

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

**FORM 10-K**

☒ **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the fiscal year ended: September 30, 2004

or

☐ **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**

(State or other jurisdiction of incorporation or organization)

**22-2746503**

(I.R.S. Employer Identification No.)

**145 Belmont Drive, Somerset, NJ 08873**

(Address of principal executive offices, including zip code)

**(732) 271-9090**

(Registrant's telephone number, including area code)

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 ☒ 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. ☐

Indicate by check mark whether the registrant is an accelerated filer (as defined in Rule 12b-2 of the Act). Yes ☒ No ☐

The aggregate market value of common stock held by non-affiliates of the registrant as of March 31, 2004 was approximately \$147,175,335 (based on the closing sale price of \$4.07 per share).

The number of shares outstanding of the registrant's no par value common stock as of December 6, 2004 was 47,038,012.

**DOCUMENTS INCORPORATED BY REFERENCE**

Portions of the Definitive Proxy Statement to be delivered to shareholders in connection with the Annual Meeting of Shareholders to be held February 28, 2005 are incorporated by reference in Part III.

**EMCORE Corporation**  
**Form 10-K for the fiscal year ended September 30, 2004**

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### **Forward-Looking Statements**

This Annual Report on Form 10-K includes forward-looking statements within the meaning of Section 27A of the Securities Act and Section 21E of the Exchange Act. These forward-looking statements are based largely on our current expectations and projections about future events and financial trends affecting the financial condition of our business. These forward looking statements may be identified by the use of words such as “expects”, “anticipates”, “intends”, “plans”, “believes”, “estimate”, “target”, “may”, “will”, and variations of these words and similar expression. These forward-looking statements are subject to business, economic, and other risks and uncertainties, and actual results may differ materially from those discussed in these forward-looking statements. Factors that could contribute to these differences include, but are not limited to, those discussed under “Risk Factors”, “Forward-Looking Statements”, and elsewhere in this report. The cautionary statements made in this Annual Report on Form 10-K should be read as being applicable to all forward-looking statements wherever they appear in this report. This discussion should be read in conjunction with the consolidated financial statements, including any and all related notes.

These forward-looking statements include, without limitation, any and all statements or implications regarding:

- The ability of EMCORE Corporation (EMCORE) to remain competitive and a leader in its industry and the future growth of the company, the industry, and the economy in general;
- Difficulties arising from the separation of the TurboDisc capital equipment business from EMCORE’s ongoing business lines;
- Difficulties in integrating recent or future acquisitions into our operations;
- The expected level and timing of benefits to EMCORE from on-going cost reduction efforts, including (i) expected cost reductions and their impact on our financial performance, (ii) our continued leadership in technology and manufacturing in its markets, and (iii) our belief that the cost reduction efforts will not impact product development or manufacturing execution;
- Expected improvements in our product and technology development programs;
- Whether our products will (i) be successfully introduced or marketed, (ii) be qualified and purchased by our customers, or (iii) perform to any particular specifications or performance or reliability standards; and/or
- Guidance provided by EMCORE regarding our expected financial performance in current or future periods, including, without limitation, with respect to anticipated revenues, income, or cash flows for any period in fiscal 2005 and subsequent periods.

These forward-looking statements involve risks and uncertainties that could cause actual results to differ materially from those projected, including, without limitation, the following:

- EMCORE’s cost reduction efforts may not be successful in achieving their expected benefits, or may negatively impact our operations;
- The failure of our products (i) to perform as expected without material defects, (ii) to be manufactured at acceptable volumes, yields, and cost, (iii) to be qualified and accepted by our customers, and (iv) to successfully compete with products offered by our competitors; and/or
- Other risks and uncertainties described in EMCORE’s filings with the Securities and Exchange Commission (SEC) (including under the heading “Risk Factors” in this Annual Report on Form 10-K), such as: cancellations, rescheduling, or delays in product shipments; manufacturing capacity constraints; lengthy sales and qualification cycles; difficulties in the production process; changes in semiconductor industry growth; increased competition; delays in developing and commercializing new products; and other factors.

We assume no obligation to update the matters discussed in this Annual Report on Form 10-K, except as required by applicable law or regulation.

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## PART I

### Item 1. Business.

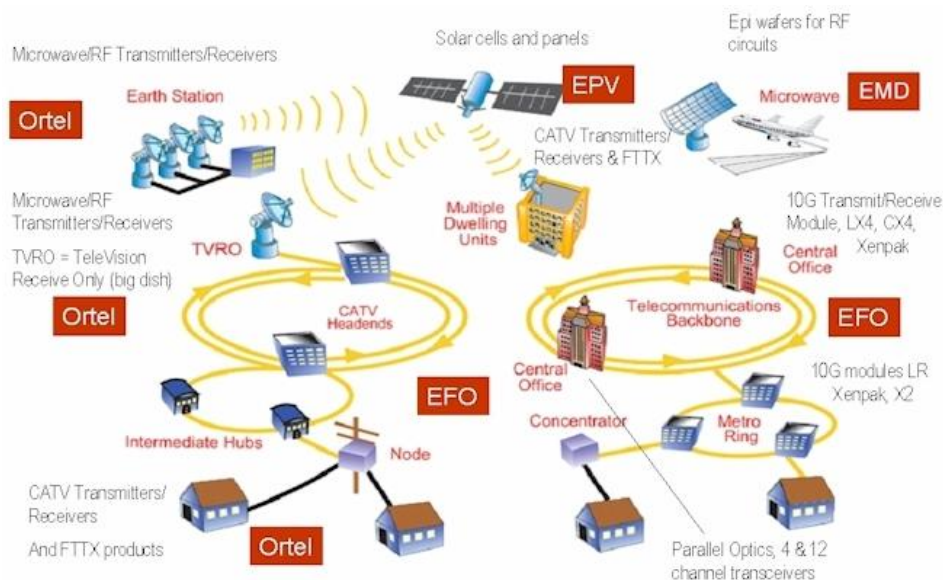
For specific information about our Company, our products or the markets we serve, please visit our website at <http://www.emcore.com>. The information on EMCORE's website is not incorporated by reference into and is not made a part of this report. All of our SEC filings are available free of charge on our website.

### Company Overview

EMCORE Corporation (EMCORE), a New Jersey corporation established in 1984, offers a broad portfolio of compound semiconductor-based components and subsystems for the broadband, fiber optic, satellite, and wireless communications markets. EMCORE continues to expand its comprehensive product portfolio to enable the transport of voice, data, and video over copper, hybrid fiber/coax (HFC), fiber, satellite, and wireless networks. EMCORE is building upon its leading-edge compound semiconductor materials and device expertise to provide cost-effective components and subsystems for the cable television (CATV), fiber-to-the-premise, business, curb or home (FTTP), telecommunications, data and storage, satellite, and wireless communications markets.

- **CATV and FTTP Networks** - The communications industry in which we participate continues to be dynamic. Cable operators and telephone companies compete with each other to offer the lowest price for unlimited "triple play" (voice, data, and video) communications through a single network connection. As a market leader in radio frequency (RF) transmission over fiber products for the CATV industry, EMCORE is enabling cable companies to offer multiple forms of communications to meet the expanding demand for high-speed Internet, on-demand and interactive video, and other new services (such as Voice over IP, or VoIP). In response to this triple play strategy from the cable companies, the telephone companies also plan to offer competing voice, data, and video services through the deployment of new fiber-based systems. These growing applications should increase demand for EMCORE's FTTP products and subsystems. Our CATV and FTTP products include broadcast analog and digital fiber optic transmitters, Quadrature Amplitude Modulation (QAM) transmitters, video receivers, Passive Optical Network (PON) transceivers, avalanche photodetectors (APD), PIN (P-type, intrinsic, and N-type semiconductor materials) photodetectors, and Distributed Feedback (DFB) and Fabry-Perot (FP) 1310 nanometer (nm) and 1550 nm analog and digital lasers.
- **Telecommunications** - Our state-of-the-art optical components and modules enable high-speed (up to an aggregate 40 Gb/s) optical interconnections that drive architectures in next-generation carrier class switching and routing networks. Our parallel optical modules facilitate high channel count optical interconnects in multi-shelf central office equipment. These systems sit in the network core and in key metro nodes of voice telephony and Internet infrastructures, and are highly expandable with pay-as-you-grow capacity scaling. EMCORE sells its recently acquired OptoCube™ transceiver product and other 4- and 12-channel parallel optics products to the telecom equipment industry.
- **Data Communications** - EMCORE's leading-edge optical components and modules for data applications include 10G Ethernet LX4, 10G Ethernet CX4, SmartLink™ optical Infiniband, and parallel optical modules for enterprise Ethernet and High Performance Computing (HPC), also called "Super Computing," applications. These high speed modules enable switch-to-switch, router-to-router, and server-to-server backbone connections at aggregate speeds of 10 gigabits per second (Gb/s) and above. Pluggable LX4 modules in X2 or XENPAK form factors provide a "pay-as-you-populate" cost structure during installation. The LX4 can transmit data over both multi-mode and single-mode optical fiber, and currently is the only available option to transmit optical 10G Ethernet signals over 300 meters of legacy multi-mode fiber or 10 km of single-mode fiber. CX4 modules similarly allow the cost-effective transmission of Ethernet signals over legacy copper cable. EMCORE's parallel optical modules also are used in switched bus architectures that are needed for next-generation Super Computers and large servers.
- **Storage Area Networks** - Our optical components also are used in the high-end data storage market, and include high-speed, 850 nm vertical cavity surface emitting lasers (VCSELs) and PIN photodiode components, and 10 Gb/s transmit and receive optical subassemblies (TOSAs/ROSAs). In the future, EMCORE anticipates selling our integrated pluggable X2 or XENPAK form factor modules into the emerging 10G Fibre Channel segment. These products provide optical interfaces for switches and storage systems used in large enterprise mission-critical applications, such as inventory control or financial systems.
- **Satellite Communications** - We manufacture high-efficiency solar cells and solar panels for global satellite communications (satcom), and expect to see increased applications for solar cells in terrestrial power products in fiscal 2005. EMCORE also manufactures satellite communications fiber optics products, including transmitters, receivers, subsystems, and systems, that transport wideband microwave signals between satellite hub equipment and antenna dishes.
- **Wireless Communications** - EMCORE manufactures compound semiconductor RF materials for the wireless handset, cell phone, and base station markets. Our products include 4-inch and 6-inch InGaP Hetero-junction Bipolar Transistor (HBT), AlGaAs pseudomorphic high electron mobility transistors (pHEMT), and E-mode transistor wafers that are used for power amplifiers and switches within next-generation wireless networks. We also produce GaN high electron mobility transistors (HEMT) RF materials that are designed to meet future wireless base station infrastructure requirements for higher power and frequency, along with high temperature operation at industry-leading efficiencies.

The following illustration shows how EMCORE's products are deployed throughout the world's communications infrastructure, and how they interconnect with each other. The lower left side shows CATV and FTTP networks, the lower right side shows telecommunications and data networks, and the upper portion shows satcom and wireless networks.



## GELcore (HB-LED) Joint Venture

EMCORE also is involved in a joint venture with General Electric Lighting to address the solid-state lighting market with High Brightness Light Emitting Diode-based (HB-LED) lighting systems. Through its 49% ownership in GELcore, LLC (GELcore), EMCORE participates in the development and commercialization of next-generation LED technology for use in the general and specialty illumination markets. GELcore's products include traffic lights, channel letters, and other signage and display products that incorporate HB-LEDs. In the near term, GELcore expects to deploy its HB-LED products in the commercial and industrial markets, including medical, aerospace, commercial refrigeration, transportation, appliance, and general and specialty illumination applications. EMCORE's partner in the joint venture is General Electric Lighting, which owns the remaining 51% of GELcore.

## Acquisitions and Divestiture

In addition to using our internal capability to develop and manufacture products for target markets, EMCORE continues to expand its portfolio of communications products and technologies through acquisitions:

- In October 2003, EMCORE acquired Molex Inc.'s 10G Ethernet transceiver business (Molex) for an initial \$1.0 million in cash, \$1.5 million in cash earnout based upon initial LX4 unit shipments, and future cash earnout payments. This transaction included assets, products, and significant intellectual property in LX4 technology, as well as several Molex product designers. EMCORE's newly-formed design center in Downers Grove, IL designs and manufactures serial 10 Gb/s and coarse-wavelength division-multiplexing (CWDM) optical transceivers for the growing 10G Ethernet market. Management believes that the acquisition of Molex's 10G Ethernet transceiver business has provided us with a significant competitive advantage and the most complete 10G Ethernet transceiver product portfolio in the industry.
- In June 2004, EMCORE acquired Corona Optical Systems, Inc. (Corona) for \$1.2 million in a cash-for-stock merger. Corona is a market leader in parallel optics with its ultra-small form factor OptoCube™ transceiver, which is currently being deployed by Tier 1 customers for use in telecommunications switching and carrier-class routing applications. This acquisition further strengthens EMCORE's position as a leader in parallel optics technology. The unique OptoCube transceiver's ultra-small form factor design and manufacturing platform are well-suited for high-performance, low-cost, and high-volume manufacturing. The OptoCube transceiver can be used as part of high-density optical backplanes in a variety of defense, super-computing, and consumer applications.

As discussed in last year's Annual Report, EMCORE sold its TurboDisc capital equipment business in November 2003 to a subsidiary of Veeco Instruments Inc. (Veeco) in a transaction that is valued at up to \$80.0 million. The selling price was \$60.0 million in cash at closing, with an additional aggregate maximum payout of \$20.0 million over the next two years. EMCORE will receive in cash or stock 50% of all revenues from the TurboDisc capital equipment business that exceed \$40.0 million in each of the next two years, beginning January 1, 2004. EMCORE management expects to receive between \$15.0 and \$17.0 million during the second quarter of fiscal 2005 as part of the additional payout.

Furthermore, as part of EMCORE's business strategy, we are committed to the ongoing evaluation of strategic opportunities and, where appropriate, to the acquisition of additional products, technologies, or businesses that are complementary to, or broaden the markets for, our products.

## Compound Semiconductor Industry Overview

Advances in information technologies have created a growing need for efficient and high-performance electronic systems that operate at very high frequencies, provide higher transmission rates with increased storage capacities, have augmented computational and display capabilities, and can be produced cost-effectively in commercial volumes. In the past, manufacturers of electronic systems have relied on advances in silicon semiconductor technology to meet many of these demands. But the latest generation of high-performance electronic and optoelectronic applications require certain functionalities that are generally not achievable using silicon-based components. Advantages of compound semiconductor devices over traditional silicon devices include:

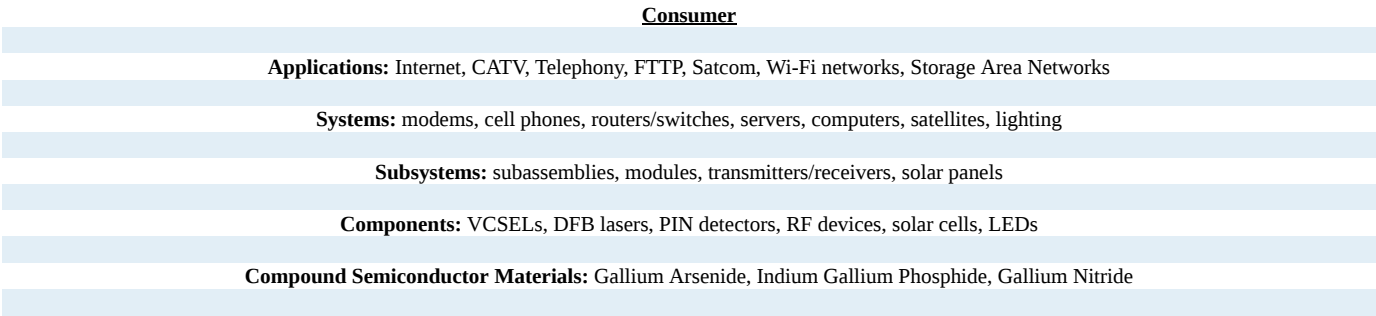
- **Higher operating speeds** to address 10 Gb/s and beyond applications;
- **Lower power consumption** to meet the demand for higher bandwidth density;
- **Reduced noise and distortion** for maximum signal-to-noise performance;
- **Higher temperature performance** for both commercial and military applications;
- **Light emitting and detecting** optoelectronic properties to power the optical interconnection market;
- **Higher detection efficiency** to maximize power conversion in satellite applications; and
- **Higher light emission efficiency** for converting electrical power in general and specialty illumination devices.

Compound semiconductor devices also can be combined into integrated circuits, such as transmitters, receivers and alphanumeric displays. Electronic manufacturers are increasingly integrating compound semiconductor devices into their products in order to achieve higher performance in applications targeted for a wide variety of communications markets. Examples of such applications enabled by compound semiconductor devices include:

- **High speed Internet** built upon optical devices that transport data cost-effectively over local and long distances;
- **Video-on-demand** over broadband cable modems using high-efficiency lasers and low-noise receivers;
- **Storage Area Networks** for the high-speed transfer of data between computer systems and storage elements;
- **Satellite communications** that utilize high-efficiency solar cells to power satellites and fiber optics components and subsystems to connect antennas to ground stations;
- **LED traffic lights, signage, displays, automotive, and general illumination devices** built upon high-brightness LEDs;
- **Cellular telephones** and **wireless networks** that utilize power-efficient RF devices;
- **DVD players** built upon short wavelength optical devices to maximize storage density; and
- **Laser mice** incorporating VCSELs for desktop computing.

The systems that enable these applications consist of many components and subsystems that incorporate individual compound semiconductor devices. Companies that own unique leading-edge technologies will be able to continue to provide value-added components, subsystems, and turnkey systems to meet the expanding communications requirements of the future.

The diagram below shows the individual building blocks that enable the final user application. The trend in the industry is for companies to supply more and more of the products within each layer in order to stay cost competitive and improve operating margins. EMCORE focuses its products in the materials, components, and subsystems layers.



**EMCORE’s Strategy.**

Our objective is to maximize shareholder value by capitalizing upon our leading-edge compound semiconductor materials and device expertise to provide cost-effective components and subsystems for the broadband, fiber optic, satellite, and wireless communications markets. The key elements of EMCORE’s strategy include:

**I. Leverage EMCORE’s Leading-Edge Compound Semiconductor and Manufacturing Expertise Across Multiple Product Applications.**

The model of purchasing components from multiple vendors results in too many layers of margin stack-ups, such that the final integrated subsystem is no longer cost competitive. We believe the trend in our industry is towards a vertically integrated structure in which key technologies are produced internally. By having the know-how and intellectual property to internally produce and supply compound semiconductor products, EMCORE can stay ahead of the competition in both performance and cost effectiveness.

EMCORE continually leverages its proprietary core technologies to develop compound semiconductor products for multiple applications in a variety of markets. Our internally designed and manufactured VCSELs, digital DFB lasers, and PIN and APD photodiodes are the optical components used in our TOSA and ROSA products, as well as in our data and telecommunications transmitters, receivers, transceivers, and transponders. Similarly, our internally designed and manufactured analog and digital DFB and FP lasers and PIN photodiodes are the optical components used in our CATV and FTTP devices.

**II. Target Potential High Growth Market Opportunities.**

We target potential high growth market opportunities, where performance characteristics and high volume production efficiencies can give compound semiconductors a competitive advantage over other devices. Historically, while technologically superior, compound semiconductors have not been widely deployed because they are more expensive to manufacture than silicon-based semiconductors and other existing solutions. EMCORE believes that as compound semiconductor production costs are reduced, new customers will be compelled to use these products because of their enhanced performance characteristics. For example, we are currently focused on high growth areas in communications infrastructure by providing complete solutions for widely-accepted transmission platforms, such as 10G Ethernet, Synchronous Optical Network (SONET), Infiniband, and Fibre Channel.

With increased demand for high bandwidth services, such as Internet, enterprise data processing and storage, video-on-demand, on-line gaming, and high-definition television (HDTV), more and more systems are relying on optics to transmit the signals. EMCORE is well positioned to leverage its compound semiconductor expertise in the area of VCSELs, DFB lasers, PIN/APD detectors into value-added subsystems to meet this market demand.

**III. Pursue Strategic Acquisitions and Partnerships with Industry Leading Companies.**

EMCORE seeks to identify and develop long-term relationships with leading companies in each of the industries that we serve. We develop these relationships through long-term, high-volume supply agreements, joint ventures, acquisitions, investments, and other arrangements. Significant transactions include:

*Strategic Commercial Relationships* - In June 2004, EMCORE announced that it had been selected by ANADIGICS, Inc., a leading supplier of wireless and broadband solutions, to be their primary supplier for all RF materials. EMCORE's six-inch GaAs RF transistor wafers will be used to produce power amplifiers and related devices for deployment in widespread wireless applications, such as cellular telephones, laptop computers, and wireless infrastructure networks;

*Technology Development* - EMCORE works closely with our customers to develop next-generation technology, based on our technical and manufacturing capabilities, to help our customers achieve their product roadmap objectives. In fiscal 2004, EMCORE achieved design wins with Cisco Systems, Inc. (10G XENPAK), Alcatel (FTTP video receiver), Scientific-Atlanta, Inc. (CATV HFC transmitter), and Aurora Networks (CATV HFC transmitter);

*Joint Venture* - In January 1999, General Electric Lighting and EMCORE formed GELcore, a joint venture to develop and market HB-LED lighting products. Since its inception, GELcore has had a compound annual revenue growth rate of 23%, with calendar 2003 revenue totaling \$53.7 million. EMCORE expects that GELcore’s calendar 2004 revenue will approximate \$70.0 million. General Electric Lighting and EMCORE have agreed that this joint venture will be the exclusive vehicle for each party’s participation in solid-state lighting;

*Acquisitions* - Recently, acquisitions have been a focus in order to enhance technologies. Over the past two years, the acquisitions listed below have expanded not only our materials expertise, but also our components and subsystems technologies:

- Alvesta’s low-cost pluggable optical and electrical module technology leverages EMCORE’s VCSEL and PIN expertise;
- Ortel’s high-performance broadcast and QAM transmitters and subscriber-end receivers leverages EMCORE’s DFB laser, APD detector, and analog and digital RF expertise;
- Molex’s industry leading CWDM optical modules leverage EMCORE’s multi-wavelength DFB laser and PIN detector expertise; and
- Corona’s ultra-small form factor transceivers leverage EMCORE’s position in the parallel optics market.

