hereafter outstanding, or make any other distribution in respect thereof, either directly or indirectly, whether in cash or property or in obligations of the Borrower, or make any payment on account of, or purchase or otherwise acquire, any securities of the Borrowers from any Person; provided, however that the foregoing shall not prohibit the Borrower from paying or declaring dividends in respect of the New Preferred Stock of (i) not greater than 2% per share (and $434,000.00 in the aggregate per annum) whether paid in cash or in-kind, in the form of scheduled dividends on such preferred stock, and (i) not greater than 0.5% per share (and $108,750 in the aggregate per annum) in cash in the form of a special dividend payment incidental to the Borrower's failure to timely file and maintain in effect the "Shelf Registration" in accordance with the terms of such preferred stock, in each case, if, AND ONLY IF, afer giving effect to the payment of any such dividends, no Event of Default or Unmatured Event of Default would then exist."

(d) Immediately following Section 10.27 of the Loan Agreement there shall be inserted a new Section 10.28, which shall read as follows:

"10.28 YEAR 2000 COMPATIBILITY. The Borrower shall take all action necessary to assure that its computer based systems have the ability to operate and effectively process data including dates on or after January 1, 2000. The Borrower shall make further inquiry as to its significant suppliers and customers regarding their respective efforts to assure such Year 2000 compatibility. At the request of the Bank, the Borrower

shall provide the Bank with such assurances as it may reasonably request to demonstrate the Borrower's compliance with the foregoing covenant."

SECTION 6. MISCELLANEOUS.

6.1 CONTINUED EFFECTIVENESS. Except as specifically amended by and/or inconsistent with this Second Amendment, all of the terms and conditions of the Loan Agreement shall remain unchanged and in full force and effect and are hereby ratified, adopted and confirmed in all respects. All references to the Loan Agreement in any Loan Document shall hereafter be deemed to refer to the Loan Agreement as amended prior to the date hereof and by this Second Amendment. This Second Amendment is a Loan Document.

6.2 PAYMENT OF EXPENSES. Borrower shall pay the reasonable fees and expenses (including, but not limited to, reasonable attorneys' fees and expenses) incurred by the Bank in connection with the preparation, negotiation, execution and delivery and enforcement of this Second Amendment and the documents executed and delivered in connection herewith and any and all renewals, modifications, amendments and waivers hereof and hereunder.

6.3 ENTIRE AGREEMENT. This Second Amendment, together with the other Loan Documents, constitutes the entire agreement between the parties with respect to the subject matter hereof and supersedes any prior agreements, written or oral, with respect to such subject matter.

6.4 COUNTERPARTS. This Second Amendment may be executed in one or more counterparts, each of which shall be deemed to be an original and all of which together shall constitute one and the same agreement, and any party may execute this Second Amendment by signing any such counterpart.

6.5 GOVERNING LAW. This Second Amendment shall be interpreted, and the rights and liabilities of the parties hereto, whether arising in contract or tort and howsoever pertaining to the parties' relationship, shall be determined

in accordance with the laws of the State of New Jersey.

6.6 HEADINGS. The section titles contained in this Second Amendment shall be without substantive meaning or content of any kind whatsoever and are not a part of the agreement between the parties.

IN WITNESS WHEREOF, the parties have executed this Second Amendment the day and year first above-written.

EMCORE CORPORATION,
a New Jersey corporation

By: /s/ THOMAS G. WERTHAN

Name: Thomas G. Werthan
Title: CFO and Vice President

FIRST UNION NATIONAL BANK

By: /s/ Robert Murphy

Name: Robert Murphy
Title: Vice President

SCHEDULE I

SPECIFIED DEFAULT

1. Failure to comply with the Fixed Charge Ratio covenant set forth in Section 10.14(a) of the Loan Agreement for the fiscal period ending June 30, 1998

Exhibit 21

SUBSIDIARY OF THE REGISTRANT

MicroOptical Devices, Inc., a Delaware corporation

Exhibit 23.1

CONSENT OF INDEPENDENT ACCOUNTANTS

We consent to the incorporation by reference in the Registration Statements of EMCORE Corporation on Form S-8 (File Nos. 333-27507, 333-36445, 333-39547 and 333-45827) of our report dated November 30, 1998 on our audits of the financial statements and financial statement schedule of EMCORE Corporation as of September 30, 1998, and for the three years ended September 30, 1998, which report is included in this Annual Report on Form 10-K.

PricewaterhouseCoopers LLP

Parsippany, New Jersey
December 28, 1998

<ARTICLE> 5
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THIS SCHEDULE CONTAINS SUMMARY FINANCIAL INFORMATION EXTRACTED FROM THE CONSOLIDATED FINANCIAL STATEMENTS OF EMCORE CORPORATION FOR THE FISCAL YEAR ENDED SEPTEMBER 30, 1998, AND IS QUALIFIED IN ITS ENTIRETY BY REFERENCE TO SUCH FINANCIAL STATEMENTS.
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