*Investment* - In October 2004, EMCORE invested \$1.0 million in K2 Optronics, Inc., a California-based company that specializes in the design and manufacture of

external cavity lasers, to strengthen our partnership in designing next-generation, high-performance, long-wavelength components on an exclusive basis for the CATV and FTTP markets.

IV. Continually Invest in Research and Development to Maintain Technology Leadership.

Through substantial investment in research and development (R&D), EMCORE seeks to expand its leadership position in compound semiconductor-based communications products and subsystems. We work with our customers to enhance the performance of our processes, materials science, and fiber optic module design expertise, including the development of new low-cost, high-volume wafers, components, and subsystems for our customers. To remain a leader in our markets, EMCORE not only addresses our customers’ current needs, but we respond to their evolving requirements to remain designed into their product lifecycles. In addition, EMCORE’s development efforts are focused on continually lowering the production costs of its products. For example, in December 2003, we introduced the SmartLink™ optical Infiniband link, a low cost, 10 Gb/s media converter solution that uses fiber optics to extend the current copper socket throughout the data center or central office (CO). The SmartLink component replaces bulky, distance-limited Infiniband copper cable with a low cost, plug-and-play optical connection that provides improved performance, lighter weight, and extended reach (up to 300 meters), with low cross talk.

V. Target Positive Cash Flows From Operations.

Management is committed to achieving profitability by reducing EMCORE’s cost structure and lowering the breakeven points of every product line, with the goal of achieving cash flow breakeven from operations during fiscal 2005. In the past year, management has implemented a number of initiatives to help achieve this goal: (i) outsourced high volume product manufacturing to contract manufacturers overseas; (ii) consolidated various corporate functions; (iii) reduced outside contractors and temporary workers; (iv) implemented programs to improve manufacturing process yields; (v) focused R&D efforts on projects that are expected to generate returns within one year without, we believe, jeopardizing future revenue opportunities; and (vi) workforce reductions. Additional product manufacturing will be outsourced during fiscal 2005, and further consolidation of facilities is under review. Offsetting some of the savings, however, are costs to implement the Sarbanes-Oxley Act of 2002 and related increases in auditing fees.

EMCORE’s Products

The following chart summarizes (i) our products, (ii) the markets to which those products are directed, (iii) representative applications in which our products are used, and (iv) certain benefits and characteristics of compound semiconductor devices:

Products	Market	Representative Applications	Benefits/Characteristics
§ Analog & digital lasers (DFB, FP) § Photodetectors and subassembly components § Broadcast analog & digital fiber-optic transmitters § QAM transmitters	CATV	§ Cable Television (CATV) § Hybrid Fiber Coax (HFC) networks § Digital overlay on HFC	§ Increased capacity to offer more cable services § Increase data transmission speeds § Increased bandwidth § Lower power consumption § Low noise video receive § Increased transmission distance
§ Analog & digital lasers (DFB, FP) § Photodetectors and subassembly components § PIN and APD photodiodes and subassemblies § Passive optical network (PON) transceivers § Analog & digital video receivers § Multi-Dwelling Unit video receivers		FTTP	§ Passive optical network (PON) in Fiber-to-the-Premise (FTTP) networks § High performance for both digital and analog characteristics § Integrated infrastructure to support competitive costs § Support for multiple standards
§ High-speed lasers (VCSEL, DFB, FP) and subassembly components § High-speed photodetector (PIN, APD) and subassembly components § RF devices and materials § 10G Ethernet modules in XENPAK & X2 § Parallel optical modules		Data Communications (LAN, SAN, Infiniband)	§ High-speed fiber optic networks and optical links (including Infiniband, Ethernet, Fibre Channel networks) § Copper replacement in the data center/CO § Supercomputing § High performance computing (HPC) systems § Storage Area Networks (SAN) § Network Attached Storage (NAS) § Increased network capacity § Increase data transmission speeds § Increased bandwidth § Lower power consumption § Improved cable management over copper interconnects § Increased transmission distance § Lowest cost optical interconnections for massively parallel multi-processors
§ Solar cells and panels § RF materials § Fiber-optic transmitters and receivers		Satellite Communications	§ Power modules for satellites § Satellite-to-ground communications § Antenna to ground station communications § High radiation tolerance § High light-to-power conversion efficiency for reduced size and launch costs § Increased bandwidth
§ RF and electronic materials § RF and electronic devices § Optical transmitters for remoting		Wireless Communications	§ Cellular telephones § Pagers § PCS handsets § Increased network capacity



- § Direct broadcast systems
- § PDAs
- § Remoting
- § Lower power consumption
- § Reduced network congestion
- § Extended battery life
- § Improved signal-to-noise performance

§ HB-LED lighting systems	<b>Solid-State Lighting</b>	<ul style="list-style-type: none"> <li>§ Flat panel displays</li> <li>§ Solid-state lighting</li> <li>§ Outdoor signage and displays</li> <li>§ Traffic signals</li> </ul>	<ul style="list-style-type: none"> <li>§ Lower power consumption</li> <li>§ Lower temperature operation</li> <li>§ Longer life</li> </ul>
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The following charts depict some of our products:

Fiber Optic Products:

LX4 XENPAK & X2



2, 4, 10 Gbps TOSAs



Parallel Optical Modules



2, 4, 10 Gbps ROSAs



Digital Networks

CX4 XENPAK & X2



Surface mount 10G Rx



Fiber Optic Products:

1310 & 1550 nm CATV Tx



ONT PON Transceivers



CATV & FTTP Tx Cards



20 GHz Tx and Rx



CATV, FTTP, Satcom

CATV Lasers & Receivers



Satcom Systems



Fiber Optic Products:

DFB, FP Lasers



VCSEL Singlets, Arrays



Chips and Die

PIN, APD Detectors



PhotoVoltaic Products:

Solar Cells



CICs



Solar Cells, CICs, Solar Panels

Solar Panels



Electronic Materials and Devices Products:

InGaP HBTs



pHEMTs



Epi Wafers for Wireless, RF Applications

GaN HEMTs



### EMCORE’s Product Lines

#### Fiber Optics

Over the past several years, communications networks have experienced dramatic growth in data transmission traffic due to worldwide Internet access, e-mail, and e-commerce. As Internet content expands to include full motion video on-demand (including HDTV), multi-channel high quality audio, online video conferencing, image transfer, online gaming, and other broadband applications, the delivery of such data will place a greater demand on available bandwidth. The bulk of this traffic is already routed through the optical networking infrastructure used by local and long distance carriers, as well as Internet service providers. Optical fiber offers substantially greater bandwidth capacity, is less error prone, and is easier to administer than older copper wire technologies.

EMCORE's fiber optics group manufactures high-speed optical transmitter, receiver, and transceiver modules that utilize our leading-edge laser and photodiode components for the data communications and telecommunications markets. EMCORE's modules are designed to help solve data bottleneck problems for short and intermediate distance applications in central office, enterprise, and point-of-presence (POP) environments. Growing segments, such as 10G Ethernet, Infiniband, Fibre Channel, and SONET,



benefit from these cost-effective products. As summarized in the table below, EMCORE has positioned itself as a component and subsystem manufacturer that services a significant portion of the digital and analog communications market:< /FONT>

MODULES	Digital (Datacom & Telecom)						Video
	Serial 2.5-4G		Serial 10G			Parallel	CATV/FTTX
	850nm	1310-1550nm	850nm	1310-1550nm	Copper		Subsystems Transmitters PON Transceivers Receivers Tx Engine Rx video card
			SR X2	LX4 Xenpak LX4 X2 LR X2	CX4 Xenpak CX4 X2		
OSA	TO - cans LC/SC TOSA LC/SC ROSA	TO - cans LC/SC TOSA LC/SC ROSA	LC/SC TOSA LC/SC ROSA	DML laser LC/SC ROSA			Laser Modules Rx modules
CHIPS	VCSELs PDs	FP, DFBs PINs, APDs	VCSELs PDs	FP, DFBs PINs, APDs		VCSEL arrays PD arrays	DFBs PDs

Short Wavelength (850 nm) VCSELs

EMCORE designs, develops, and manufactures high-speed VCSELs and PIN photodiode components and subassemblies for the data communications (including local and storage area networks) and telecommunications markets. We offer a broad product line of VCSEL and PIN photodiode solutions, including bare die, packaged components, and optical subassemblies for integration into 1G-10G Ethernet, Fibre Channel, Infiniband, CWDM, SONET, and other high-speed telecom applications.

VCSELs are revolutionary compound semiconductor micro laser diodes that emit light vertically from the surface of a fabricated wafer. They combine the ability of batch process and on-wafer tests like LEDs with the superior electro-optical performance of traditional edge-emitting lasers. In addition, the cylindrical laser beam profile allows an easy and efficient coupling of light into a multi-mode fiber. This enhanced manufacturability for both wafer processing and packaging enables a cost-effective, high-bandwidth fiber optic communications solution.

VCSELs have many advantages, including ultra-high modulation rates for advanced information signaling, extremely low power consumption, high fiber optic coupling efficiencies, circular output beams, and photolithography-defined geometries. We capitalize on our oxide-confined VCSEL manufacturing platform and expertise to provide the industry with 1 Gb/s, 2 Gb/s, 2.5 Gb/s, 4 Gb/s, 10 Gb/s (OC-192), and 40 Gb/s (OC-768) solutions through single-channel serial, multi-channel parallel, or CWDM approaches. Our customers combine this VCSEL technology with custom integrated circuits (IC) and module level designs for the final transceiver package, which usually consists of a VCSEL, photodiode, laser driver circuit, receiver circuit, and various other electronic components that are all connected via a printed circuit board. This circuit board is then mounted into a mechanical housing with an electrical connection to the user's system and an optical connection to fiber cabling. Leading electronic systems manufacturers are integrating VCSELs into a broad array of end-market applications, including Internet backbone, telephony, and computing. Specific network elements include Ethernet switches, digital cross-connects, grooming switches, clustered servers with Infiniband interfaces, supercomputers, and carrier class routers.

Long Wavelength (1310 nm and 1550 nm) DFB and FP Lasers

EMCORE's Ortel division designs, develops, and manufactures high-speed, long-wavelength edge emitters, which are based on DFB or FP technologies and enhanced with predistortion technology invented by Ortel for highest fidelity applications. These devices are packaged into subsystems and used to transmit CATV or FTTP signals from the service provider to the subscriber, and back. The primary advantage of the longer wavelength (i.e., 1310 nm, 1490 nm, and 1550 nm) and narrow spectral width (in the case of the DFB laser) is the reduced absorpti on and dispersion within the optical fiber. This results in increased distances between repeaters or amplifiers, which reduces deployment costs for the service providers.

Photodetectors (PIN and APD)

Photodetectors are discrete semiconductor devices that detect light in order to convert an optical signal into an electrical signal. Similar to VCSELs, photodetectors combine the ability of batch processing and on-wafer testing with superior electro-optical performance. The large aperture size readily permits efficient coupling of light from a multi-mode or single-mode fiber. EMCORE has developed 850 nm, 1310 nm, and 1550 nm photodetectors to cover most speed and distance applications. In addition, 1x4 and 1x12 arrays of 850 nm photodetector can be incorporated into our parallel optical modules. The addition of photodete ctor products completes our line of optical devices, and provides an internal supply for all of our optical subsystems.

Optical Subsystems (Transmitters, Receivers, Transceivers, and Transponders)

EMCORE's optical subsystem products are built using our internally produced optical devices, which allows us to provide highly cost-effective subsystems in our key markets. By creating additional value at the subsusyem level, and leveraging our compound semiconductor expertise and growing know-how in subsystem design and manufacturing, we can further improve margins and increase our overall revenue. Our subsystem products are becoming quite intelligent, with functions that re-time and clean up the signals passing through them. Many of these subsystems have been widely adopted in Ethernet, SONET, Infiniband, and Fibre Channel equipmen t. Most widely available is the XENPAK form factor (for more information see www.xenpak.org). In 2004, EMCORE added customers, expanded production, and began high volume commercial shipments of two key value-added subsystems in the XENPAK form factor (the LX4 and CX4) to vendors shipping 10G Ethernet systems. EMCORE's family of subsystem products includes:

- Broadcast transmitters and QAM overlay systems for CATV and FTTP applications based on 1550 nm laser technology;
- Subscriber-end video receivers for CATV and FTTP applications based on 1310 nm and 1550 nm PIN detectors and video receive technology;
- XENPAK and X2 transceivers using optical LX4 (CWDM) and copper CX4 technology for the 10G Ethernet market;
- 4- and 12-channel parallel optical transceiver modules for HPCs, supercomputers, and high-end servers, data communications switches, and telecommunications switch applications based on 850 nm VCSEL and PIN array technology; and
- 10 Gb/s transmit and receive optical subassemblies for Storage Area Networks.

## Photovoltaics

EMCORE serves the global satellite communications market by providing advanced solar cell products and solar panels. Compound semiconductor solar cells are used to power satellites because they are more resistant to radiation levels in space and convert substantially more power from light, therefore weighing less per unit of power than silicon-based solar cells. These characteristics increase satellite useful life, increase payload capacity, and reduce launch costs.

A solar cell works as follows: the "photovoltaic effect" is the basic physical process through which a solar cell converts sunlight into electricity. Sunlight is composed of photons, or particles of energy. These photons contain various amounts of energy corresponding to the different wavelengths of the solar spectrum. When photons strike a solar cell, they may be reflected or absorbed, or they may pass right through the cell. Only the absorbed photons generate electricity. When this happens, the energy of the photon is transformed into an electric current. Special electrical properties of the solar cell provide the voltage needed to drive the current through an external load (such as a transponder or transmitter aboard a spacecraft).

EMCORE designs and manufactures multi-junction compound semiconductor solar cells for military and commercial satellite applications. Our Albuquerque, New Mexico facility is a state-of-the-art, highly automated factory that includes a computer-aided manufacturing system to monitor production processes, generate electronic run cards, and provide real-time production and yield metrics. We currently manufacture one of the most efficient and reliable commercially available, radiation resistant advanced triple-junction solar cells in the world, with an average "beginning of life" efficiency of 27.5%. A satellite's broadcast success and corresponding revenue depend on its power efficiency and its capacity to transmit data.

EMCORE also provides covered interconnect solar cells (CICs) and solar panel lay-down services, giving us the capacity to manufacture complete solar panels. We can provide satellite manufacturers with proven integrated satellite power solutions that considerably improve satellite economics. Satellite manufacturers and solar array integrators rely on EMCORE to meet their satellite power needs with proven flight heritage. Through well-established partnerships with major satellite manufacturers and a proven qualification process, we play a vital role in the evolution of satellite communications around the world.

We also recently have begun an active R&D effort in terrestrial solar cell applications. EMCORE is conducting a National Renewable Energy Laboratory-funded effort to adapt our space-qualified advanced triple-junction solar cell technology for the terrestrial photovoltaic market. Because of its higher device cost when compared to silicon-based terrestrial solar cells, we also are developing solar concentrator systems to lower the cost per watt generated by our compound semiconductor-based terrestrial solar cells. Major terrestrial solar power manufacturers have expressed interest in incorporating EMCORE's photovoltaics technology into their commercial products.

Through its Ortel division, EMCORE also manufactures and sells a line of fiber optic satellite communications transmitters, subsystems, and systems to transport wideband microwave signals between satellite base stations and antenna dishes.

## Electronic Materials and Devices

RF materials are compound semiconductor materials used in wireless communications. These materials have a broader bandwidth and superior performance at higher frequencies compared to silicon-based materials. EMCORE currently produces 4-inch and 6-inch InGaP HBT and AlGaAs pHEMT materials and E-mode transistor wafers that are used for power amplifiers and switches in GSM, CDMA multiband wireless handsets, cell phones, and in wireless LAN applications. InGaP HBT materials provide higher linearity, higher power-added efficiency, as well as greater reliability than first generation AlGaAs HBT technologies. In addition, our recently-developed enhanced mode pHEMT technologies have demonstrated in production their continued competitiveness for handset applications. EMCORE also makes GaN HE MT RF materials that are designed to meet future wireless base station infrastructure requirements for higher power and frequency, along with temperature operation at industry leading efficiencies. We believe that our ability to produce high volumes of RF materials at a low cost will encourage their adoption in new applications and products.

EMCORE's Somerset, New Jersey manufacturing facility has seven GaAs-based MOCVD production systems, two GaN production systems, and two GaN development systems dedicated to electronic materials manufacturing. EMCORE also equipped its wafer fabrication area with state-of-the-art cassette-to-cassette characterization equipment. As mentioned above, in June 2004, EMCORE announced that it had been selected by ANADIGICS to be their primary supplier for all RF materials. Our six-inch GaAs RF transistor wafers will be used to produce power amplifiers and related devices that are used in widespread wireless applications, such as cellular telephones, laptop computers, and wireless infrastructure networks.

We also manufacture magneto-resistive (MR) sensors that are compound semiconductor devices used in position sensing applications. MR sensors improve vehicle performance through the more accurate control of engine and crank shaft timing, which allows for improved spark plug efficiency and reduced emissions. EMCORE sells MR sensors using technology licensed from General Motors.

### ***GELcore (HB-LED) Joint Venture***

HB-LEDs are solid-state compound semiconductor devices that emit light. They are used in miniature packages in everyday applications, including commercial displays, transportation, general and specialty illumination, computers, and other consumer electronics. HB-LEDs offer substantial advantages over small incandescent bulbs, including longer life, lower maintenance costs and energy consumption, and smaller space requirements. Groups of HB-LEDs can make up single or full-color electronic displays. Presently, HB-LED chips are used for backlighting applications, including wireless handsets, cell phones, computer monitors, and automotive dashboard lighting. In addition, they are used in consumer products, office equipment, full color displays, message advertising, informational signs, landscape lighting, and traffic signals. While growing its business in commercial applications, GELcore is focused on the general illumination market as its ultimate goal.

HB-LEDs have the potential to significantly reduce overall U.S. lighting energy consumption. Energy savings to date from HB-LEDs have been estimated to exceed the power produced from one large electric power plant -- more than 8 billion kilowatt-hours. If solid-state lighting achieves anticipated price and performance targets, over the next two decades U.S. lighting energy consumption could be reduced by over 30 percent. HB-LED traffic signals use only 10 percent of the electricity consumed by the incandescent lamps they replace. Moreover, LED signals last several times longer, allowing for additional savings through reduced maintenance costs. HB-LEDs also have made inroads into mobile applications, such as brake and signal lights on trucks, buses, and automobiles. In 2002, an estimated 41 million gallons of gasoline and 142 million gallons of diesel fuel were saved because of HB-LED use on these vehicles. If our nation's entire fleet of automobiles, trucks, and buses were converted to HB-LED lighting, an estimated 1.4 billion gallons of gasoline and 1.1 billion gallons of diesel fuel could have been saved. (The information in this paragraph is based on published reports prepared by Navigant Consulting for the US Department of Energy.)

As mentioned above, in January 1999, EMCORE and General Electric Lighting formed GELcore, a joint venture to develop and market HB-LED lighting products. EMCORE has a 49% non-controlling interest in this joint venture, and both owners have agreed that this joint venture will be the exclusive vehicle for their participation in solid-state lighting. GELcore combines EMCORE's materials science and device design expertise with General Electric Lighting's brand name recognition, phosphor technology, and extensive marketing and distribution capabilities. GELcore's current product line includes traffic lights, channel letters, and other signage and display products incorporating HB-LEDs. In the near term, GELcore expects to be deploying its HB-LED products in the commercial refrigeration market. GELcore's long-term goal is to develop products that replace traditional lighting in the general illumination market.

### Revenues by Product Line

The table below sets forth the revenues and percentage of total revenues attributable to each of EMCORE's product lines for each of the past three fiscal years:

(in thousands)	For the fiscal years ended September 30,					
	FY 2004	% of revenue	FY 2003	% of revenue	FY 2002	% of revenue

Product Revenue							
Fiber Optics	\$	56,169	60.4%	\$	32,658	54.2%	\$ 9,077 17.7%
Photovoltaics		25,716	27.6		18,196	30.2	23,621 46.1
Electronic Materials and Devices		11,184	12.0		9,430	15.6	18,538 36.2
Total revenues	\$	93,069	100.0%	\$	60,284	100.0%	\$ 51,236 100.0%

### Government Research Contract Funding

EMCORE derives a portion of its revenue from funding of research contracts with the U.S. Government (Government). These contracts typically cover work performed from over several months up to several years. These contracts may be modified or terminated at the convenience of the Government and therefore, these programs may be subject to Government budgetary fluctuations. In fiscal 2004, 2003, and 2002, Government research contract funding represented 5%, 9%, and 6% of total EMCORE revenue, respectively.

### Customers and Geographic Region

EMCORE works closely with its customers to design and develop (i) process technology, (ii) material science expertise, (iii) optical sub-assemblies, and/or (iv) integrated module level products for use in its customers' end-use applications. EMCORE's customer base includes many of the largest semiconductor, telecommunications, data communications, and computer manufacturing companies in the world. In fiscal 2004, Motorola, Inc. (Motorola) and Cisco Systems, Inc. (Cisco) accounted for 13% and 8% of our total revenue, respectively. In fiscal 2003, Motorola accounted for 14% of total revenue. In fiscal 2002, revenues from Motorola, Boeing Satellite Systems, Inc. (Boeing), and Space Systems/Loral, Inc. (SS/L) accoun ted for 22%, 15%, and 14% of total revenue, respectively.

The following chart contains a breakdown of EMCORE's consolidated revenues by geographic region. North American sales include sales to Canada, which historically have not been material.

(in thousands)	For the fiscal years ended September 30,					
	FY 2004	% of revenue	FY 2003	% of revenue	FY 2002	% of revenue
Revenue by Region						
North America	\$ 66,485	71.4%	\$ 44,136	73.2%	\$ 42,983	83.9%
South America	416	0.5	-	-	-	-
AsiaPac	15,496	16.6	9,018	15.0	3,638	7.1
Europe	10,672	11.5	7,130	11.8	4,615	9.0
Total revenues	\$ 93,069	100.0%	\$ 60,284	100.0%	\$ 51,236	100.0%

### Marketing and Sales

EMCORE actively markets its products through its dedicated sales force, external sales agents, marketing staff, applications engineers, select advertising, and participation at trade shows. Our customers work directly with our internal sales force, external sales agents, and senior management. EMCORE's strategy is to use its dedicated sales force for marketing and selling to key accounts. EMCORE plans to expand its external sales agent program for increased coverage in international markets and some domestic segments.

During fiscal 2004, EMCORE relied on Hakuto Co., Ltd. (Hakuto) pursuant to various distributorship and sales representative agreements to market and sell certain products in Japan and China. Hakuto primarily marketed and serviced EMCORE's reactor products until the sale of the capital equipment division to Veeco. Following such sale, EMCORE and Hakuto agreed in October 2004 to terminate their distributorship and sales representative agreements. Hakuto owns approximately 4% of EMCORE's common stock, and Shigeo Takayama, the Chairman of Hakuto, was a member of EMCORE's Board of Directors from 1997 until he retired in 2002.

EMCORE uses a variety of external sales agents, such as UR Group in Europe, BUPT and MilliTech in China, and M-RF in Japan. We also have an established distribution and value added reseller channel to sell our satcom products worldwide.

EMCORE's sales cycle for component and subsystem products is usually three months to in excess of a year. During this time, we work closely with our customers to qualify our products in their product lines. As a result, EMCORE develops strategic and long lasting customer relationships with products and services that we believe are uniquely tailored to our customers' requirements.

### Backlog

As of September 30, 2004, EMCORE had a backlog it believes to be firm of approximately \$28.8 million. This compares to a backlog of \$33.1 million as reported at September 30, 2003. Backlog principally consists of EMCORE's longer lead-time products, such as satellite communications. Our other product lines, including fiber optics and RF, typically ship within the same quarter as the purchase order is received. We believe that substantially all of our backlog can be filled during the next 12 months. But given the current market environment, customers may delay shipment of certain orders. Backlog also could be adversely affected if customers unexpectedly cancel purchase orders accepted by us.

### Manufacturing

EMCORE's operations include wafer fabrication, design and device production, solar panel engineering and assembly, and fiber optic module design and manufacture. Many of EMCORE's manufacturing operations are computer monitored or controlled to enhance reliability and yield. EMCORE employs a strategy of minimizing ongoing capital investments, while maximizing the variable nature of its cost structure. EMCORE maintains a commercially advantageous contract supply agreement with Veeco for MOCVD systems, components, and spare parts. Where EMCORE can gain significant cost advantages while maintaining strict quality and intellectual property control, EMCORE outsources to overseas contract manufacturers (CMs) the production of certain components and sub-assemblies. Our contract manufacturing supply chain is an integral part of enabling this strategy. EMCORE develops assembly and testing procedures, and then transfers these procedures overseas. Our CMs must maintain comprehensive quality and delivery systems, and we continuously monitor them for compliance. As of September 30, 2004, EMCORE had 330 employees involved in manufacturing. The location of and products manufactured at EMCORE's facilities are summarized below:

Location	EMCORE Product Line

Somerset, New Jersey (headquarters)	Electronic materials (InGaP HBTs, AlGaAs pHEMTs, and GaN HEMTs) Electronic devices (MR Sensors)
Albuquerque, New Mexico	Photovoltaics (solar cells) Fiber Optics (VCSEL and photodiode die, parallel optical modules)
City of Industry, California	Photovoltaics (CICs and solar panels)
Alhambra, California	Fiber Optics (CATV, FTTP, lasers, modules, and subsystems)
Santa Clara, California	Fiber Optics (parallel optical modules, design center for 10G Ethernet modules)
Downers Grove, Illinois	Fiber Optics (10G Ethernet fiber optical modules )
Eau Claire, Wisconsin	Fiber Optics (design center for parallel optical modules)

EMCORE has combined clean room area totaling approximately 88,000 square feet. Unlike silicon semiconductor technology, which could involve up to a 100-step manufacturing process, our electronic materials and devices products are manufactured in a four-part process: epitaxial deposition, fabrication, testing, and packaging. The epitaxial deposition process represents the growth of thin layers of GaAs, GaN, or other materials on a polished wafer, depending on the nature of the device being produced. Following epitaxy, chips are fabricated in a clean room environment. The final steps involve testing and packaging prior to shipment to the customer, or further integration into a module or subsystem within EMCORE's manufacturing infrastructure. EMCORE also maintains the capability to transfer and monitor our ongoing processes to CMs.

Our various manufacturing processes involve extensive quality assurance systems and performance testing. All of EMCORE's facilities have acquired and maintain certification status for their quality management systems. The New Jersey facility, which is used for EMCORE's electronic materials and devices products, is registered to both ISO 9001 and QS 9000-1998. Both the New Mexico and California facilities, which are used for EMCORE's photovoltaics and fiber optics products, are registered to ISO 9001.

### Sources of Raw Materials

Outside contractors and vendors are used to supply raw materials and standard components, as well as to assemble portions of end subsystems, components, and modules from EMCORE specifications. EMCORE continually reviews our vendor relationships to mitigate risks and improve costs, especially where we depend on one or two vendors for critical components or raw materials. While maintaining inventories that we believe are sufficient to meet our near term needs, we generally do not carry significant inventories of raw materials. Accordingly, EMCORE maintains ongoing communications with our vendors to work to prevent any interruptions in supply, and have implemented a supply-chain management program to maintain quality and improve prices through standardized purchasing efficiencies and design requirements. To date, we generally have been able to obtain sufficient quantities of quality supplies in a timely manner.

### Research and Development

The scope of EMCORE's business is in the areas of semiconductor processes and communications components and subsystems. Our R&D efforts have been sharply focused to maintain the technology leading position of various product lines, and to grow into new product areas and market opportunities by leveraging the existing technology base and infrastructure. The semiconductor industry is characterized by rapid changes in process technologies with increasing levels of functional integration. To maintain and improve its competitive position, EMCORE invests significant resources in R&D. Our efforts are focused on designing new proprietary processes and products, on improving the performance of our existing materials, devices, modules, and systems, and on reducing costs in the product manufacturing process. EMCORE has dedicated 22 MOCVD systems and five device fabrication facilities for both research and production, which are capable of processing virtually all compound semiconductor materials and devices. Nine of those MOCVD systems and three device fabrication areas are dedicated fully to R&D efforts and are used by a staff of over 94 scientists, engineers, technicians, and staff, of whom 32 have a Ph.D. degree. The R&D staff utilizes x-ray, optical, and electrical characterization equipment, as well as device and module fabrication and testing, that generates data rapidly, which allows for shortened development cycles and rapid customer response.

During fiscal years 2004, 2003, and 2002, EMCORE invested \$23.6 million, \$17.0 million, and \$30.6 million towards our product R&D activities. As a percentage of revenues, R&D represented 25%, 28%, and 60% for the fiscal years 2004, 2003, and 2002, respectively. As part of the ongoing effort to cut costs, we implemented a program to focus research and product development efforts on projects that we expect to generate returns within one year. As a result, EMCORE reduced overall R&D costs as a percentage of revenue without, we believe, jeopardizing future revenue opportunities.

EMCORE's most recent and successful R&D project was the XENPAK LX4 module that began in August 2003. Within twelve months, the LX4 module was developed by EMCORE and qualified by the customer, and is being manufactured in full production. Revenues from LX4 module sales represented a significant area of growth in our total fiscal 2004 revenues.

We believe that several other R&D projects have the potential to greatly improve our competitive position and drive revenue growth in the next few years. Listed below are several examples:

- In the FTTP market, EMCORE is developing an integrated PON transceiver utilizing Oritel's industry leading video technology. EMCORE is currently in qualification and expects production of this PON transceiver to commence by the end of the second quarter of fiscal 2005.
- EMCORE is currently developing the next generation LX4 module using the smaller X2 form factor. This X2 LX4 module is expected to begin ramping in the second half of fiscal 2005, and to exceed total sales of the current XENPAK form factor. As with the current XENPAK LX4 module, EMCORE plans to be a leading supplier and one of the first to market with this product.
- In the photovoltaics market, EMCORE is developing a high efficiency solar cell product for terrestrial applications. Intended for use in concentrated sunlight, these cells already have been measured at 34% efficiency at 400 suns, close to our goal of 35% efficiency at 500 suns.
- EMCORE has developed GaN HEMT wafers for use in base stations for wireless and cellular networks, and is continuing to work with its customers to optimize their performance, improve yields, and increase wafer size.

EMCORE also competes for R&D funds. In view of the high cost of development, EMCORE solicits research contracts that provide opportunities to enhance its core technology base and promote the commercialization of targeted EMCORE products. Internal R&D funding is used for the development of products that will be released within 12 months, and external funding is used for longer-range R&D efforts.

### Intellectual Property and Licensing

The success and competitive position of our product lines depend significantly on our ability to obtain intellectual property protection for our R&D efforts. EMCORE's strategy is to rely on both patents and trade secrets to protect its intellectual property. A patent is the grant of a property right, which allows its holder to exclude others from,

among other things, selling the subject invention in, or importing such invention into, the jurisdiction that granted the patent. In the United States, patents expire twenty years from the date of application. EMCORE has 46 U.S. patents and 8 foreign patents. Also, over 100 patent applications have been filed in the U.S. and internationally. Our U.S. patents will expire between 2009 and 2022. These patents and patent applications claim various aspects of current or planned commercial versions of EMCORE's wafers, devices, and modules.

EMCORE relies on trade secrets to protect its intellectual property when it believes that publishing patents would make it easier for others to reverse engineer EMCORE's proprietary 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. Reliance on trade secrets is only an effective business practice insofar as trade secrets remain undisclosed and a proprietary product or process is not reverse engineered or independently developed. To protect our trade secrets, we take certain measures to ensure their secrecy, such as partitioning the non-essential flow of information between our different groups and executing non-disclosure agreements with our employees, joint venture partners, customers, and suppliers.

As is typical in our industry, from time to time, we have sent letters to, and received letters from, third parties regarding the assertion of patent or other intellectual property rights in connection with certain of our products and processes. To date, we have not engaged in any litigation regarding the intellectual property rights of our products and processes.

In connection with our sale of the TurboDisc capital equipment business, EMCORE retained a license to all MOCVD system-related technology. EMCORE intends to use this license to further optimize the performance of its own reactors and develop improvements to its hardware that will increase yields on existing products and enable the fabrication of advanced, wide bandgap materials.

## Environmental Regulations

EMCORE 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 R&D and production operations, as well as laws and regulations concerning environmental remediation and employee health and safety. The production of wafers and devices involves the use of certain hazardous raw materials, including, but not limited to, ammonia, phosphine, and arsine. EMCORE has in-house professionals to address compliance with applicable environmental and health and safety laws and regulations.

If our control systems are unsuccessful in preventing release of these or other hazardous materials, we could experience a substantial interruption of operations and could be subject to significant liability for clean-up and other claims. We believe that EMCORE is currently in compliance with all applicable environmental laws, including the Resource Conservation and Recovery Act, except such violations as could not reasonably be expected to have a material effect on our financial condition or results of operations.

## Competition

The semiconductor industry is intensely competitive and is characterized by rapid technological change, price erosion, and substantial foreign competition. EMCORE faces actual and potential competition from a number of established domestic and international compound semiconductor companies. Many of these companies have greater engineering, manufacturing, marketing, and financial resources than we have.

*CATV.* Competitors in the CATV market include JDS Uniphase Corporation (JDSU), Optium Corporation, Mitsubishi, and Fujitsu.

*Telecommunications.* For telecommunications and FTTP components, the market competitors include JDSU, MRV Communications, Fujitsu, Mitsubishi, and Summitomo. For 10G transceivers and parallel optical modules, our competitors include Agilent Technologies, Inc. (Agilent), Finisar Corporation (Finisar), Eudyna Devices, Inc., Picolight, Inc., and Opnext, Inc. (Opnext).

*Data and Storage.* EMCORE's principal competitor for VCSEL devices and components is Finisar (through its Advanced Optical Component division, which was acquired from Honeywell Corporation). There also are numerous smaller VCSEL vendors located throughout the world. For 10G LX4 and CX4 products, our primary competitor is Opnext.

*Satellite Communications.* For photovoltaics products, EMCORE primarily competes with the Spectrolab, Inc. subsidiary of The Boeing Company, Sharp Electronics Corporation, RWE SCHOTT Solar GmbH, and Mitsubishi Electric. For satcom products, our primary competitors are Foxcom and MITEQ, Inc.

*Wireless Communications.* The primary competitors in the electronic materials and wireless communications markets include Kopin Corporation, Visual Photonics Epitaxy Co., Ltd., Hitachi Cable, Sumika, APA Enterprise, Inc., and IQE plc, as well as integrated circuit manufacturers with in-house transistor growth capabilities.

*Solid State Lighting.* The principal competitors for HB-LED applications and EMCORE's joint venture with General Electric Lighting include LumiLeds Lighting, a joint venture between Agilent and Philips Lighting, Siemens AG's Osram GmbH subsidiary, Cree, Nichia Corporation, and Toyoda Gosei Co., Ltd. In addition, Epistar Corporation, Arima Computer Corporation, and other Asia-based companies in recent years have begun production of LEDs.

In addition to the companies listed above, EMCORE competes with many research institutions and universities for research contract funding. EMCORE also sells its products to current competitors and companies with the capability of becoming competitors. As the markets for EMCORE's products grow, new competitors are likely to emerge and current competitors may increase their market share. In the EU, political and legal requirements encourage the purchase of EU-produced goods, which may put EMCORE at a competitive disadvantage against its European competitors.

There are substantial barriers to entry by new competitors across EMCORE's product lines. These barriers include: the large number of existing patents; the time and costs to be incurred to develop products; the technical difficulty in manufacturing semiconductor products; the lengthy sales and qualification cycles; and the difficulties in hiring and retaining skilled employees with the required scientific and technical backgrounds. EMCORE believes that the primary competitive factors within EMCORE's current markets are yield, throughput, performance, breadth of product line, product heritage, customer satisfaction, and customer commitment to competing technologies. Competitors may develop enhancements to or future generations of competitive products that offer superior price and performance factors. We believe that in order to remain competitive, we must invest significant financial resources in developing new product features and enhancements and in maintaining customer satisfaction worldwide.

## Investments

In addition to the GELcore joint venture mentioned above, in February 2002, EMCORE purchased \$1.0 million of preferred stock of Archcom Technology, Inc. (Archcom), a venture-funded, start-up optical networking components company that designs, manufactures, and markets a series of high performance lasers and photodiodes for the datacom and telecom industries. EMCORE does not exercise significant influence over financial and operating policies, and the investment represents less than 20% of ownership. Therefore, EMCORE accounts for this investment under the cost method of accounting. During fiscal 2004, Archcom raised additional capital, but EMCORE did not participate in the latest round. As a result, we have reduced the carrying value of our investment in Archcom by 50%, or \$0.5 million.

Subsequent to our fiscal 2004 year end, in October 2004, EMCORE invested \$1.0 million in K2 Optonics, Inc., a California-based company specializing in the design and manufacture of external cavity lasers, to strengthen our partnership in designing next-generation, high-performance, long-wavelength components on an exclusive basis for the CATV and FTTP markets. EMCORE does not exercise significant influence over financial and operating policies, and the investment represents approximately 6.6% ownership. Therefore, EMCORE accounts for this investment under the cost method of accounting.

## Employees

At September 30, 2004, EMCORE had 588 employees, including 330 employees in manufacturing operations, 94 employees in R&D, 136 employees in sales, general and administration (SG&A), and 28 temporary employees. This represented a decrease of 161 employees or 21% from September 30, 2003. This decrease was primarily attributable to our divestiture of the TurboDisc capital equipment business. Our ability to attract and retain qualified personnel is essential to our continued success. None of EMCORE's employees are covered by a collective bargaining agreement, nor have we ever experienced any labor-related work stoppage. We believe that our employee relations are good.

## Risk Factors

YOU SHOULD CAREFULLY CONSIDER THE RISKS DESCRIBED BELOW. IF ANY OF THE FOLLOWING RISKS ACTUALLY OCCURS, OUR BUSINESS, FINANCIAL CONDITION OR RESULTS OF OPERATIONS COULD BE MATERIALLY AND ADVERSELY AFFECTED. WE CAUTION THE READER THAT THESE RISK FACTORS MAY NOT BE EXHAUSTIVE. WE OPERATE IN A CONTINUALLY CHANGING BUSINESS ENVIRONMENT AND NEW RISK FACTORS EMERGE FROM TIME TO TIME. WE CANNOT PREDICT SUCH NEW RISK FACTORS, AND WE CANNOT ASSESS THE EFFECT, IF ANY, OF SUCH NEW RISK FACTORS ON OUR BUSINESSES OR THE EXTENT TO WHICH ANY FACTOR, OR COMBINATION OF FACTORS, MAY CAUSE ACTUAL RESULTS TO DIFFER MATERIALLY FROM THOSE PROJECTED IN ANY FORWARD-LOOKING STATEMENTS CONTAINED IN THIS REPORT. ACCORDINGLY, FORWARD-LOOKING STATEMENTS SHOULD NOT BE RELIED UPON AS A PREDICTION OF ACTUAL RESULTS. IN ADDITION, OUR MANAGEMENT'S ESTIMATES OF FUTURE OPERATING RESULTS ARE BASED ON THE CURRENT COMPLEMENT OF BUSINESSES, WHICH IS CONSTANTLY SUBJECT TO CHANGE AS MANAGEMENT UPDATES AND IMPLEMENTS ITS BUSINESS STRATEGY.

### *We May Continue To Incur Operating Losses.*

We started operations in 1984 and as of September 30, 2004, we had an accumulated deficit of \$302.9 million. We incurred net losses of \$13.4 million in fiscal 2004, \$38.5 million in fiscal 2003, and \$129.8 million in fiscal 2002. While we have reduced our cost structure substantially, and are focused on profitability, we may continue to lose money. Many of our expenses, particularly those relating to capital equipment, debt service, and manufacturing overhead are fixed. Accordingly, lower revenue causes our fixed production costs to be allocated across reduced production volumes, which adversely affects our gross margin and profitability. While our business strategy is to achieve operational profitability in 2005, if we are unable to achieve target revenues or to contain our cost structures, we will continue to incur operating losses.

### *Our Cost Reduction Programs May Be Insufficient To Achieve Long-Term Profitability.*

We are undertaking cost reduction measures intended to reduce our expense structure at both the cost of goods sold and the operating expense levels. We believe these measures are a necessary response to, among other things, declining average sales prices across our product lines. These measures may be unsuccessful in creating profit margins sufficient to sustain our current operating structure and business.

### *Reduced Customer Lead Times Means We Are Less Able To Forecast Revenues And, As A Result, We May Be Unable To Accurately Predict Growth And Manage Our Cost Structure.*

Several of our customers have reduced the lead times they give us when ordering product from us. While this trend has enabled us to reduce inventory, it also restricts our ability to forecast revenues. If our sales and profit margins do not increase to support the higher levels of operating expenses, and if our new product offerings are not successful, our business, financial condition, results of operations and cash flows could be materially and adversely affected.

### *We Have Substantial Long-Term Debt Which We May Be Unable To Repay If We Cannot Generate Sufficient Funds To Do So Or Restructure The Terms Of The Debt.*

In May 2001, we sold \$175.0 million of 5% Convertible Subordinated Notes due May 15, 2006 (2006 Notes) in a private placement for resale to qualified institutional buyers. In December 2002, EMCORE purchased \$13.2 million principal amount of the notes at prevailing market prices for an aggregate of approximately \$6.3 million. In February 2004, EMCORE exchanged approximately \$146.0 million, or 90.2%, of these remaining 2006 Notes for approximately \$80.3 million aggregate principal amount of new 5% Convertible Senior Subordinated Notes due May 15, 2011 (2011 Notes) and approximately 7.7 million shares of EMCORE common stock. The notes are convertible into EMCORE common stock at a conversion price of \$8.06 per share, subject to adjustment under customary anti-dilutive provisions. They also are redeemable should EMCORE's common stock price reach \$12.09 per share. Approximately \$15.7 million of the 2006 notes, and approximately \$80.3 million of the 2011 notes, are currently outstanding, for a combined long-term debt of approximately \$96.0 million. In addition, we may incur additional debt in the future. This significant amount of debt could, among other things:

- make it difficult for us to make payments on the notes and any other debt we may have;
- make it difficult for us to obtain any necessary future financing for working capital, capital expenditures, debt service requirements or other purposes;
- require us to dedicate a substantial portion of our cash flow from operations to service our debt, which would reduce the amount of our cash flow available for other purposes, including working capital and capital expenditures;
- limit our flexibility in planning for, or reacting to, changes in our business; and
- make us more vulnerable in the event of a further or continued downturn in our business.

If our cash flow is inadequate to meet our obligations or we are unable to generate sufficient cash flow or otherwise obtain funds necessary to make required payments on the notes or our other obligations, we would be in default under the terms thereof. Default under one or both of the note indentures would permit the holders of the notes to accelerate the maturity of the notes and could cause defaults under future indebtedness we may incur. Any such default would have a material adverse effect on our business, prospects, financial condition, results of operations and cash flows. In addition, we cannot assure you that we would be able to repay amounts due in respect of the notes if payment of either or both of the notes were to be accelerated following the occurrence of an event of default as defined in the respective note indentures.

### *Our Success Depends On Our Ability To Introduce New Products On A Timely Basis.*

We compete in markets characterized by rapid technological change, evolving industry standards and continuous improvements in products. Due to constant changes in these markets, our future success depends on our ability to improve our manufacturing processes, systems and products. To remain competitive we must continually introduce new and improved products. Our business, financial condition, results of operations and cash flows may be materially and adversely affected if:

- we are unable to improve our existing products on a timely basis;
- our new products are not introduced on a timely basis or do not achieve sufficient market penetration; or
- our new products experience reliability or quality problems.

### *If The Internet Does Not Continue To Grow As Expected And Demand Does Not Increase For Our Communications Products, Our Business Will Suffer.*

Our future success as a manufacturer of optical components, modules, and subsystems ultimately depends on the continued growth of the communications industry, and, in particular, the growth of the Internet as a global communications system. As part of that growth, we are relying on increasing demand for high-content voice, text, video and other data delivered over high-speed connections (i.e., high bandwidth communications). As Internet usage and bandwidth demand increase, so does the need for advanced optical networks to provide the required bandwidth. Without Internet and bandwidth growth, the need for our advanced communications products, and hence our future growth as a manufacturer of these products, is jeopardized. Currently, while generally increasing demand for Internet access is apparent, less evident is when order capacity will be absorbed. Moreover, multiple service providers compete to supply the existing demand. Also, fiberoptic networks currently have significant excess capacity. The combination of a large number of service providers and excess network capacity has resulted in severe downward pressure on bandwidth prices and associated profit margins, and this is expected to



continue in the foreseeable future. Until industry margins recover, service providers have less incentive to install new equipment, including many of our communications products. Ultimately, should long-term expectations for Internet growth and bandwidth demand not be realized, our business would be significantly harmed.

*Shifts In Industry-wide Demands And Inventories Could Result In Significant Inventory Write-downs.*

The life cycles of some of our products depend heavily upon the life cycles of the end products into which our products are designed. Products with short life cycles require us to manage production and inventory levels closely. We evaluate our ending inventories on a quarterly basis for excess quantities, impairment of value and obsolescence. This evaluation includes analysis of sales levels by product and projections of future demand based upon input received from our customers, sales team and management estimates. If inventories on hand are in excess of demand, or if they are greater than 12-months old, appropriate reserves are provided. In addition, we write off inventories that are considered obsolete based upon changes in customer demand, manufacturing process changes that result in existing inventory obsolescence or new product introductions, which eliminate demand for existing products. Remaining inventory balances are adjusted to approximate the lower of our manufacturing cost or market value.

In fiscal 2002, EMCORE recorded a \$7.7 million inventory charge for excess raw material and finished goods inventory that EMCORE believed it was carrying as a result of market conditions. In fiscal 2003, EMCORE recorded a \$2.0 million inventory charge related to certain transceiver devices that were later determined to be non-saleable because of design modifications. If future demand or market conditions are less favorable than our estimates, additional inventory write-downs may be required. We cannot assure investors that obsolete or excess inventories, which may result from unanticipated changes in the estimated total demand for our products and/or the estimated life cycles of the end products into which our products are designed, will not affect us beyond the inventory charges that we have already taken.

*The Time And Costs Of Developing New Products May Exceed Our Budget And Our Products May Not Be Commercially Successful.*

We continue to introduce a number of new products, and expect to be introducing additional new products in the future. The commercialization of our new products involves substantial expenditures in R&D, production, and marketing. We may be unable to successfully design or manufacture these new products and may have difficulty penetrating new markets.

Because it is generally not possible to predict the amount of time required and the costs involved in achieving certain research, development, and engineering objectives, actual development costs may exceed budgeted amounts and estimated product development schedules may be extended. Our business, financial condition, results of operations, and cash flows could suffer if we incur budget overruns or delays in our R&D efforts.

*We May Engage In Acquisitions That May Effect Our Operating Results, Dilute Our Shareholders, and/or Cause Us To Incur Debt.*

We may pursue acquisitions to acquire new technologies, products or service offerings. Future acquisitions by us may involve the following:

- use of significant amounts of cash;
- potentially dilutive issuances of equity securities on potentially unfavorable items; and
- incurrence of debt on potentially unfavorable terms, as well as amortization expense related to other intangible assets.

In addition, acquisitions involve numerous risks, including:

- inability to achieve anticipated synergies;
- difficulties in the integration of the operations, technologies, products and personnel of the acquired company;
- diversion of management's attention from other business concerns;
- risks of entering markets in which we have no or limited prior experience; and
- potential loss of key employees of the acquired company or of EMCORE.

From time to time, we have engaged in discussions with acquisition candidates regarding potential acquisitions of product lines, technologies and businesses. If acquisitions occur, we cannot be certain that our business, operating results and financial condition will not be materially and adversely affected.

In the past several years we have completed several major acquisitions, which have reoriented EMCORE's strategy and broadened our product lines within our target markets. However, if customer demand in these markets does not meet current expectations, our revenues could be significantly reduced, and we could suffer a material adverse effect on our financial condition, results of operations and cash flows.

*Our Acquisitions Place A Strain On Our Resources.*

We are in a dynamic business and certain of our larger acquisitions over the past several years have presented many challenges. These acquisitions have placed, and will continue to place, a significant strain on our management, financial, sales, and other employees, as well as on our internal systems and controls. If we are unable to effectively manage multiple facilities and a joint venture in geographically distant locations, our business, financial condition, results of operations and cash flows could be materially and adversely affected.

*Our Industry Is Rapidly Changing.*

The compound semiconductor industry is rapidly changing due to, among other things, continuous technological improvements in products and evolving industry standards. This industry is marked by the continuous introduction of new products and increased capacity for services similar to those provided by us. Future technological advances in the compound semiconductor industry may result in the availability of new products or increase the efficiency of existing products. If a technology becomes available that is more cost effective or creates a superior product, we may be unable to access such technology or its use may involve substantial capital expenditures, which we may be unable to finance. There can be no assurance that existing, proposed or as yet undeveloped technologies will not render our technology less profitable or that we will have available the financial and other resources necessary to compete effectively against companies possessing such technologies. There can be no assurance that we will be able to adapt to technological changes or offer competitive products on a timely or cost effective basis.

*The Markets In Which We Compete Are Highly Competitive. An Increase In Competition Would Limit Our Ability To Maintain Or Increase Our Market Share.*

We face substantial competition from a number of companies, many of which have greater financial, marketing, manufacturing and technical resources. Larger-sized competitors could spend more on R&D, which could give those competitors an advantage in meeting customer demand. We expect that existing and new competitors will improve the design of their existing products and will introduce new products with enhanced performance characteristics. The introduction of new products or more efficient production of existing products by our competitors could result in price reductions and increases in expenses, and reduce market acceptance of our products, which could diminish our market share and gross margins.

*We Face Intense and Predatory Competition in Certain Markets.*

The compound semiconductor industry has been undergoing a period of significant consolidation, and we believe that some of our competitors have engaged in below-cost sales and other predatory conduct in order to preserve revenues and/or drive their competitors out of business. As part of our strategy to achieve profitable growth, we may be unable to win future business from customers who elect to buy from such predatory companies. As a result, our revenues may decline as we focus on profitable business opportunities (by not choosing to bid on orders with negative gross margins), and our business, financial condition, results of operations, and cash flows may be materially and adversely impacted.



*We May Not Respond Effectively to Increased Competition Caused by Industry Volatility and Consolidation.*

Our business could be seriously harmed if we do not compete effectively. We face competitive challenges, especially from Asia, that are likely to arise from a number of factors, including industry volatility resulting from rapid product development cycles; increasing price competition due to maturation of technologies; industry consolidation resulting in competitors with greater financial, marketing, and technical resources; the emergence of new competitors in Asia with lower cost structures and competitive offerings; and greater competition for fewer customers as a result of consolidation in our sales channels.

*Fluctuations In Our Quarterly Operating Results May Negatively Impact Our Stock Price.*

Our revenues and operating results may vary significantly from quarter to quarter due to a number of factors particular to EMCORE and the compound semiconductor industry. Not all of these factors are in our control. They can include:

- the volume and timing of orders and payments for our products;
- the timing of our announcements and introduction of new products and of similar announcements by our competitors;
- downturns in the market for our customers' products;
- regional economic conditions, particularly in locations (such as the United States and Asia) where we derive a significant portion of our revenues;
- price volatility in the compound semiconductor industry; and
- changes in product mix.

These factors may cause our operating results for future periods to be below the expectations of analysts and investors. This may cause a decline in the price of our common stock.

*General Electric Lighting, Our Joint Venture Partner, Who Has Majority Ownership and Control Of GELcore, May Make Decisions That We Do Not Agree With And That Adversely Affect Our Net Income.*

We have a 49% minority interest in our GELcore joint venture with General Electric Lighting. A board of managers governs GELcore with representatives from both General Electric Lighting and EMCORE. Many fundamental decisions must be approved by both parties, which means we will be unable to direct the operation and direction of GELcore without the agreement of General Electric Lighting. If we are unable to agree on important issues with General Electric Lighting, GELcore's business may be delayed or interrupted, which may, in turn, materially and adversely affect our business, financial condition, results of operations and cash flows.

We have devoted and may be required to continue to devote significant funds and technologies to GELcore to develop and enhance its products. In addition, GELcore requires that some of our employees devote much of their time to its projects. This places a strain on our management, scientific, financial, and sales employees. If GELcore is unsuccessful in developing and marketing their products, our business, financial condition, results of operations and cash flows may be materially and adversely affected.

General Electric Lighting and EMCORE have agreed that our joint venture will be the sole vehicle for each party's participation in the solid state lighting market. General Electric Lighting and EMCORE have also agreed to several limitations during the life of the venture and thereafter relating how each of us can make use of the joint venture's technology. One consequence of these limitations is that in certain circumstances, such as a material default by us or certain sales of our interest in the joint venture, we would not be permitted to use the joint venture's technology to compete in the solid state lighting market.

*Since an Increasing Percentage of Our Revenues Are From Foreign Sales, Various International Commercial Risks May Disproportionately Affect Our Revenues.*

Sales to customers located outside the U.S. accounted for approximately 29% of our revenues in fiscal 2004, 27% of our revenues in fiscal 2003, and 16% of our revenues in fiscal 2002. Sales to customers in Asia represent the majority of our international sales. We believe that international sales will continue to account for a significant percentage of our revenues. Because of this, the following international commercial risks may disproportionately affect our revenues:

- political and economic instability may inhibit export of our devices and limit potential customers' access to U.S. dollars in a country or region in which our customers are located;
- we may experience difficulties in the timeliness of collection of foreign accounts receivable and be forced to write off receivables from foreign customers;
- tariffs and other barriers may make our devices less cost competitive;
- the laws of certain foreign countries may not adequately protect our trade secrets and intellectual property or may be burdensome to comply with;
- potentially adverse tax consequences to our customers may make our devices not cost competitive; and
- currency fluctuations may impact foreign investment in U.S. companies, including EMCORE, or affect overseas demand for our products.

*We Will Lose Sales If We Are Unable To Obtain Government Authorization To Export Our Products.*

Exports of our products to certain international destinations (such as the People's Republic of China, Argentina, Brazil, India, Russia, Malaysia, and Taiwan) may require pre-shipment authorization from U.S. export control authorities, including the U.S. Departments of Commerce and State. Authorization may be conditioned on end-use restrictions. Failure to receive these authorizations may materially and adversely affect our revenues and in turn our business, financial condition, results of operations and cash flows from international sales.

Our communications satellite business is particularly sensitive to export control issues. All of our commercially-available solar cell products are export-controlled, and are currently subject to the jurisdiction of the U.S. Department of Commerce. Many of our customers are located in countries (such as Russia, India, Argentina and Brazil) for which export licenses are required. Given the current global political climate, obtaining export licenses can be difficult and time-consuming. Failure to obtain export licenses for these shipments could significantly reduce our revenue, and could have a material adverse effect on our financial condition, results of operations and cash flows.

*Our Operating Results Could Be Harmed If We Lose Access To Sole Or Limited Sources Of Materials Or Services.*

We currently obtain some components and services for our products from limited or single sources. We generally do not carry significant inventories of any raw materials. Because we often do not account for a significant part of our vendors' business, we may not have access to sufficient capacity from these vendors in periods of high demand. In addition, we risk having important suppliers terminate product lines, change business focus, or even go out of business. If we were to change any of our limited or sole source vendors, we would be required to re-qualify each new vendor. Re-qualification could prevent or delay product shipments that could negatively affect our results of operations. In addition, our reliance on these vendors may negatively affect our production if the components vary in quality or quantity. If we are unable to obtain timely deliveries of sufficient components of acceptable quality or if the prices of components for which we do not have alternative sources increase, our business, financial condition, results of operations and cash flows could be materially and adversely affected.

*Our Products Are Difficult To Manufacture And Our Production Could Be Disrupted If We Are Unable To Avoid Manufacturing Difficulties.*

We manufacture many of our wafers and devices in our production facilities. Difficulties in the production process can cause a substantial percentage of wafers and devices to be rejected. Lower-than-expected production yields may delay shipments or result in unexpected levels of warranty claims, either of which can materially and adversely affect our operating results. We have experienced difficulties in achieving planned yields in the past, particularly in pre-production and upon initial commencement of full production volumes, which have adversely affected our gross margins. Because the majority of our manufacturing costs are relatively fixed, our production yields are critical to our financial results. Because we manufacture many of our products internally, any interruption in manufacturing resulting from fire, natural disaster, equipment failures, or otherwise could materially and adversely affect our business, financial condition, results of operations and cash flows.

*We Face Lengthy Sales And Qualifications Cycles For Our Products And, In Many Cases, Must Invest A Substantial Amount Of Time And Funds Before We Receive Orders.*

Nearly all of our products are tested by current and potential customers to determine whether they meet customer or industry specifications. During a given qualification period, we invest significant resources and allocate substantial production capacity to the manufacture of these new products, prior to any commitment to purchase by customers and without generating significant revenues from the qualification process. If we are unable to meet applicable specifications, or do not receive sufficient orders to profitably use the allocated production capacity, our business, financial condition, results of operations and cash flows could be materially and adversely affected.

Our historical and future budgets for operating expenses, capital expenditures, operating leases, and service contracts are based upon our assumptions as to the anticipated market acceptance of our products. Because of the lengthy lead time required for product development and the changes in technology that typically occur during such period, it is difficult to accurately estimate customer demand for a given product. If our products do not achieve expected customer demand, our business, financial condition, results of operations and cash flows could be materially and adversely affected.

*If Our Contract Manufacturers Fail To Deliver Quality Products At Reasonable Prices And On A Timely Basis, Our Results Of Operations And Financial Condition Could Be Materially Affected.*

We are increasing our use of contract manufacturers located outside of the U.S. as a less-expensive alternative to performing our own manufacturing of certain products. If these contract manufacturers do not fulfill their obligations to us, or if we do not properly manage these relationships and the transition of production to these contract manufacturers, our existing customer relationships may suffer. In addition, by undertaking these activities, we run the risk that the reputation and competitiveness of our products and services may deteriorate as a result of the reduction of our control over quality and delivery schedules. We also may experience supply interruptions, import/export controls, cost escalations and competitive disadvantages if our contract manufacturers fail to develop, implement or maintain manufacturing methods appropriate for our products and customers.

Our supply chain and manufacturing process relies on accurate forecasting to provide us with optimal margins and profitability. Because of market uncertainties, forecasting is becoming much more difficult. In addition, as we come to rely more heavily on contract manufacturers, we may have fewer personnel with expertise to manage these third-party arrangements.

*We Have Continuing Concerns Regarding The Manufacture, Profitability Quality, And Distribution Of Our Products.*

EMCORE's success depends upon our ability to timely deliver high quality products to our customers at acceptable cost. As a technology company, we constantly encounter quality, volume, price and cost concerns. These factors have caused considerable strain on our execution capabilities and our customer relations. Currently, we are (a) having difficulty responding to customer delivery expectations for some of our products, (b) unable to fulfill customer demand for some of our products, (c) experiencing yield and quality problems, and (d) expending additional funds and other resources to respond to these execution challenges. We are currently losing additional revenue opportunities due to these concerns. We are also, in the short-term, diverting resources from R&D and other functions to assist with resolving these matters. If we do not improve our performance in all of these areas, our operating results will be harmed, the commercial viability of new products may be challenged and our customers may choose to reduce their orders of our products and purchase additional products from our competitors. Our business, financial condition, results of operations, and cash flows may be materially and adversely affected by these factors.

*We Could Incur Significant Costs To Correct Defective Products.*

Our products are rigorously tested for quality both internally and by our customers. Nevertheless, our products do, and may continue to, fail to meet customer expectations from time-to-time. Also, not all defects are immediately detectible. Failures could result from faulty design or problems in manufacturing. In either case, we could incur significant costs to repair and/or replace defective products under warranty, particularly when such failures occur in installed systems. We have experienced such failures in the past and remain exposed to such failures. In some cases, product redesigns and/or rework may be required to correct a defect, and such occurrences could adversely impact future business with effected customers. Our business, financial condition, results of operations and cash flows may be materially and adversely affected by any unexpected warranty costs.

*Industry Demand For Skilled Employees (Particularly Scientific And Technical Personnel With Compound Semiconductor Experience) Exceeds The Number Of Skilled Personnel Available.*

Our future success depends, in part, on our ability to attract and retain certain key personnel, including scientific, operational and management personnel. The competition for attracting and retaining these employees (especially scientists and technical personnel) is intense. Because of this competition for skilled employees, we may be unable to retain our existing personnel or attract additional qualified employees in the future. If we are unable to retain our skilled employees and attract additional qualified employees to the extent necessary to keep up with our business demands and changes, our financial condition, results of operations and cash flows may be materially and adversely affected.

*Protecting Our Trade Secrets And Obtaining Patent Protection Is Critical To Our Ability To Effectively Compete For Business.*

Our success and competitive position depend on protecting our trade secrets and other intellectual property. Our strategy is to rely both on trade secrets and patents to protect our manufacturing and sales processes and products. Reliance on trade secrets is only an effective business practice insofar as trade secrets remain undisclosed and a proprietary product or process is not reverse engineered or independently developed. We take certain measures to protect our trade secrets, including executing non-disclosure agreements with our employees, our joint venture partner, customers, and suppliers. If parties breach these agreements or the measures we take are not properly implemented, we may not have an adequate remedy. Disclosure of our trade secrets or reverse engineering of our proprietary products, processes, or devices could materially and adversely affect our business, financial condition, results of operations and cash flows.

There is also no assurance that any patents will afford us commercially significant protection of our technologies or that we will have adequate resources to enforce our patents. We are actively pursuing patents on some of our recent inventions. In addition, the laws of certain other countries may not protect our intellectual property to the same extent as U.S. laws.

*Our Failure To Obtain Or Maintain The Right To Use Certain Intellectual Property May Adversely Affect Our Financial Results.*

The compound semiconductor, optoelectronics and fiber optic communications industries are characterized by frequent litigation regarding patent and other intellectual property rights. From time to time we have received, and may receive in the future, notice of claims of infringement of other parties' proprietary rights and licensing offers to commercialize third party patent rights. Although we are not currently involved in any litigation relating to our intellectual property, there can be no assurance that:

- infringement claims (or claims for indemnification resulting from infringement claims) will not be asserted against us or that such claims will not be successful;
- future assertions will not result in an injunction against the sale of infringing products or otherwise significantly impair our business and results of operations;
- any patent owned by us will not be invalidated, circumvented or challenged; or
- we will not be required to obtain licenses, the expense of which may adversely affect our results of operations and profitability.

In addition, effective copyright and trade secret protection may be unavailable or limited in certain foreign countries. Litigation, which could result in substantial cost to us and diversion of our resources, may be necessary to defend our rights or defend us against claimed infringement of the rights of others.

*Our Management's Stock Ownership Gives Them The Power To Control Business Affairs And Prevent A Takeover That Could Be Beneficial To Unaffiliated Shareholders.*

Certain members of our management, specifically Thomas J. Russell, Chairman of our Board, Reuben F. Richards, Jr., President, Chief Executive Officer and a director, and Robert Louis-Dreyfus, a director, are former members of Jesup & Lamont Merchant Partners, L.L.C. They collectively beneficially own more than 20% of our common stock. Accordingly, such persons will continue to hold sufficient voting power to control our business and affairs for the foreseeable future. This concentration of ownership may also have the effect of delaying, deferring or preventing a change in control of our company, which could have a material adverse effect on our stock price.

*Unsuccessful Control Of The Hazardous Raw Materials Used In Our Manufacturing Process Could Result In Costly Remediation Fees, Penalties Or Damages Under Environmental And Safety Regulations.*

Some of our production activities involve the use of certain hazardous raw materials, including, but not limited to, ammonia, gallium, phosphine and arsine. If our control systems are unsuccessful in preventing a release of these materials into the environment or other adverse environmental conditions occur, we could experience interruptions in our operations and incur substantial remediation and other costs. Failure to comply with environmental and health and safety laws and regulations may materially and adversely affect our business, financial condition, results of operations and cash flows.

*Compliance Obligations Will Cause Us To Incur Increased Costs.*

Changes in the laws and regulations affecting public companies over the past several years, including certain provisions of the Sarbanes-Oxley Act of 2002, have resulted in additional internal and external expenses required to respond to these new requirements. In particular, we will incur additional SG&A expense as we implement Section 404 of the Sarbanes-Oxley Act, which requires management to report on, and our independent auditors to attest to, our internal controls. Compliance with these new rules requires management to devote substantial time and attention to accounting and other compliance matters, which can be disruptive to product development, marketing and other business activities. Furthermore, these new requirements may make it more difficult for us to attract and retain qualified persons to serve on our board of directors or as executive officers, which could harm our business.

We are currently performing the system and process evaluation required to ensure compliance as of September 30, 2005 with the management certification and auditor attestation requirements of Section 404 of the Sarbanes Oxley Act. While we currently anticipate that we will timely complete all such actions, we cannot at this time provide absolute assurance that all such actions will be timely completed, although possible consequences of failure include, sanction or investigation by regulatory authorities, such as the Securities Exchange Commission or the Nasdaq National Market (on which our common stock trades), and inability to timely file our Annual Report on Form 10-K for fiscal 2005. Any such action could effect our stock price.

*We May Have Difficulty Obtaining Director And Officer Liability Insurance In Acceptable Amounts For Acceptable Rates Which Could Impair Our Ability To Recruit and Retain Qualified Officers and Directors.*

Like most other public companies, we carry insurance protecting our officers and directors against claims relating to the conduct of our business. Historically, this insurance covered, among other things, the costs incurred by companies and their management to defend against and resolve claims relating to management conduct and results of operations, such as securities class action claims. These claims typically are extremely expensive to defend against and resolve. Hence, as is customary, we purchase and maintain insurance to cover some of these costs. We pay significant premiums to acquire and maintain this insurance, which is provided by third-party insurers, and we agree to underwrite a portion of such exposures under the terms of the insurance coverage. Over the last several years, the premiums we have paid for this insurance have increased substantially. One consequence of the current economic environment and decline in stock prices has been a substantial increase in the number of securities class actions and similar claims brought against public corporations and their management. Consequently, insurers providing director and officer liability insurance have in recent periods sharply increased the premiums they charge for this insurance, raised retentions (that is, the amount of liability that a company is required to pay to defend and resolve a claim before any applicable insurance is provided), and limited the amount of insurance they will provide. Moreover, insurers typically provide only one-year policies.

Each year we negotiate with insurers to renew our director and officer insurance. Particularly in the current economic environment, we cannot be certain that we will be able to obtain sufficient director and officer liability insurance coverage in the future at acceptable rates and with acceptable deductibles and other limitations. Failure to obtain such insurance could materially harm our financial condition in the event that we are required to defend against and resolve any future securities class actions or other claims made against us or our management arising from the conduct of our operations. Further, the inability to obtain such insurance in adequate amounts may impair our future ability to retain and recruit qualified officers and directors.

*Our Business Or Our Stock Price Could Be Adversely Affected By Issuance Of Preferred Stock.*

Our board of directors is authorized to issue up to 5,882,352 shares of preferred stock with such dividend rates, liquidation preferences, voting rights, redemption and conversion terms and privileges as our board of directors, in its sole discretion, may determine. The issuance of shares of preferred stock may result in a decrease in the value or market price of our common stock, or our board of directors could use the preferred stock to delay or discourage hostile bids for control of us in which shareholders may receive premiums for their common stock or to make the possible sale of EMCORE or the removal of our management more difficult. The issuance of shares of preferred stock could adversely affect the voting and other rights of the holders of common stock and may depress the price of our common stock.

*Certain Provisions Of New Jersey Law And Our Charter May Make A Takeover Of EMCORE Difficult Even If Such Takeover Could Be Beneficial To Some Of Our Shareholders.*

New Jersey law and our certificate of incorporation, as amended, contain certain provisions that could delay or prevent a takeover attempt that our shareholders may consider in their best interests. Our board of directors is divided into three classes. Directors are elected to serve staggered three-year terms and are not subject to removal except for cause by the vote of the holders of at least 80% of our capital stock. In addition, approval by the holders of 80% of our voting stock is required for certain business combinations unless these transactions meet certain fair price criteria and procedural requirements or are approved by two-thirds of our continuing directors. We may in the future adopt other measures that may have the effect of delaying or discouraging an unsolicited takeover, even if the takeover were at a premium price or favored by a majority of unaffiliated shareholders. Certain of these measures may be adopted without any further vote or action by our shareholders and this could depress the price of our common stock.

*The Price Of Our Common Stock May Fluctuate Widely In The Future.*

EMCORE's stock price has experienced large swings over the last year, and may continue to fluctuate widely in the future. In fiscal 2004, our stock price was as high as \$7.93 per share and as low as \$1.90 per share. Volatility in the price of our common stock may be caused by other factors outside of our control, and may be unrelated or disproportionate to our operating results.

Factors such as quarterly fluctuations in financial results, the estimates and projections of industry analysts, and financial performance and other activities of other publicly traded companies in the semiconductor industry could cause the price of our common stock to fluctuate substantially. Similarly, the NASDAQ National Market has experienced and may continue to experience significant price and volume fluctuations, which could adversely affect the market price of our common stock without regard to our operating performance.

**Item 2. Properties.**

The following chart contains certain information regarding each of EMCORE's principal facilities. Except for the storage facility located in Somerset, NJ, each of these facilities contains office, marketing, sales, and R&D space.

Location	Function	Sq. Feet	Terms (in fiscal year)
Somerset, New Jersey	Corporate Headquarters	18,716	

	Manufacturing of RF materials & MR sensors	19,500	Lease expires in 2007 <sup>(1) (5)</sup>
	Storage facility	47,000	Lease expires in 2005 <sup>(2)</sup>
			Lease expires in 2006 <sup>(1) (3)</sup>
Albuquerque, New Mexico	Manufacturing of solar cells, VCSELs, and fiber optic components	145,000	Owned by EMCORE <sup>(4)</sup>
City of Industry, California	Manufacturing of solar panels	71,699	Lease expires in 2007
Alhambra, California	Manufacturing of CATV, FTTP, and satcom products	75,000	Lease expires in 2005 <sup>(1)</sup>
Santa Clara, California	Sales and R&D facility	4,000	Lease expires in 2006
Lombard, Illinois	Sales and R&D facility	7,925	Lease expired in 2005 <sup>(6)</sup>
Eau Claire, Wisconsin	R&D Facility	3,178	Lease expires in 2005 <sup>(1)</sup>
Downers Grove, Illinois	Manufacturing of LX4 modules; R&D facility	11,700	Month to month

(1) Leases have the option to be renewed by EMCORE, subject to inflation adjustments.

(2) EMCORE has the option to renew the lease from month to month, and also has the right of first offer to purchase the building in which the lease property is located.

(3) EMCORE subleases this space to a third party.

(4) EMCORE subleases approximately 20,000 square feet of this facility to third parties.

(5) Renewal lease, effective March 2005 (or earlier, depending on certain trigger events). Existing lease for 40,000 sq. feet expires upon the commencement of the renewal lease.

(6) Lease expired on October 31, 2004 and EMCORE vacated this facility.

### Item 3. Legal Proceedings.

As discussed more fully in our last Annual Report, in fiscal 2003 we discovered that we had failed to obtain export licenses for certain shipments involving our TurboDisc capital equipment business, which has since been divested by EMCORE. We entered into a settlement with the U.S. Department of Commerce in December 2003, under which EMCORE agreed to pay \$400,000 in two installments. The first installment was made in fiscal 2004, and the final installment was made in December 2004.

From time to time, we are involved in other lawsuits, claims, investigations, and proceedings that arise in the ordinary course of business. There are no matters pending that we expect to be material in relation to our business, consolidated financial condition, results of operations, or cash flows.

### Item 4. Submission of Matters to a Vote of Security Holders.

No matters were submitted to a vote of security holders during the fourth quarter of fiscal 2004.

## PART II

### Item 5. Market for Registrant's Common Equity, Related Stockholder Matters, and Issuer Purchases of Equity Securities.

EMCORE's common stock is traded on the NASDAQ National Market and is quoted under the symbol "EMKR". The following table sets forth the quarterly high and low sale prices for EMCORE's common stock during the two most recent fiscal years:

	High	Low
<b>Fiscal year ended September 30, 2003</b>		
First Quarter	\$ 3.38	\$ 0.98
Second Quarter	\$ 2.50	\$ 1.65
Third Quarter	\$ 3.98	\$ 1.66
Fourth Quarter	\$ 3.90	\$ 2.40
<b>Fiscal year ended September 30, 2004</b>		
First Quarter	\$ 6.13	\$ 2.75
Second Quarter	\$ 7.93	\$ 3.01
Third Quarter	\$ 5.15	\$ 2.46
Fourth Quarter	\$ 3.89	\$ 1.90

The reported closing sale price of EMCORE's common stock on December 6, 2004 was \$2.75 per share. As of December 6, 2004, EMCORE had approximately 4,950 shareholders of record.

EMCORE has never declared or paid dividends on its common stock since the company's formation. EMCORE currently does not intend to pay dividends on its common stock in the foreseeable future, so that it may reinvest any earnings in its business. The payment of dividends, if any, in the future is at the discretion of the Board of Directors.

### Equity Compensation Plan Information

The following table sets forth, as of September 30, 2004, the number of securities outstanding under each of EMCORE's stock option plans, the weighted average exercise price of such options, and the number of options available for grant under such plans:

(a) Number of securities to be issued upon	(b) Weighted average exercise price of	(c) Number of securities remaining available for
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	exercise of outstanding options, warrants and rights	outstanding options, warrants and rights	future issuance under equity compensation plans (excluding securities reflected in column (a))
<b>Plan Category</b>			
Equity compensation plans approved by security holders	5,499,393	\$ 4.21	1,597,766
Equity compensation plans not approved by security holders	1,920	0.23	-
Totals	5,501,313	\$ 4.21	1,597,766

## Item 6. Selected Financial Data.

The following selected consolidated financial data for EMCORE's five most recent fiscal years ended September 30, 2004 is qualified by reference to, and should be read in conjunction with, the Financial Statements and the accompanying notes thereto, and Management's Discussion and Analysis of Financial Condition and Results of Operations included elsewhere in this Annual Report on Form 10-K. The Statement of Operations data set forth below with respect to fiscal years 2004, 2003, and 2002, and the Balance Sheet data as of September 30, 2004 and 2003, are derived from EMCORE's audited financial statements included elsewhere in this document. The Statement of Operations data for fiscal years 2001 and 2000, and the Balance Sheet data as of September 30, 2002, 2001, and 2000, are derived from audited financial statements not included herein. All share amounts have been restated to reflect EMCORE's two-for-one (2:1) common stock split that was effective on September 18, 2000.

Significant transactions that affect the comparability of EMCORE's operating results and financial condition include:

### Fiscal 2001

1. In May 2001, EMCORE issued \$175.0 million aggregate principal amount of its 5% convertible subordinated notes due in May 2006 (2006 Notes).
2. In March 2001, EMCORE recorded a net gain of \$5.9 million related to the settlement of litigation.
3. In August 2001, EMCORE recorded a net gain of \$10.0 million upon receipt of UTCI common stock in connection with the sale of a joint venture.
4. Effective October 1, 2000, EMCORE changed its revenue recognition policy to defer the portion of revenue related to the installation of TurboDisc MOCVD systems until final acceptance. The net effect of this change was \$3.6 million, and is reported as a cumulative effect of a change in accounting principle in the fiscal year ended September 30, 2001.

### Fiscal 2002

1. UTCI and its subsidiaries filed voluntary petitions for reorganization under Chapter 11 of the U.S. Bankruptcy Code. As a result, EMCORE wrote off its investment in UTCI totaling \$14.0 million.
2. EMCORE wrote off its \$0.4 million investment in Qusion Technologies, a Princeton, New Jersey start-up specializing in monolithic integration of optical components.
3. In March 2002, EMCORE acquired Tecstar for a total cash purchase price, including related acquisition costs, of approximately \$25.1 million. The results of operations from this acquisition have been included in EMCORE's consolidated results of operations from the acquisition closing date.
4. EMCORE recorded pre-tax charges to income totaling \$40.7 million, which included a severance charge of \$0.8 million related to employee termination costs, a non-cash impairment charge of \$30.8 million related to fixed assets, an inventory write-down expense of \$7.7 million charged to cost of revenue, and an additional reserve for doubtful accounts of \$1.4 million.

### Fiscal 2003

1. In January 2003, EMCORE purchased Ortel for \$26.2 million in cash. The results of operations from this acquisition have been included in EMCORE's consolidated results of operations from the acquisition closing date.
2. In December 2002, EMCORE purchased \$13.2 million principal amount of the 2006 Notes at prevailing market prices for an aggregate of approximately \$6.3 million. Total gain from debt extinguishment was \$6.6 million after netting unamortized debt issuance costs of approximately \$0.3 million.

### Fiscal 2004

1. In November 2003, EMCORE sold its TurboDisc capital equipment business to Veeco in a transaction that is valued at up to \$80.0 million. The selling price was \$60.0 million in cash at closing, with an additional aggregate maximum payout of \$20.0 million over the next two years. EMCORE will receive in cash or stock 50% of all revenues from this business that exceed \$40.0 million in each of the next two years, beginning January 1, 2004. EMCORE management expects to receive between \$15.0 and \$17.0 million during the second quarter of fiscal 2005 as part of the additional payout.
2. In February 2004, EMCORE exchanged approximately \$146.0 million, or 90.2%, of the remaining 2006 Notes for approximately \$80.3 million aggregate principal amount of new 5% Convertible Senior Subordinated Notes due May 15, 2011 (2011 Notes) and approximately 7.7 million shares of EMCORE common stock. Total gain from debt extinguishment was \$12.3 million.

(in thousands)

	As of September 30,				
	2004	2003	2002	2001	2000
<b>Balance Sheet Data</b>					
Cash, cash equivalents and marketable securities	\$ 51,572	\$ 28,439	\$ 84,181	\$ 147,661	\$ 101,745
Working capital	58,541	77,464	111,825	201,215	111,575
Total assets	213,243	232,439	285,943	403,553	243,902
Long-term liabilities	96,078	161,791	175,087	175,046	1,284
Shareholders' equity	\$ 85,809	\$ 44,772	\$ 81,950	\$ 197,127	\$ 199,322

(in thousands)

	For the fiscal years ended September 30,				
	2004	2003	2002	2001	2000
Revenue	\$ 93,069	\$ 60,284	\$ 51,236	\$ 53,473	\$ 38,718
Cost of revenue	85,780	61,959	62,385	41,784	23,526

Gross profit (loss)	7,289	(1,675)	(11,149)	11,689	15,192
Operating expenses:					
Selling, general and administrative	20,771	21,637	15,659	15,714	12,115
Research and development	23,555	17,002	30,580	42,204	27,200
Severance charges	1,156	-	832	-	-
Goodwill amortization	-	-	-	1,147	4,392
Impairment charges	-	-	30,804	-	-
Total operating expenses	45,482	38,639	77,875	59,065	43,707
Operating loss	(38,193)	(40,314)	(89,024)	(47,376)	(28,515)
Other (income) expenses:					
Interest income	(783)	(1,009)	(2,865)	(5,222)	(4,925)
Interest expense	6,156	8,288	8,936	3,240	346
Gain from debt extinguishment	(12,312)	(6,614)	-	-	-
Other expense (income)	500	-	14,388	(15,920)	-
Imputed warrant interest expense	-	-	-	-	843
Equity in net (income) loss unconsolidated affiliate	(789)	1,228	2,706	12,326	13,265
Total other (income) expenses	(7,228)	1,893	23,165	(5,576)	9,529
Loss from continuing operations	(30,965)	(42,207)	(112,189)	(41,800)	(38,044)
Discontinued operations:					
(Loss) income from discontinued operations	(2,045)	3,682	(17,572)	33,158	12,559
Gain on disposal of discontinued operations	19,584	-	-	-	-
Income (loss) from discontinued operations	17,539	3,682	(17,572)	33,158	12,559
Net loss before cumulative effect of a change in accounting principle	(13,426)	(38,525)	(129,761)	(8,642)	(25,485)
Cumulative effect of a change in accounting principle	-	-	-	(3,646)	-
Net loss	<u>\$ (13,426)</u>	<u>\$ (38,525)</u>	<u>\$ (129,761)</u>	<u>\$ (12,288)</u>	<u>\$ (25,485)</u>
Per share data:					
Weighted average number of basic and diluted shares outstanding used in per share calculations	43,303	36,999	36,539	34,438	31,156
Loss from continuing operations per basic and diluted share	\$ (0.72)	\$ (1.14)	\$ (3.07)	\$ (1.21)	\$ (1.22)
Income (loss) from discontinued operations per basic and diluted share	\$ 0.41	\$ 0.10	\$ (0.48)	\$ 0.96	\$ 0.40
Cumulative effect of a change in accounting principle per basic and diluted share	\$ -	\$ -	\$ -	\$ (0.11)	\$ -
Net loss per basic and diluted share	<u>\$ (0.31)</u>	<u>\$ (1.04)</u>	<u>\$ (3.55)</u>	<u>\$ (0.36)</u>	<u>\$ (0.82)</u>

#### Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operation.

This report includes "forward-looking statements" within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Exchange Act of 1934. These forward-looking statements are based largely on our current expectations and projections as they relate to our future results, prospects, developments and business strategies. These forward-looking statements are identifiable by their use of terms and phrases such as "expects", "anticipates", "intends", "plans", "believes", "estimate", "predict", "target", "may", "could", "will", and variations of these terms and phrases including references to assumptions. These forward-looking statements are subject to known and unknown risks, business, economic, and other risks and uncertainties, that may cause actual results to be materially different from those discussed in these forward-looking statements. Factors that could also contribute to these differences include, but are not limited to, those discussed under "Risk Factors", "Forward-Looking Statements" and elsewhere in this report. The cautionary statements made in this report should be read as being applicable to all forward-looking statements wherever they appear in this report. This discussion should be read in conjunction with the consolidated financial statements, including the related notes. If one or more of these risks or uncertainties materialize, or if underlying assumptions prove incorrect, our actual results may vary materially from those expected, estimated, or projected.

#### Company & Business Overview

During fiscal 2004, EMCORE Corporation (EMCORE) completed its transition from a capital equipment manufacturer to a leading provider of compound semiconductor solutions for the broadband, fiber optic, satellite, and wireless communications markets. We sell products that enable our customers to transport voice, data, and video over any medium -- wireless, satellite, fiber, copper, or hybrid-fiber coaxial (HFC). Prior to our divestiture of the TurboDisc capital equipment business, EMCORE had two reportable operating segments: (i) the systems segment; and (ii) the components and subsystems segment. As a result of this divestiture, EMCORE now reports only one operating segment: the components and sub systems segment. EMCORE is building upon its leading-edge compound semiconductor materials and device expertise to provide cost-effective components and subsystems for the cable television (CATV), fiber-to-the-premise, business, curb or home (FTTP), telecommunications, data and storage, satellite, and wireless communications markets.

- **CATV and FTTP Networks** - The communications industry in which we participate continues to be dynamic. Cable operators and telephone companies compete with each other to offer the lowest price for unlimited "triple play" (voice, data, and video) communications through a single network connection. As a market leader in radio frequency (RF) transmission over fiber products for the CATV industry, EMCORE is enabling cable companies to offer multiple forms of communications to meet the expanding demand for high-speed Internet, on-demand and interactive video, and other new services (such as Voice over IP, or VoIP). In response to this triple play strategy from the cable companies, the telephone companies also plan to offer competing voice, data, and video services through the deployment of new fiber-based systems. These growing applications should increase demand for EMCORE's FTTP products and subsystems. Our CATV and FTTP products include broadcast analog



and digital fiber optic transmitters, Quadrature Amplitude Modulation (QAM) transmitters, video receivers, Passive Optical Network (PON) transceivers, avalanche photodetectors (APD), PIN (P-type, intrinsic, and N-type semiconductor materials) photodetectors, and Distributed Feedback (DFB) and Fabry-Perot (FP) 1310 nanometer (nm) and 1550 nm analog and digital lasers.

- **Telecommunications** - Our state-of-the-art optical components and modules enable high-speed (up to an aggregate 40 Gb/s) optical interconnections that drive architectures in next-generation carrier class switching and routing networks. Our parallel optical modules facilitate high channel count optical interconnects in multi-shelf central office equipment. These systems sit in the network core and in key metro nodes of voice telephony and Internet infrastructures, and are highly expandable with pay-as-you-grow capacity scaling. EMCORE sells its recently acquired OptoCube™ transceiver product and other 4- and 12-channel parallel optics products to the telecom equipment industry.
- **Data Communications** - EMCORE's leading-edge optical components and modules for data applications include 10G Ethernet LX4, 10G Ethernet CX4, SmartLink™ optical Infiniband, and parallel optical modules for enterprise Ethernet and High Performance Computing (HPC), also called "Super Computing," applications. These high speed modules enable switch-to-switch, router-to-router, and server-to-server backbone connections at aggregate speeds of 10 gigabits per second (Gb/s) and above. Plug gable LX4 modules in X2 or XENPAK form factors provide a "pay-as-you-populate" cost structure during installation. The LX4 can transmit data over both multi-mode and single-mode optical fiber, and currently is the only available option to transmit optical 10G Ethernet signals over 300 meters of legacy multi-mode fiber or 10 km of single-mode fiber. CX4 modules similarly allow the cost-effective transmission of Ethernet signals over legacy copper cable. EMCORE's parallel optical modules also are used in switched bus architectures that are needed for next-generation Super Computers and large servers.
- **Storage Area Networks** - Our optical components also are used in the high-end data storage market, and include high-speed, 850 nm vertical cavity surface emitting lasers (VCSELs) and PIN photodiode components, and 10 Gb/s transmit and receive optical subassemblies (TOSAs/ROSAs). In the future, EMCORE anticipates selling our integrated pluggable X2 or XENPAK form factor modules into the emerging 10G Fibre Channel segment. These products provide optical interfaces for switches and storage systems used in large enterprise mission-critical applications, such as inventory control or financial systems.
- **Satellite Communications** - We manufacture high-efficiency solar cells and solar panels for global satellite communications (satcom), and expect to see increased applications for solar cells in terrestrial power products in fiscal 2005. EMCORE also manufactures satellite communications fiber optics products, including transmitters, receivers, subsystems, and systems, that transport wideband microwave signals between satellite hub equipment and antenna dishes.
- **Wireless Communications** - EMCORE manufactures compound semiconductor RF materials for the wireless handset, cell phone, and base station markets. Our products include 4-inch and 6-inch InGaP Hetero-junction Bipolar Transistor (HBT), AlGaAs pseudomorphic high electron mobility transistors (pHEMT), and E-mode transistor wafers that are used for power amplifiers and switches within next-generation wireless networks. We also produce GaN high electron mobility transistors (HEMT) RF materials that are designed to meet future wireless base station infrastructure requirements for higher power and frequency, along with high temperature operation at industry-leading efficiencies.

EMCORE also is involved in a joint venture with General Electric Lighting to address the solid-state lighting market with High Brightness Light Emitting Diode-based (HB-LED) lighting systems. Through its 49% ownership in GELcore, LLC. (GELcore), EMCORE participates in the development and commercialization of next-generation LED technology for use in the general and specialty illumination markets. GELcore's products include traffic lights, channel letters, and other signage and display products that incorporate HB-LEDs. In the near term, GELcore expects to deploy its HB-LED products in the commercial and industrial markets, including medical, aerospace, commercial refrigeration, transportation, appliance, and general and specialty illumination applications. GELcore is on a calendar year and anticipates revenues in the \$70.0 million range for 2004. GELcore is profitable, has experienced an annual revenue growth of approximately 23% per year, and expects similar growth for 2005.

In November 2003, EMCORE sold its TurboDisc capital equipment business to a subsidiary of Veeco Instruments Inc. (Veeco) in a transaction that is valued at up to \$80.0 million. The selling price was \$60.0 million in cash at closing, with an additional aggregate maximum payout of \$20.0 million over the next two years. EMCORE will receive in either cash or stock 50% of all revenues from this business that exceed \$40.0 million in each of the next two years, beginning January 1, 2004. EMCORE management expects to receive between \$15.0 million and \$17.0 million during the second quarter of fiscal 2005 as part of the additional payout. Our financial statements have been reclassified to reflect the TurboDisc capital equipment business as a discontinued operation for all prior periods presented. See Item 8, Note 4 - [Discontinued Operations](#).

The table below sets forth the revenues and percentage of total revenues attributable to each of EMCORE's product lines for each of the past three fiscal years:

	For the fiscal years ended September 30,					
	FY 2004	% of revenue	FY 2003	% of revenue	FY 2002	% of revenue
<b>Product Revenue</b>						
Fiber Optics	\$ 56,169	60.4%	\$ 32,658	54.2%	\$ 9,077	17.7%
Photovoltaics	25,716	27.6	18,196	30.2	23,621	46.1
Electronic Materials and Devices	11,184	12.0	9,430	15.6	18,538	36.2
Total revenues	\$ 93,069	100.0%	\$ 60,284	100.0%	\$ 51,236	100.0%

## Customers and Geographic Region

EMCORE works closely with its customers to design and develop (i) process technology, (ii) material science expertise, (iii) optical sub-assemblies, and/or (iv) integrated module level products for use in its customers' end-use applications. EMCORE's customer base includes many of the largest semiconductor, telecommunications, data communications, and computer manufacturing companies in the world. In fiscal 2004, Motorola, Inc. (Motorola) and Cisco Systems, Inc. (Cisco) accounted for 13% and 8% of our total revenue, respectively. In fiscal 2003, Motorola accounted for 14% of total revenue. In fiscal 2002, revenues from Motorola, Boeing Satellite Systems, Inc. (Boeing), and Space Systems/Loral, Inc. (SS/L) accounted for 22%, 15%, and 14% of total revenue, respectively.

The following chart contains a breakdown of EMCORE's consolidated revenues by geographic region. North American sales include sales to Canada, which historically have not been material.

	For the fiscal years ended September 30,					
	FY 2004	% of revenue	FY 2003	% of revenue	FY 2002	% of revenue
<b>Revenue by Region</b>						
North America	\$ 66,485	71.4%	\$ 44,136	73.2%	\$ 42,983	83.9%
South America	416	0.5	-	-	-	-
AsiaPac	15,496	16.6	9,018	15.0	3,638	7.1
Europe	10,672	11.5	7,130	11.8	4,615	9.0
Total revenues	\$ 93,069	100.0%	\$ 60,284	100.0%	\$ 51,236	100.0%



## Backlog

As of September 30, 2004, EMCORE had a backlog it believes to be firm of approximately \$28.8 million. This compares to a backlog of \$33.1 million as reported at September 30, 2003. Backlog principally consists of EMCORE's longer lead-time products, such as satellite communications. Our other product lines, including fiber optics and RF, typically ship within the same quarter as the purchase order is received. We believe that substantially all of our backlog can be filled during the next 12 months. But given the current market environment, customers may delay shipment of certain orders. Backlog also could be adversely affected if customers unexpectedly cancel purchase orders accepted by us.

## Critical Accounting Policies

The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America 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 and the reported amounts of revenues and expenses during the reported period. Actual results may differ from those estimates. Critical accounting policies include those policies that are reflective of significant judgments and uncertainties, which potentially could produce materially different results under different assumptions and conditions. EMCORE's most significant estimates relate to accounts receivable bad debt reserves, inventory valuation reserves specifically relating to excess and obsolete inventory, product warranty accruals, the valuation of goodwill, intangibles and other long-lived assets, and revenue recognition on contracts utilizing the percentage-of-completion method.

- *Bad Debt Reserves* - EMCORE regularly evaluates its accounts receivable and accordingly maintains allowances for doubtful accounts for estimated losses resulting from the inability of our customers to meet their financial obligation to us. The allowance for doubtful accounts at September 30, 2004 and 2003 was \$0.7 million and \$1.0 million, respectively. If the financial condition of our customers were to deteriorate, additional allowances may be required.
- *Inventory Reserves* - EMCORE reserves against inventory once it has been determined that conditions exist which may not allow it to be sold for its intended purpose, the inventory's value is determined to be less than cost or it is determined to be obsolete. The charge for the inventory reserves is recorded in cost of revenue. EMCORE evaluates inventory levels at least quarterly against sales forecasts on a part-by-part basis, in addition to determining its overall inventory risk. Reserves are adjusted to reflect inventory values in excess of forecasted sales, as well as overall inventory risk assessed by management. Total inventory reserves at September 30, 2004 and 2003 were \$4.1 million and \$4.4 million, respectively. If future demand or market conditions are less favorable than our estimates, additional inventory write-downs may be required.
- *Product Warranty Reserves* - EMCORE provides its customers with limited rights of return for non-conforming shipments and warranty claims for up to 5 years for certain products. EMCORE makes estimates using historical data and accrues estimated warranty expense as a cost of revenue. Total warranty expense amounted to approximately \$1.4 million, \$2.2 million, and \$2.3 million for the years ended September 30, 2004, 2003, and 2002, respectively. Total warranty reserves at September 30, 2004 and 2003 were \$2.2 million and \$2.4 million, respectively. If our product reliability assessments change in the future, additional allowances may be required.
- *Valuation of Goodwill and Intangible Assets* - EMCORE evaluates its goodwill for impairment on an annual basis or whenever events or changes in circumstances indicate that the carrying value may not be recoverable. Factors that are considered important in making this determination include, but are not limited to, the following: (a) an anticipated or historic decline in revenue or operating profit; (b) significant negative industry trends; and (c) adverse legal or regulatory developments. During fiscal 2004, 2003, and 2002, EMCORE had no impairment of any of its patents, other intangibles assets, or goodwill.
- *Valuation of Long-lived Assets* - EMCORE reviews long-lived assets on an annual basis or whenever events or circumstances indicate that the assets may be impaired. A long-lived asset is considered impaired when its anticipated undiscounted cash flow is less than its carrying value. In making this determination, EMCORE uses certain assumptions, including, but not limited to: (a) estimates of the fair market value of these assets; and (b) estimates of future cash flows expected to be generated by these assets, which are based on additional assumptions such as asset utilization, length of service that assets will be used in our operations, and estimated salvage values. During fiscal 2002, EMCORE determined certain property and equipment was impaired under Statement of Financial Accounting Standards (SFAS) No. 121, *Accounting for the Impairment of Long-Lived Assets and for Long-Lived Assets to Be Disposed of*, which was the relevant accounting pronouncement at the time. As a result, we recorded an impairment charge of \$30.8 million. EMCORE determined that there was no such impairment in fiscal 2004 and 2003.
- *Revenue Recognition* - Revenue is recognized upon shipment provided persuasive evidence of a contract exists, such as when a purchase order or contract is received from a customer, the price is fixed, the product meets the customers' requirements, title and ownership have transferred to the customer, and there is reasonable assurance of collection of the sales proceeds. The majority of our products have shipping terms that are free on board (FOB) or free carrier alongside (FCA) shipping point, which means that EMCORE fulfills its delivery obligation when the goods are handed over to the freight carrier at our shipping dock. This means the buyer bears all costs and risks of loss of or damage to the goods from that point. In certain cases, EMCORE ships its products cost insurance and freight (CIF). Under this arrangement, revenue is recognized under FCA shipping point terms, but EMCORE pays (and bills the customer) for the cost of shipping and insurance to the customer's designated location. EMCORE accounts for shipping and related transportation costs by recording the charges that are invoiced to customers as revenue, with the corresponding cost recorded as cost of revenue. In those instances where inventory is maintained at a consigned location, revenue is recognized only when our customer pulls product for its use and title and ownership have transferred to the customer.

EMCORE records revenues from solar panel contracts using the percentage-of-completion method. Revenue is recognized in proportion to actual costs incurred compared to total anticipated costs expected to be incurred for each contract. If estimates of costs to complete long-term contracts indicate a loss, a provision is made for the total loss anticipated. EMCORE has numerous contracts that are in various stages of completion. Such contracts require estimates to determine the appropriate cost and revenue recognition. EMCORE uses all available information in determining dependable estimates of the extent of progress towards completion, contract revenues, and contract costs. Estimates are revised as additional information becomes available. At September 30, 2004 and 2003, EMCORE's accrued program losses totaled \$0.1 million and \$0.2 million, respectively. In the fourth quarter of fiscal 2004, we incurred a one-time \$1.2 million charge related to a communications satellite program with a positive contribution margin, but with an overall expected loss due to fixed cost overhead absorption.

Contract revenue represents reimbursement by various U.S. Government entities to aid in the development of new technology. The applicable contracts generally provide that EMCORE may elect to retain ownership of inventions made in performing the work, subject to a non-exclusive license retained by the government to practice the inventions for government purposes. The contract funding may be based on a cost-plus, cost reimbursement, cost-share, or a firm fixed price arrangement. The amount of funding under each contract is determined based on cost estimates that include direct costs, plus an allocation for research and development, general and administrative, and the cost of capital expenses. Cost-plus funding is determined based on actual costs plus a set margin. For cost-share contracts, the actual costs of performance are divided between the U.S. Government and EMCORE based on the contract terms. A contract is considered complete when all significant costs have been incurred, milestones have been reached, and any reporting obligations to the customer have been met. Revenues from Government contracts amounted to approximately \$4.6 million, \$5.2 million, and \$3.3 million for the years ended September 30, 2004, 2003, and 2002, respectively.

The above listing is not intended to be a comprehensive list of all of our accounting policies. In many cases, the accounting treatment of a particular transaction is specifically dictated by generally accepted accounting principles (GAAP). There also are areas in which management's judgment in selecting any available alternative would not produce a materially different result. See our audited consolidated financial statements and notes thereto included in this Annual Report on Form 10-K, which contain a discussion of our accounting policies and other required GAAP disclosures.

## Results of Operations

The following table sets forth the consolidated statements of operations data of EMCORE expressed as a percentage of total revenues for the fiscal years ended September 30, 2004, 2003, and 2002:

STATEMENTS OF OPERATIONS	For the fiscal years ended September 30,		
	2004	2003	2002
Revenue	100.0%	100.0%	100.0%
Cost of revenue	92.2	102.8	121.8
Gross profit (loss)	7.8	(2.8)	(21.8)
Operating expenses:			
Selling, general and administrative	22.3	35.9	30.6
Research and development	25.3	28.2	59.7
Severance charges	1.2	-	1.6
Impairment charges	-	-	60.1
Total operating expenses	48.8	64.1	152.0
Operating loss	(41.0)	(66.9)	(173.8)
Other (income) expenses:			
Interest expense, net	5.7	12.1	11.8
Gain from debt extinguishment	(13.2)	(11.0)	-
Investment losses	0.5	-	28.1
Equity in net (income) loss of GELcore	(0.8)	2.0	5.3
Total other (income) expenses	(7.8)	3.1	45.2
Loss from continuing operations	(33.2)	(70.0)	(219.0)
Discontinued operations:			
(Loss) income from discontinued operations	(2.2)	6.1	(34.3)
Gain on disposal of discontinued operations	21.0	-	-
Income (loss) from discontinued operations	18.8	6.1	(34.3)
Net loss	(14.4)%	(63.9)%	(253.3)%

## Comparison of Fiscal Years Ended September 30, 2004 and 2003

**Revenue.** EMCORE's consolidated revenue increased \$32.8 million or 54% to \$93.1 million in fiscal 2004 from \$60.3 million in fiscal 2003. On a product line basis, fiber optics revenues increased \$23.5 million or 72%, photovoltaic revenues increased \$7.5 million or 41%, and electronic materials and devices revenues increased \$1.8 million or 19% from the prior year. International sales accounted for 29% of revenues in fiscal 2004 and 27% in fiscal 2003. Government contract revenue represents reimbursement by various U.S. Government entities to aid in the development of new technology. Revenue from government contracts decreased \$0.6 million to \$4.6 million in fiscal 2004 from \$5.2 million in fiscal 2003. With increased government focus on energy conservation, national security, and fiber optic communications, we expect revenues from government contracts to increase in fiscal 2005.

**Fiber Optics** - Fiber Optics revenues are derived primarily from sales of optical components and subsystems for CATV and FTTP, VCSEL and PIN photodiodes components, 10G Ethernet LX4 and CX4, TOSA/ROSA packaged parts and modules, and satcom transmitter and receiver components.

EMCORE's Albuquerque, NM facility is headquarters for three digital fiber optics product lines: VCSEL chip products, TOSA/ROSA packaged products, and transceiver module level products. In fiscal 2004, EMCORE acquired two fiber optics businesses that complement the transceiver module product line. In October 2003, EMCORE acquired Molex Inc.'s 10G Ethernet transceiver business (Molex), and in June 2004, EMCORE purchased Corona Optical Systems, Inc. (Corona), a parallel optics company. The Molex acquisition provided an extremely talented design and engineering team who worked on the new 10G CWDM fiber optic communications transceiver module. The Corona acquisition added the OptoCube transceiver to the existing parallel optical product family of SNAP-12, Quadlink™, and Smartlink™ transceivers. Annual revenues from digital fiber optics products increased \$8.9 million or 98% to \$18.0 million in fiscal 2004 from \$9.1 million in fiscal 2003. New product launches in fiscal 2004 accounted for more than 95% of the increase in annual revenues from digital fiber optics products. On a quarterly basis, fiscal 2004 digital fiber optics revenues were \$3.5 million, \$4.4 million, \$3.5 million, and \$6.6 million compared to fiscal 2003 quarterly digital fiber optics revenues of \$2.3 million, \$2.6 million, \$3.0 million, and \$1.2 million. The decrease in revenues in the third quarter of fiscal 2004 was a direct result of a LX4 product launch delay. Supply chain issues caused the delay; specifically, a vendor supplied contaminated material that was not identified until testing of the finished modules. To maintain the integrity of our business and product line, management decided not to ship the finished modules because of the risk of warranty returns. The LX4 product was successfully launched in July 2004. Digital fiber optics revenue represented 19% and 15% of EMCORE's total revenues in fiscal 2004 and 2003, respectively. Key customers for the digital fiber optics product line include Cisco, Agilent Technologies, Inc., Infineon Technologies AG, and JDS Uniphase Corporation. As a result of successful customer product qualifications and the recent increase in order backlog, digital fiber optics revenues are expected to increase over 25% in the first quarter of fiscal 2005.

In January 2003, EMCORE acquired Agere's System's, Inc.'s CATV transmission systems, telecom access, and satcom components business, formerly Ortel Corporation (Ortel). Fiber optic products acquired through the acquisition primarily consist of broadcast transmitters, analog and digital lasers, QAM transmitters, video receivers, satcom transmission links, and photodetectors. Revenues from Ortel's product lines increased \$14.6 million or 62% to \$38.2 million in fiscal 2004 from \$23.6 million in fiscal 2003. In fiscal 2003, Ortel was part of EMCORE for approximately three quarters. On a quarterly basis, Ortel's fiscal 2004 fiber optics revenues were \$12.0 million, \$9.7 million, \$8.5 million, and \$8.0 million compared to Ortel's fiscal 2003 revenues, beginning with the second quarter, of \$7.1 million, \$8.2 million, and \$8.3 million. The first quarter of fiscal 2004 experienced an unexpected increase in sales volumes due to one-time buys from our customers. But the third and fourth quarter were lower due to reduced customer demand. Ortel's backlog decreased because we improved our book-to-ship window to two weeks on many products. Sales of Ortel's products represented 41% and 39% of EMCORE's total revenues in fiscal 2004 and 2003, respectively. Key customers for Ortel's product line include Motorola and Scientific-Atlanta, Inc. As a result of smaller lead times on purchase orders, Ortel's revenues in the first quarter of fiscal 2005 are expected to be flat when compared to the prior quarter. The communications industry in which Ortel participates continues to be dynamic. Cable operators and telephone companies compete to offer the lowest price for unlimited "triple play" (voice, data, and video) communications through a single network connection. As a market leader in radio frequency (RF) transmission over fiber products for the CATV industry, EMCORE is enabling cable companies to offer multiple forms of communications to meet the expanding demand for high-speed Internet, on-demand and interactive video, and other new services. In

response to this threat from the cable companies, telephone companies also plan to offer competing services over the deployment of new FTTP systems. These growing applications should increase demand for FTTP subsystems that are manufactured and marketed by Oritel.

**Photovoltaics** - Photovoltaics revenues include the sale of epi wafers, solar cells, covered interconnect solar cells (CICs), and solar panels. The photovoltaics product line is headquartered out of EMCORE's Albuquerque, NM facility. Annual revenues from our photovoltaics product line increased \$7.5 million or 41% to \$25.7 million in fiscal 2004 from \$18.2 million in fiscal 2003. The annual increase is partly attributable to the receipt of two significant solar contracts that were delayed from the prior year. On a quarterly basis, fiscal 2004 photovoltaics revenues were \$4.5 million, \$6.1 million, \$6.8 million, and \$8.3 million compared to fiscal 2003 quarterly photovoltaic revenues of \$5.1 million, \$5.2 million, \$3.0 million, and \$4.9 million. Government contract revenues for photovoltaics products were \$2.8 million and \$2.7 million in fiscal years 2004 and 2003, respectively. The photovoltaics industry continues to experience weakness in satellite infrastructure spending, delays in government program launch schedules, and significant sales price erosion on solar products. The worldwide satellite industry has weakened with satellite awards decreasing from 19 in 2003 to 11 through December 2004. Military procurement remains steady, and we are focusing on gaining market share in that area. Private equity groups also have acquired a number of the satellite operators, and it is unclear what impact this will have on satellite procurement in the near term. In addition, on July 15, 2003, SS/L together with its parent corporation, Loral Space & Communications, Ltd., filed for bankruptcy. Our sales to SS/L were \$4.6 million in 2004, and represented 18% of our photovoltaics revenue. On October 22, 2004, SS/L filed an amended plan of reorganization to emerge from bankruptcy. The plan is subject to approval by SS/L's bankruptcy court. SS/L has stated that it believes it will emerge from bankruptcy in the first calendar quarter of 2005. During the pendency of SS/L's bankruptcy, EMCORE has continued to do business with SS/L. We do not believe that the SS/L bankruptcy or reorganization will have a material adverse effect on our business.

Sales of our photovoltaics products represented 28% and 30% of EMCORE's total revenues in fiscal 2004 and 2003, respectively. In fiscal 2005, we expect to see increased applications for our solar cells in terrestrial products, as well as the satellite industry continuing to develop a communications backbone for voice, data, and video communications. Given the projected timing for completion of three significant on-going solar paneling contracts, photovoltaics revenues in the first quarter of fiscal 2005 are expected to be slightly lower when compared to the prior quarter.

**Electronic Materials and Devices** - Sales of electronic materials and devices (EMD), which include RF materials and MR sensors, increased to \$11.2 million in fiscal 2004 from \$9.4 million in fiscal 2003. This increase is due in part to EMCORE broadening its relationship with ANADIGICS, Inc. by entering into a preferred supplier agreement in the second quarter of fiscal 2004. Revenues from Freescale Semiconductor, Inc. (Freescale) also increased \$1.7 million in fiscal year 2004. On a quarterly basis, fiscal 2004 revenues from EMD were \$3.1 million, \$2.9 million, \$2.6 million, and \$2.6 million compared to fiscal 2003 quarterly revenues from EMD of \$2.0 million, \$2.0 million, \$2.7 million, and \$2.7 million. Government contract revenues for EMD products were \$1.8 million and \$2.5 million in fiscal years 2004 and 2003, respectively. This market is highly competitive, raw materials are extremely expensive, and average selling prices have been declining over the past several years. Our contract with General Motors for MR sensors expires in the first quarter of fiscal 2005, before which a "last time buy" arrangement is expected to occur. EMD sales in the first quarter of fiscal 2005 are expected to be lower when compared to the prior quarter. However, management expects the introduction of GaN RF materials to drive revenue growth in fiscal 2005, as major RF product manufacturers roll out new commercial infrastructure devices. Revenues from Freescale may decline in the future due to their potential change in platform from EMODE to InGaP HBT devices.

**Gross Profit (Loss)**. Gross profit increased \$9.0 million to \$7.3 million in fiscal 2004 from (\$1.7) million in fiscal 2003. Compared to the prior year, gross margins increased from (2.8%) to 7.8% of revenue. On a product line basis, margins for fiber optics increased from 10.4% in fiscal 2003 to 11.8% in fiscal 2004, margins for photovoltaics improved from (31.5%) in fiscal 2003 to (8.2%) in fiscal 2004 and margins for the electronic materials and devices product line increased slightly as well. Gross margins were negatively impacted by the underutilization of fixed costs and overhead resulting from expansions previously deployed through fiscal 2001. In the aggregate, EMCORE currently operates at approximately 30% of capacity. As revenues increase, our margins should increase as well since a significant portion of our facility costs is fixed, so higher throughput should result in lower costs per unit produced. Fiscal 2005 gross margins should also increase as product lines continue to be transferred to contract manufacturers for high volume production and as management implements additional programs to improve manufacturing process yields. Management does expect gains in gross margins to be somewhat offset by lower sales prices due to competitive pricing pressures.

**Selling, General and Administrative**. SG&A expenses decreased \$0.8 million or 4% to \$20.8 million in fiscal 2004 from \$21.6 million in fiscal 2003. As a percentage of revenue, SG&A significantly decreased from 36% in fiscal 2003 to 22% in fiscal 2004. In the fourth quarter of fiscal 2004, EMCORE reversed a portion of the professional fees accrual in the amount of \$0.5 million, which represented an over-accrued amount based upon information gained directly from the service providers. Assuming no further non-recurring charges and acquisitions, management expects annual SG&A expenses in fiscal year 2005 to continue to decrease as a percentage of revenue due to current cost reduction measures being undertaken and projected revenue growth.

**Research and Development**. R&D expenses increased \$6.6 million or 39% to \$23.6 million in fiscal 2004 from \$17.0 million in fiscal 2003. The increase was primarily due to an increase in R&D spending in the fiber optics product line. During fiscal 2004, this group incurred significant R&D on the development of the LX4 module, including a \$1.3 million one-time charge incurred as a result of contaminated materials supplied to us by a vendor. Also, Oritel's R&D focus continued the development of PONs and FTTP systems that are intended to provide even greater bandwidth, better performance and increased reliability to homes and businesses. As a percentage of revenue, R&D decreased from 28% in fiscal 2003 to 25% in 2004. Management expects R&D to decline as a percentage of revenue in the second quarter of fiscal 2005 as products previously under development are released to production.

**Gain From Debt Extinguishment**. In May 2001, EMCORE issued \$175.0 million aggregate principal amount of its 5% convertible subordinated notes due in May 2006 (2006 Notes). In December 2002, EMCORE purchased \$13.2 million principal amount of the notes at prevailing market prices for an aggregate of approximately \$6.3 million, resulting in a gain of approximately \$6.6 million after netting unamortized debt issuance costs of approximately \$0.3 million. In February 2004, EMCORE exchanged approximately \$146.0 million, or 90.2%, of 2006 Notes for approximately \$80.3 million aggregate principal amount of new 5% Convertible Senior Subordinated Notes due May 15, 2011 and approximately 7.7 million shares of EMCORE common stock. As a result of this transaction, EMCORE recorded a gain from early debt extinguishment of approximately \$12.3 million.

**Severance Charges**. In fiscal 2004, EMCORE initiated a restructuring program, consisting of cutting corporate overhead expenses and realignment of certain shared service operations. As a result, EMCORE incurred \$1.2 million in severance and fringe benefit charges related to employee termination costs for 110 employees. As of September 30, 2004, \$0.7 million of these charges have been paid. Management expects the restructuring program to continue into fiscal 2005.

**Interest Expense, net**. Interest expense, net decreased \$1.9 million, or 26%, to \$5.4 million in fiscal 2004 from \$7.3 million in fiscal 2003. This decrease is due to the retirement of approximately \$65.7 million of EMCORE's subordinated debt through the debt exchange accomplished in February 2004. As a result of this debt exchange, net interest expense will decrease by approximately \$3.3 million for fiscal year 2005.

**Investment Loss**. In February 2002, EMCORE purchased \$1.0 million of preferred stock of Archcom Technologies, Inc., a venture-funded, start-up optical networking components company that designs, manufactures and markets a series of high performance lasers and photodiodes for datacom and telecom industries. In fiscal 2004, EMCORE chose not to participate in a equity offering at Archcom which diluted EMCORE ownership in half to \$0.5 million.

**Equity in Net Income (Loss) of GELcore**. EMCORE's share of GELcore's net income (loss) increased \$2.0 million, or 164%, to net income of \$0.8 million in fiscal 2004 from a net loss of \$1.2 million in fiscal 2003. On a quarterly basis, EMCORE's share of GELcore's operating results was \$0.3 million, (\$0.1) million, \$0.4 million and \$0.2 million. This quarterly improvement is associated with increased unit volumes, changes in LED product mix and less manufacturing inefficiencies associated with newer product introductions. As a result, management believes GELcore's results will continue to improve in fiscal 2005 when compared to fiscal 2004.

**Income Taxes**. As a result of its losses, EMCORE did not incur any income tax expense in either fiscal 2004 or 2003. Management provides valuation allowances against the deferred tax asset for amounts which are considered "more likely than not" to be realized. As of September 30, 2004, EMCORE had net operating loss carryforwards for tax purposes of approximately \$431.0 million that expire in the years 2005 through 2024. In fiscal 2004, \$0.8 million of net operating loss carryforwards expired and approximately \$13.9 million are due to expire in fiscal 2005. EMCORE is incorporated in the State of New Jersey, which presently has a moratorium on the use of net operating loss carryforwards due to state government budget deficits.

## Comparison of Fiscal Years Ended September 30, 2003 and 2002

*Revenue.* EMCORE's consolidated revenue increased \$9.1 million or 18% to \$60.3 million in fiscal 2003 from \$51.2 million in fiscal 2002. Higher revenue was primarily attributable to the Ortel acquisition, which contributed \$23.6 million since being acquired in January 2003. On a product line basis, sales of fiber optic components and subsystems devices increased \$23.6 million or 260%, photovoltaic products decreased \$5.4 million or 23% and electronic materials and devices decreased \$9.1 million or 49% from the prior year. International sales accounted for 27% of revenues in fiscal 2003 and 16% of revenues in fiscal 2002.

Revenues from VCSEL chip products, packaged products, and transceiver module products were \$9.1 million for both fiscal 2003 and 2002. Sales of digital products represented 15% and 18% of EMCORE's total revenues in fiscal 2003 and 2002, respectively. In the fourth quarter of fiscal 2003, the VCSEL chip product line experienced delays of significant orders from certain customers due to a perceived quality problem that was clarified and resolved in October 2003. Also, during the fourth quarter of fiscal 2003, EMCORE experienced product obsolescence related to certain transceiver module products, which were determined to be non-saleable because of design deficiencies. As a result, \$2.0 million of inventory costs associated with the products were written-off during the period.

Fiber optic products acquired through the Ortel acquisition primarily consist of fiber optic transmitter and receiver CATV products, Satcom transmission links, and PON and FTTP systems. Sales of these products represented 39% of EMCORE's total revenues in fiscal 2003.

Fiscal 2003 photovoltaic revenues decreased to \$18.2 million from \$23.6 million in fiscal 2002. The annual decrease is attributable to prior period weakness in satellite infrastructure spending, delays in government program launch schedules, significant sales price erosion on solar products and the delay of two significant solar contracts which have since been awarded to EMCORE. Sales in the photovoltaic group represented 30% and 46% of EMCORE's total revenues in fiscal 2003 and 2002, respectively.

Sales of electronic materials and devices (including RF materials, GaN materials, and MR sensors) decreased to \$9.4 million in fiscal 2003 from \$18.5 million in fiscal 2002 due to a significant decline in orders from Motorola. EMCORE broadened its relationship with Motorola by entering into an agreement to co-develop and transition into production certain RF materials. In light of the fact that Motorola has now developed the capacity to supply a portion of their needs internally and due to the delayed introduction of InGaP HBTs into GSM handsets, annual RF materials related revenues have decreased significantly. Annual revenues from our mature MR sensors product line decreased \$0.7 million from the prior year as a result of the phase out of certain automotive models at General Motors. While our contract with General Motors expired in fiscal 2004, we anticipate a "last time buy" order from General Motors to be separately negotiated.

Revenue from government contracts increased \$1.9 million to \$5.2 million in fiscal 2003 from \$3.3 million in fiscal 2002. Government contract revenues are included in the product line related to the work being performed. In fiscal 2003, \$2.7 million and \$2.5 million of government contract revenue was included in our photovoltaic and electronic materials and devices revenue, respectively. In fiscal 2002, \$1.5 million and \$1.8 million of government contract revenue was included in our photovoltaic and electronic materials and devices revenue, respectively.

*Gross Profit (Loss).* Gross profit increased \$9.4 million to (\$1.7) million in fiscal 2003 from (\$11.1) million in fiscal 2002. Compared to the prior year, gross margins increased from (21.8%) to (2.8%). During the second quarter of fiscal 2002, EMCORE recorded a \$7.7 million inventory charge. The inventory charge was for excess raw material and finished goods inventory that EMCORE believed it was carrying as a result of market conditions. As revenues increase, our margins should increase as well since a significant portion of our facility costs is fixed, so higher throughput should result in lower costs per unit produced.

The most significant factor contributing to these negative gross margins is unabsorbed overhead costs associated with lower revenues. EMCORE has a significant amount of fixed expenses relating to capital equipment and manufacturing overhead in its facilities. By December 2001, EMCORE's manufacturing facilities were expanded and placed into service with the anticipation of expanding market prospects. Lower than forecasted revenues caused these fixed expenses to be allocated across reduced production volumes, adversely affecting gross profit and margins. In addition, as mentioned above, a \$7.7 million inventory charge was recorded in fiscal 2002. During the fourth quarter of fiscal 2003, EMCORE recorded approximately \$0.2 million in anticipated losses on certain long-term photovoltaic contracts. On a quarterly basis, gross margins were (28.0%), (5.0%), 3.7% and 6.8%. This quarterly improvement is associated with increased volumes, changes in product mix and less manufacturing inefficiencies associated with newer product introductions.

*Selling, General and Administrative.* SG&A expenses increased \$5.9 million or 38% to \$21.6 million in fiscal 2003 from \$15.7 million in fiscal 2002. As a percentage of revenue, SG&A increased from 31% in fiscal 2002 to 36% in 2003. The Ortel acquisition added approximately \$5.0 million of SG&A in fiscal 2003.

*Research and Development.* R&D expenses decreased \$13.6 million or 44% to \$17.0 million in fiscal 2003 from \$30.6 million in fiscal 2002. As a percentage of revenue, R&D decreased from 60% in fiscal 2002 to 28% in 2003. The Ortel acquisition added approximately \$4.2 million of R&D in fiscal 2003. The decrease in R&D was mostly due to the deferral or elimination of certain non-critical research and development projects and headcount reductions. It is also attributable to our photovoltaic customers, who in response to a depressed satellite industry, prefer to use previously qualified solar cells at lower prices instead of newly developed, more efficient product.

*Impairment and Severance Charges.* In fiscal 2002, EMCORE recorded pre-tax charges to income totaling \$31.6 million, which included an impairment charge of \$30.8 million, and severance charges of \$0.8 million.

*Impairment charges:* As discussed earlier in the critical accounting policies section, EMCORE recorded \$30.8 million of non-cash impairment charges related to its fixed assets in the second quarter of fiscal 2002.

*Severance charges:* EMCORE's fiscal 2002 restructuring program consisted of a realignment of all engineering, manufacturing and sales/marketing operations, as well as workforce reductions. As a result, EMCORE incurred severance and fringe benefit charges of \$0.8 million related to employee termination costs. All monetary obligations relating to these charges were paid as of March 31, 2003.

*Interest Expense, net.* Interest expense, net increased \$1.7 million or 28% to \$7.8 million in fiscal 2003 from \$6.1 million in fiscal 2002. The increase is due to less interest income earned primarily from lower interest rates available on our decreasing cash balance offset slightly by less interest expense of \$0.6 million due to a partial repurchase of outstanding debt.

*Other Expense.* In fiscal 2001, EMCORE recorded a net gain of \$10.0 million upon receipt of UTCI common stock in connection with the sale of a joint venture. In fiscal 2002, UTCI and its subsidiaries filed voluntary petitions for reorganization under Chapter 11 of the U.S. Bankruptcy Code. As a result, EMCORE wrote off its investment in UTCI totaling \$14.0 million in fiscal 2002.

In fiscal 2002, EMCORE invested approximately \$0.4 million in Qusion Technologies (Qusion), a Princeton, New Jersey start-up specializing in monolithic integration of optical components. Lacking additional funding, Qusion closed its business. EMCORE purchased all of Qusion's intellectual property and wrote off its entire investment.

*Equity in Net Loss of GELcore.* EMCORE's share of GELcore's net loss decreased \$1.5 million or 55% to \$1.2 million in fiscal 2003 from \$2.7 million in fiscal 2002. On a quarterly basis, EMCORE's share of GELcore's operating results was (\$0.6) million, (\$0.7) million, (\$33,000) and \$0.1 million. This quarterly improvement is associated with increased unit volumes, changes in LED product mix and less manufacturing inefficiencies associated with newer product introductions.

*Income Taxes.* As a result of its losses, EMCORE did not incur any income tax expense in either fiscal 2003 or 2002.

## Quarterly Results of Operations

The following tables present EMCORE's unaudited results of operations expressed in dollars and as a percentage of revenue for the eight most recently ended quarters. EMCORE believes that all necessary adjustments, consisting only of normal recurring adjustments, have been included in the amounts below to present fairly the selected quarterly information when read in conjunction with the consolidated financial statements and notes included elsewhere in this document. EMCORE's results from operations may vary substantially from quarter to quarter. Accordingly, the operating results for a quarter are not necessarily indicative of results for any subsequent quarter or for the full year. EMCORE has experienced and expects to continue to experience significant fluctuations in quarterly results. See [Item 6. Selected Financial Data](#), for a listing of certain significant transactions that affect the comparability of EMCORE's operating results and financial condition.

### STATEMENTS OF OPERATIONS

<i>(in thousands)</i>	<b>Dec. 31, 2002</b>	<b>Mar. 31, 2003</b>	<b>Jun. 30, 2003</b>	<b>Sept. 30, 2003</b>	<b>Dec. 31, 2003</b>	<b>Mar. 31, 2004</b>	<b>June 30, 2004</b>	<b>Sept. 30, 2004</b>
Revenue	\$ 9,382	\$ 16,864	\$ 16,986	\$ 17,052	\$ 23,125	\$ 23,180	\$ 21,225	\$ 25,539
Cost of revenue	<u>12,007</u>	<u>17,705</u>	<u>16,361</u>	<u>15,886</u>	<u>19,945</u>	<u>20,499</u>	<u>20,811</u>	<u>24,525</u>
Gross (loss) profit	(2,625)	(841)	625	1,166	3,180	2,681	414	1,014
Operating expenses:								
Selling, general & administrative	3,974	5,499	5,979	6,185	5,307	5,644	5,723	4,097
Research and development	2,449	4,212	4,283	6,058	6,046	5,714	6,535	5,260
Severance charge	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>1,156</u>
Total operating expenses	<u>6,423</u>	<u>9,711</u>	<u>10,262</u>	<u>12,243</u>	<u>11,353</u>	<u>11,358</u>	<u>12,258</u>	<u>10,513</u>
Operating loss	(9,048)	(10,552)	(9,637)	(11,077)	(8,173)	(8,677)	(11,844)	(9,499)
Other (income) expenses:								
Interest expense, net	1,786	1,746	1,827	1,920	1,867	1,486	1,004	1,016
Gain from debt extinguishment	(6,614)	-	-	-	-	(12,312)	-	-
Investment loss	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>500</u>
Equity in net loss (income) of GELcore	<u>571</u>	<u>731</u>	<u>33</u>	<u>(107)</u>	<u>(267)</u>	<u>51</u>	<u>(341)</u>	<u>(232)</u>
Total other (income) expenses	<u>(4,257)</u>	<u>2,477</u>	<u>1,860</u>	<u>1,813</u>	<u>1,600</u>	<u>(10,775)</u>	<u>663</u>	<u>1,284</u>
(Loss) income from continuing operations	(4,791)	(13,029)	(11,497)	(12,890)	(9,773)	2,098	(12,507)	(10,783)
Discontinued operations:								
Income (loss) from discontinued operations	1,894	488	2,265	(965)	(1,697)	(348)	-	-
Gain on disposal of discontinued operations	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>19,584</u>	<u>-</u>	<u>-</u>	<u>-</u>
Income (loss) from discontinued operations	<u>1,894</u>	<u>488</u>	<u>2,265</u>	<u>(965)</u>	<u>17,887</u>	<u>(348)</u>	<u>-</u>	<u>-</u>
Net (loss) income	<u>\$ (2,897)</u>	<u>\$ (12,541)</u>	<u>\$ (9,232)</u>	<u>\$ (13,855)</u>	<u>\$ 8,114</u>	<u>\$ 1,750</u>	<u>\$ (12,507)</u>	<u>\$ (10,783)</u>

<i>(in thousands)</i>	<b>Dec. 31, 2002</b>	<b>Mar. 31, 2003</b>	<b>Jun. 30, 2003</b>	<b>Sept. 30, 2003</b>	<b>Dec. 31, 2003</b>	<b>Mar. 31, 2004</b>	<b>June 30, 2004</b>	<b>Sept. 30, 2004</b>
Revenue	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Cost of revenue	<u>128.0</u>	<u>105.0</u>	<u>96.3</u>	<u>93.2</u>	<u>86.2</u>	<u>88.4</u>	<u>98.0</u>	<u>96.0</u>
Gross (loss) profit	(28.0)	(5.0)	3.7	6.8	13.8	11.6	2.0	4.0
Operating expenses:								
Selling, general & administrative	42.4	32.6	35.2	36.3	23.0	24.3	27.0	16.0
Research and development	26.1	25.0	25.2	35.5	26.1	24.7	30.8	20.6
Severance charge	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>4.6</u>
Total operating expenses	<u>68.5</u>	<u>57.6</u>	<u>60.4</u>	<u>71.8</u>	<u>49.1</u>	<u>49.0</u>	<u>57.8</u>	<u>41.2</u>
Operating loss	(96.5)	(62.6)	(56.7)	(65.0)	(35.3)	(37.4)	(55.8)	(37.2)
Other (income) expenses:								
Interest expense, net	19.0	10.4	10.8	11.2	8.1	6.5	4.7	3.9
Gain from debt extinguishment	(70.5)	-	-	-	-	(53.1)	-	-
Investment loss	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>2.0</u>
Equity in net loss (income) of GELcore	<u>6.1</u>	<u>4.3</u>	<u>0.2</u>	<u>(0.6)</u>	<u>(1.1)</u>	<u>0.2</u>	<u>(1.6)</u>	<u>(0.9)</u>
Total other (income) expenses	<u>(45.4)</u>	<u>14.7</u>	<u>11.0</u>	<u>10.6</u>	<u>7.0</u>	<u>(46.4)</u>	<u>3.1</u>	<u>5.0%</u>
Loss (income) from continuing operations	(51.1)	(77.3)	(67.7)	(75.6)	(42.3)	9.0	(58.9)	(42.2)%
Discontinued operations:								
Income (loss) from discontinued operations	20.2	2.9	13.3	(5.7)	(7.3)	(1.5)	-	-

Gain on disposal of discontinued operations	-	-	-	-	84.7	-	-	-
Income (loss) from discontinued operations	20.2	2.9	13.3	(5.7)	77.4	(1.5)	-	-
Net (loss) income	(30.9)%	(74.4)%	(54.4)%	(81.3)%	35.1%	7.5%	(58.9)%	(42.2)%

## Liquidity and Capital Resources

### Working Capital

At September 30, 2004, EMCORE had working capital of approximately \$58.0 million. Cash, cash equivalents, and marketable securities at September 30, 2004 totaled \$51.6 million, which reflects a net cash increase of \$23.1 million for fiscal 2004. In November 2003, EMCORE received \$62.0 million from the divestiture of the TurboDisc capital equipment business to Veeco. In connection with this divestiture, EMCORE management expects to receive between \$15.0 million and \$17.0 million during the second quarter of fiscal 2005 as part of the additional payout.

### Cash Flow

*Net Cash Used For Operations* - Net cash used for operations increased \$13.7 million or 74% to \$32.3 million in fiscal 2004 from \$18.6 million in fiscal 2003. Following is a summary of the major items accounting for the increase in cash used in operations:

(in thousands)	For the fiscal years ended September 30,		
	2004	2003	Favorable (Unfavorable)
Loss from continuing operations	\$ (30,965)	\$ (42,207)	\$ 11,242
Adjustments (non cash items):			
Depreciation	15,219	19,340	(4,121)
Gain from debt extinguishment	(12,312)	(6,614)	(5,698)
Other non-cash items	304	3,305	(3,001)
Adjusted loss from continuing operations	(27,754)	(26,176)	(1,578)
Other adjustments:			
Changes in working capital	(366)	2,207	(2,573)
Discontinued operations	(4,218)	5,388	(9,606)
Cash used in operations	<u>\$ (32,338)</u>	<u>\$ (18,581)</u>	<u>\$ (13,757)</u>

Two items accounted for 89% of the increase: (i) changes in working capital components; and (ii) discontinued operations relating to the divestiture of the TurboDisc capital equipment business. All major components of working capital increased in fiscal 2004 due to the dramatic increase in revenues resulting in a use of cash. In fiscal 2003, inventories decreased significantly, resulting in the \$2.2 million source of funds.

During fiscal 2004, we sold our TurboDisc capital equipment business to Veeco. We only owned this product line for approximately 35 days in fiscal 2004. As a result, expenses exceeded revenues and we generated a loss of \$4.2 million for the period during which we still owned the TurboDisc business. Revenues during this 35-day period were *de minimis* since, historically, the majority of our TurboDisc revenues were generated in the latter part of each fiscal quarter. In fiscal 2003, since we owned the TurboDisc business for the entire year, we generated income of \$5.4 million. Therefore, the change between fiscal years amounted to \$9.6 million, accounting for 70% of the increase in cash used in operations during fiscal 2004.

*Net Cash Provided by Investing Activities* - Net cash provided by investing activities improved \$12.0 million to \$22.3 million in fiscal 2004 from \$10.3 million in fiscal 2003. Changes in cash flow consisted of:

- Divestiture - Sale of TurboDisc business generated \$62.0 million in cash.
- Capital expenditures - Capital expenditures increased to \$4.2 million in fiscal 2004 from \$2.6 million in fiscal 2003. This increase was due in part to our purchase of a GaNzilla MOCVD reactor for \$1.3 million, to support our wide-bandgap activities. As part of our ongoing effort to manage cash, management carefully scrutinizes all significant capital purchases.
- Investments - As a result of GELcore's improved operations and recently reported profitable quarterly results, no additional investments were made to GELcore during fiscal year 2004. Investments in EMCORE's GELcore joint venture totaled approximately \$2.0 million in fiscal 2003.
- Acquisitions - In fiscal 2003, EMCORE purchased Ortel for \$26.2 million in cash, and acquired certain assets of privately-held Alvesta Corporation for approximately \$250,000. In October 2003, EMCORE acquired Molex's 10G Ethernet transceiver business for an initial \$1.0 million in cash, \$1.5 million in cash earn out based upon initial LX4 unit shipments, and future cash earn out payments calculated as a percentage of revenue, ranging from 3.7% to 0.25%, on LX4 product sold through December 2007. EMCORE has paid \$0.4 million of the \$1.5 million earn out, leaving a balance of \$1.1 million accrued at September 30, 2004. In June 2004, EMCORE purchased Corona for \$1.2 million in a cash-for-stock merger.
- Marketable securities - In fiscal 2004, EMCORE's net investment in marketable securities increased by \$32.2 million in order to take advantage of higher interest-bearing instruments. In fiscal 2003, EMCORE's net investment in marketable securities decreased by \$41.4 million (as compared to fiscal 2002) in order to fund multiple acquisitions, partially repurchase debt, and pay interest expense on the remaining debt.

*Net Cash Provided By (Used For) Financing Activities* — Net cash provided by (used for) financing activities increased \$6.9 million to \$1.0 million in fiscal 2004 from (\$5.9) million in fiscal 2003. In fiscal 2003, \$6.3 million related to the partial repurchase of our 2006 Notes (see below).

### Financing Transactions

In May 2001, EMCORE issued \$175.0 million aggregate principal amount of its 5% convertible subordinated notes due in May 2006 (2006 Notes). In December 2002, EMCORE purchased, in multiple transactions, \$13.2 million principal amount of the notes at prevailing market prices, for an aggregate purchase price of approximately \$6.3 million.

In February 2004, EMCORE exchanged approximately \$146.0 million or 90.2% of the remaining 2006 Notes for approximately \$80.3 million aggregate principal amount of new 5% Convertible Senior Subordinated Notes due May 15, 2011(2011 Notes) and approximately 7.7 million shares of EMCORE common stock. Interest on the 2011 Notes is payable in arrears semiannually on May 15 and November 15 of each year. The notes are convertible into EMCORE common stock at a conversion price of \$8.06 per share, subject to adjustment under customary anti-dilutive provisions. They also are redeemable should EMCORE's common stock price reach \$12.09 per share. As a result of this transaction, EMCORE recorded a gain from early debt extinguishment of approximately \$12.3 million, decreased annual interest expense by approximately \$3.3 million, and reduced debt by approximately \$65.7 million.

EMCORE may continue to repurchase 2006 and/or 2011 Notes through various means, including, but not limited to, one or more open market or privately negotiated transactions in future periods. The timing and amount of repurchase, if any, whether *de minimis* or material, will depend on many factors, including, but not limited to, the availability of capital, the prevailing market price of the notes, and overall market conditions.

### **Contractual Obligations**

EMCORE's contractual obligations over the next five years are summarized in the table below:

<b>As of September 30, 2004 (in millions)</b>	<b>Total</b>	<b>&lt;1 Year (fiscal 2005)</b>	<b>1 - 3 Years (fiscal 2006-08)</b>	<b>4 - 5 Years (fiscal 2009-10)</b>	<b>After 5 Years</b>
Long-Term Debt	\$ 96.0	\$ -	\$ 15.7	\$ -	\$ 80.3
Interest on Long-Term Debt	29.6	4.8	12.8	8.0	4.0
Capital Lease Obligations	0.1	0.1	-	-	-
Operating Leases	6.6	2.1	1.7	0.3	2.5
Molex Purchase Price Earnout	1.1	1.1	-	-	-
Purchase Obligations	4.4	4.4	-	-	-
<b>Total Contractual Cash Obligations</b>	<b>\$ 137.8</b>	<b>\$ 12.5</b>	<b>\$ 30.2</b>	<b>\$ 8.3</b>	<b>\$ 86.8</b>

Our long-term debt is convertible debt, and therefore may be converted to EMCORE common stock before maturity under certain circumstances. The above-listed Molex earnout obligation is an estimate. As of September 30, 2004, EMCORE does not have any purchase obligations or other long-term liabilities beyond those listed in the table above.

### **Conclusion**

We believe that our current liquidity should be sufficient to meet our cash needs for working capital through the next 12 months. If cash generated from operations and cash on hand are not sufficient to satisfy EMCORE's liquidity requirements, EMCORE will seek to obtain additional equity or debt financing. Additional funding may not be available when needed, or on terms acceptable to EMCORE. If EMCORE is required to raise additional financing and if adequate funds are not available or not available on acceptable terms, our ability to continue to fund expansion, develop and enhance products and services, or otherwise respond to competitive pressures may be severely limited. Such a limitation could have a material adverse effect on EMCORE's business, financial condition, results of operations, and cash flow.

## **Item 7A. Quantitative and Qualitative Disclosures About Market Risk.**

We are exposed to financial market risks, including changes in currency exchange rates, interest rates, and non-marketable equity security prices. We do not use derivative financial instruments for speculative purposes.

**Currency Exchange Rates.** Although EMCORE occasionally enters into transactions denominated in foreign currencies, the total amount of such transactions is not material. Accordingly, fluctuations in foreign currency values would not have a material adverse effect on our future financial condition or results of operations. However, some of our foreign suppliers may adjust their prices (in \$US) from time to time to reflect currency exchange fluctuations, and such price changes could impact our future financial condition or results of operations.

**Interest Rates.** We maintain an investment portfolio in a variety of high-grade (AAA), short-term debt and money market instruments, which carry a minimal degree of interest rate risk. Due in part to these factors, our future investment income may be slightly less than expected because of changes in interest rates, or we may suffer insignificant losses in principal if forced to sell securities that have experienced a decline in market value because of changes in interest rates.

**Non-Marketable Equity Securities.** Our strategic investments in non-marketable equity securities would be affected by an adverse movement of equity market prices, although the impact cannot be directly quantified. Such a movement and the related underlying economic conditions would negatively affect the prospects of the companies in which we invest, their ability to raise additional capital, and the likelihood of our being able to realize our investments through liquidity events, such as initial public offerings, mergers, and private sales. These types of investments involve a great deal of risk, and there can be no assurance that any specific company will grow or will become successful. Consequently, we could lose all or part of our investment.



**Item 8. Financial Statements and Supplementary Data.**

**EMCORE CORPORATION**  
**Consolidated Statements of Operations for the fiscal years ended September 30, 2004, 2003, and 2002**  
(in thousands, except per share data)

	2004	2003	2002
Revenue	\$ 93,069	\$ 60,284	\$ 51,236
Cost of revenue	<u>85,780</u>	<u>61,959</u>	<u>62,385</u>
Gross profit (loss)	7,289	(1,675)	(11,149)
Operating expenses:			
Selling, general and administrative	20,771	21,637	15,659
Research and development	23,555	17,002	30,580
Severance charges	1,156	-	832
Impairment charges	<u>-</u>	<u>-</u>	<u>30,804</u>
Total operating expenses	<u>45,482</u>	<u>38,639</u>	<u>77,875</u>
Operating loss	(38,193)	(40,314)	(89,024)
Other (income) expenses:			
Interest income	(783)	(1,009)	(2,865)
Interest expense	6,156	8,288	8,936
Gain from debt extinguishment	(12,312)	(6,614)	-
Investment loss	500	-	14,388
Equity in net (income) loss of GELcore	<u>(789)</u>	<u>1,228</u>	<u>2,706</u>
Total other (income) expenses	<u>(7,228)</u>	<u>1,893</u>	<u>23,165</u>
Loss from continuing operations	(30,965)	(42,207)	(112,189)
Discontinued operations:			
(Loss) income from discontinued operations	(2,045)	3,682	(17,572)
Gain on disposal of discontinued operations	<u>19,584</u>	<u>-</u>	<u>-</u>
Income (loss) from discontinued operations	17,539	3,682	(17,572)
Net loss	<u>\$ (13,426)</u>	<u>\$ (38,525)</u>	<u>\$ (129,761)</u>
<b>Per share data:</b>			
Weighted average number of basic and diluted shares outstanding used in per share calculations	43,303	36,999	36,539
Loss from continuing operations per basic and diluted share	\$ (0.72)	\$ (1.14)	\$ (3.07)
Income (loss) from discontinued operations per basic and diluted share	<u>\$ 0.41</u>	<u>\$ 0.10</u>	<u>\$ (0.48)</u>
Net loss per basic and diluted share	<u>\$ (0.31)</u>	<u>\$ (1.04)</u>	<u>\$ (3.55)</u>

**The accompanying notes are an integral part of these consolidated financial statements.**

**EMCORE CORPORATION**  
**Consolidated Balance Sheets as of September 30, 2004 and 2003**  
(in thousands)

	<u>2004</u>	<u>2003</u>
<b>ASSETS</b>		
Current assets:		
Cash and cash equivalents	\$ 19,422	\$ 28,439
Marketable securities	32,150	-
Accounts receivable, net	20,775	14,221
Accounts receivable, GELcore	215	325
Inventories, net	14,839	13,963
Prepaid expenses and other current assets	2,496	1,936
Assets of discontinued operations	-	44,456
Total current assets	89,897	103,340
Property, plant and equipment, net	65,354	74,722
Goodwill	33,584	30,366
Intangible assets, net	5,177	4,567
Investments in GELcore	10,003	9,214
Other assets, net	9,228	10,230
Total assets	<u>\$ 213,243</u>	<u>\$ 232,439</u>
<b>LIABILITIES and SHAREHOLDERS' EQUITY</b>		
Current liabilities:		
Accounts payable	\$ 16,064	\$ 8,155
Accrued expenses	15,078	13,204
Customer deposits	171	295
Capitalized lease obligation, current portion	43	52
Liabilities of discontinued operations	-	4,170
Total current liabilities	31,356	25,876
Convertible subordinated notes	96,051	161,750
Capitalized lease obligation, net of current portion	27	41
Total liabilities	127,434	187,667
Commitments and contingencies (see Note 10)		
Shareholders' equity:		
Preferred stock, \$0.0001 par, 5,882 shares authorized, no shares outstanding	-	-
Common stock, no par value, 100,000 shares authorized, 46,951 shares issued and 46,931 outstanding at September 30, 2004; 37,327 shares issued and 37,307 outstanding at September 30, 2003	389,750	335,266
Accumulated deficit	(302,864)	(289,438)
Accumulated other comprehensive loss	(111)	(90)
Shareholders' notes receivable	(34)	(34)
Treasury stock, at cost; 20 shares	(932)	(932)
Total shareholders' equity	85,809	44,772
Total liabilities and shareholders' equity	<u>\$ 213,243</u>	<u>\$ 232,439</u>

**The accompanying notes are an integral part of these consolidated financial statements.**

**EMCORE CORPORATION**  
**Consolidated Statements of Shareholders' Equity for the fiscal years ended September 30, 2004, 2003, and 2002**  
(in thousands)

	Shares	Common Stock	Accumulated Deficit	Accumulated Other Comprehensive Income (Loss)	Shareholders Notes Receivable	Treasury Stock	Total Shareholders' Equity
<b>Balance at October 1, 2001</b>	35,597	\$ 327,559	\$ (121,152)	\$ (8,314)	\$ (34)	\$ (932)	\$ 197,127
Net loss			(129,761)				(129,761)
Impairment of equity investment charged to expense				8,421			8,421
Unrealized loss on marketable securities				(308)			(308)
Translation adjustment				(21)			(21)
Comprehensive loss							(121,669)
Stock option exercise	159	1,023					1,023
Stock purchase warrant exercise	823	4,194					4,194
Compensatory stock issuances	125	714					714
Employee Stock Purchase Plan issuances	48	561					561
<b>Balance at September 30, 2002</b>	36,752	334,051	(250,913)	(222)	(34)	(932)	81,950
Net loss			(38,525)				(38,525)
Unrealized loss on marketable securities				(37)			(37)
Translation adjustment				169			169
Comprehensive loss							(38,393)
Stock option exercise	157	285					285
Compensatory stock issuances	309	759					759
Employee Stock Purchase Plan issuances	89	171					171
<b>Balance at September 30, 2003</b>	37,307	335,266	(289,438)	(90)	(34)	(932)	44,772
Net loss			(13,426)				(13,426)
Unrealized loss on marketable securities				4			4
Translation adjustment				(25)			(25)
Comprehensive loss							(13,447)
Stock option exercise	1,328	2,642					2,642
Compensatory stock issuances	230	812					812
Employee Stock Purchase Plan issuances	411	911					911
Subordinated debt exchange	7,655	50,119					50,119
<b>Balance at September 30, 2004</b>	<u>46,931</u>	<u>\$ 389,750</u>	<u>\$ (302,864)</u>	<u>\$ (111)</u>	<u>\$ (34)</u>	<u>\$ (932)</u>	<u>\$ 85,809</u>

The accompanying notes are an integral part of these consolidated financial statements.

**EMCORE CORPORATION**  
**Consolidated Statements of Cash Flows for the fiscal years ended September 30, 2004, 2003, and 2002**  
(in thousands)

	2004	2003	2002
<b>Cash flows from operating activities:</b>			
Net loss	\$ (13,426)	\$ (38,525)	\$ (129,761)
Adjustments to reconcile net loss to net cash used for operating activities:			
Loss (income) from discontinued operations	2,045	(3,682)	17,572
Loss on disposal of property, equipment and other impairment charges	-	-	48,649
Recognition of loss on marketable securities	-	-	14,389
Gain on disposal of discontinued operations	(19,584)	-	-
Gain from debt extinguishment	(12,312)	(6,614)	-
Translation adjustment	(25)	169	(21)
Depreciation and amortization	15,219	19,340	16,902
Provision for doubtful accounts	(215)	443	1,589
Equity in net (income) loss of GELcore	(789)	1,228	2,706
Compensatory stock issuances	812	759	714
Reduction of note receivable due for services received	521	706	-
Decrease (increase) in assets:			
Accounts receivable	(6,190)	(1,953)	(3,949)
Accounts receivable, GELcore	110	193	1,643
Inventories	(752)	6,639	1,777
Prepaid and other current assets	(560)	(779)	3,065
Other assets	(509)	(619)	1,206
Increase (decrease) in liabilities:			
Accounts payable	6,543	(12)	(1,430)
Accrued expenses	1,116	(936)	(680)
Customer deposits	(124)	(326)	621
Net cash (used for) provided by operating activities of discontinued operations	(4,218)	5,388	(8,603)
Total adjustments	(18,912)	19,944	96,150
Net cash used for operating activities	(32,338)	(18,581)	(33,611)
<b>Cash flows from investing activities:</b>			
Cash proceeds from disposition of discontinued operations	62,043	-	-
Purchase of plant and equipment	(4,173)	(2,599)	(4,259)
Investments in GELcore	-	(1,960)	(1,960)
Investments in associated company	-	-	(1,000)
Repayment of related part loan	-	-	5,000
Cash purchase of business, net of cash acquired	(3,386)	(26,450)	(25,084)
(Investment in) net proceeds from sales of marketable securities	(32,146)	41,428	28,682
Net cash used for investing activities of discontinued operations	-	(164)	(1,990)
Net cash provided by (used for) investing activities	22,338	10,255	(611)
<b>Cash flows from financing activities:</b>			
Repurchase of convertible subordinated notes	(10)	(6,317)	-
Payments on capital lease obligations	(60)	(90)	(79)
Proceeds from exercise of stock purchase warrants	-	-	4,194
Proceeds from exercise of stock options	2,642	285	1,023
Proceeds from employee stock purchase plan	911	171	561
Convertible debt/equity issuance costs	(2,500)	-	-
Net cash provided by (used for) financing activities	983	(5,951)	5,699
Net decrease in cash and cash equivalents	(9,017)	(14,277)	(28,523)
Cash and cash equivalents, beginning of period	28,439	42,716	71,239
Cash and cash equivalents, end of period	\$ 19,422	\$ 28,439	\$ 42,716
<b>Supplemental Disclosure of Cash Flow Information:</b>			
Cash paid during the period for interest	\$ 7,383	\$ 8,498	\$ 8,958
<b>Non-Cash Investing and Financing Activities:</b>			
Acquisition of property and equipment under capital leases	\$ 37	\$ -	\$ -
Issuance of common stock in conjunction with subordinated debt exchange	\$ 51,091	\$ -	\$ -

The accompanying notes are an integral part of these consolidated financial statements.

**EMCORE Corporation**  
**Notes to Consolidated Financial Statements**  
**As of September 30, 2004 and 2003, and for the fiscal years ended September 30, 2004, 2003, and 2002**

**NOTE 1. Description of Business.**

EMCORE Corporation (EMCORE), a New Jersey corporation established in 1984, offers a broad portfolio of compound semiconductor-based components and subsystems for the broadband, fiber optic, satellite, and wireless communications markets. Through our 49% ownership in GELcore, LLC. (GELcore), we also participate in the development and commercialization of next-generation LED technology for use in the general and specialty illumination market. EMCORE continues to expand its comprehensive product portfolio to enable the transport of voice, data, and video over copper, hybrid fiber/coax (HFC), fiber, satellite, and wireless networks. EMCORE is building upon its leading-edge compound semiconductor materials and device expertise to provide cost-effective components and subsystems for the cable television (CATV), fiber-to-the-premise, business, curb or home (FTTP), telecommunications, data and storage, satellite, and wireless communications markets.

**NOTE 2. Summary of Significant Accounting Policies.**

*Principles of Consolidation.* The consolidated financial statements include the accounts of EMCORE and all its wholly owned subsidiaries. Under the terms of its joint venture agreement with General Electric Lighting, EMCORE has a 49% non-controlling interest in the GELcore venture and accounts for this investment using the equity method of accounting. All material intercompany accounts and transactions have been eliminated in consolidation.

*New Accounting Pronouncements.* EMCORE has reviewed recently issued accounting standards that have not yet been adopted in order to determine their potential effect, if any, on the results of operations or financial position of EMCORE. Based on that review, EMCORE does not currently believe that any of these recent accounting pronouncements will have a significant effect on its current or future financial position, results of operations, cash flows or disclosures.

*Cash and Cash Equivalents.* Cash and cash equivalents consist of highly liquid short-term investments purchased with an original maturity of three months or less.

*Marketable Securities.* Unrealized gains and losses for these securities are excluded from earnings and reported as a separate component of shareholders' equity. Realized gains and losses on sales of investments, as determined on a specific identification basis, are included in the consolidated statement of operations. Fair values are determined by reference to market prices for securities as quoted based on publicly traded exchanges. The fair value of the debt securities approximated cost. Declines in values that are deemed to be other than temporary are recorded as a component of other (income) expense on the statement of operations. EMCORE recorded approximately \$0.1 million and \$0.2 million of net realized gains on sales of available-for-sale debt securities during fiscal 2003 and 2002, respectively. There were no net realized gains on sales of available-for-sale debt securities during fiscal 2004.

*Concentration of Credit Risk.* Financial instruments, which may subject EMCORE to a concentration of credit risk, consist primarily of cash and cash equivalents, marketable securities and accounts receivable. EMCORE's cash and cash equivalents consist primarily of money market funds. EMCORE has maintained cash balances with certain financial institutions in excess of the \$100,000 insured limit of the Federal Deposit Insurance Corporation. EMCORE performs ongoing credit evaluations of its customers' financial condition and generally requires no collateral from its customers.

*Fair Value of Financial Instruments.* The carrying amounts of cash and cash equivalents, marketable securities, account receivable, accounts payable, and accrued expenses approximate fair value because of the short maturity of these instruments. The carrying amount of long-term receivables approximates fair value, as the effective rates for these instruments are comparable to market rates at year-end. The carrying amount of investments approximates fair market value. As of September 30, 2004 and 2003, the fair market value of the convertible subordinated debenture, based on the quoted market prices, approximated \$88.0 million and \$129.4 million, respectively.

*Inventories.* Inventories are stated at the lower of cost or market, with cost being determined using the standard cost method.

*Property, Plant, and Equipment.* Property, plant, and equipment are recorded at cost and depreciated on a straight-line basis over the assets' estimated useful lives, which range from three to forty years. Leasehold improvements are amortized over the lesser of the asset life or the life of the related lease. Expenditures for repairs and maintenance are charged to expense as incurred. The costs for major renewals and improvements are capitalized and depreciated over their estimated useful lives. The cost and related accumulated depreciation of the assets are removed from the accounts upon disposition and any resulting gain or loss is reflected in operations.

*Valuation of Goodwill and Intangible Assets.* EMCORE evaluates its goodwill for impairment on an annual basis or whenever events or changes in circumstances indicate that the carrying value may not be recoverable. Factors that are considered important in making this determination include, but are not limited to, the following: (a) an anticipated or historic decline in revenue or operating profit; (b) significant negative industry trends; and (c) adverse legal or regulatory developments. EMCORE also reviews its capitalized patent portfolio and records impairment charges when circumstances warrant, such as when patents have been abandoned or are no longer being pursued. During fiscal 2004, 2003, and 2002, EMCORE had no impairment of any of its patents, other intangible assets, or goodwill.

*Valuation of Long-lived Assets.* EMCORE reviews long-lived assets on an annual basis or whenever events or circumstances indicate that the assets may be impaired. A long-lived asset is considered impaired when its anticipated undiscounted cash flow is less than its carrying value. In making this determination, EMCORE uses certain assumptions, including, but not limited to: (a) estimates of the fair market value of these assets; and (b) estimates of future cash flows expected to be generated by these assets, which are based on additional assumptions such as asset utilization, length of service that assets will be used in our operations, and estimated salvage values. During fiscal 2002, EMCORE determined certain property and equipment was impaired under Statement of Financial Accounting Standards (SFAS) No. 121, *Accounting for the Impairment of Long-Lived Assets and for Long-Lived Assets to Be Disposed of*, which was the relevant accounting pronouncement at the time. As a result, we recorded an impairment charge of \$30.8 million. EMCORE determined that there was no such impairment in fiscal 2004 and 2003.

*Other Assets.* Included in other assets are various deferred costs, related party receivables and an investment. The deferred costs are primarily related to financing costs associated with our convertible subordinated notes due in 2006 and 2011. These financing costs are being amortized on a straight-line basis over the life of the notes. Total capitalized financing costs, net of amortization, were \$1.6 million and \$3.0 million at September 30, 2004 and 2003, respectively. Total amortization expense related to these financing costs amounted to approximately \$0.6 million, \$1.0 million and \$1.3 million for the years ended September 30, 2004, 2003 and 2002 respectively. Related party receivables at September 30, 2004 primarily consisted of a \$3.6 million loan and accrued interest due from the Chief Executive Officer issued in fiscal 2001. Also included in other assets is a \$2.0 million six-year promissory note due from Analytical Solutions, Inc. issued in fiscal 2002.

*Revenue Recognition.* Revenue is recognized upon shipment provided persuasive evidence of a contract exists, such as when a purchase order or contract is received from a customer, the price is fixed, the product meets the customers' requirements, title and ownership have transferred to the customer, and there is reasonable assurance of collection of the sales proceeds. The majority of our products have shipping terms that are free on board (FOB) or free carrier alongside (FCA) shipping point, which means that EMCORE fulfills its delivery obligation when the goods are handed over to the freight carrier at our shipping dock. This means the buyer bears all costs and risks of loss of or damage to the goods from that point. In certain cases, EMCORE ships its products cost insurance and freight (CIF). Under this arrangement, revenue is recognized under FCA shipping point terms, but EMCORE pays (and bills the customer) for the cost of shipping and insurance to the customer's designated location. EMCORE accounts for shipping and related transportation costs by recording the charges that are invoiced to customers as revenue, with the corresponding cost recorded as cost of revenue. In those instances where inventory is maintained at a consigned location, revenue is recognized only when our customer pulls product for its use and title and ownership have transferred to the customer.

EMCORE records revenues from solar panel contracts using the percentage-of-completion method. Revenue is recognized in proportion to actual costs incurred compared to total anticipated costs expected to be incurred for each contract. If estimates of costs to complete long-term contracts indicate a loss, a provision is made for the total loss anticipated. EMCORE has numerous contracts that are in various stages of completion. Such contracts require estimates to determine the appropriate cost and revenue recognition. EMCORE uses all available information in determining dependable estimates of the extent of progress towards completion, contract revenues, and contract costs. Estimates are revised as additional information becomes available. At September 30, 2004 and 2003, EMCORE's accrued program losses totaled \$0.1 million and \$0.2 million, respectively. In the fourth quarter of fiscal 2004, we incurred a one-time \$1.2 million charge related to a communications satellite program with a positive contribution margin, but with an overall expected loss due to fixed cost overhead absorption.

Contract revenue represents reimbursement by various U.S. Government entities to aid in the development of new technology. The applicable contracts generally provide that EMCORE may elect to retain ownership of inventions made in performing the work, subject to a non-exclusive license retained by the government to practice the inventions for government purposes. The contract funding may be based on a cost-plus, cost reimbursement, cost-share, or a firm fixed price arrangement. The amount of funding under each contract is determined based on cost estimates that include direct costs, plus an allocation for research and development, general and administrative, and the cost of capital expenses. Cost-plus funding is determined based on actual costs plus a set margin. For cost-share contracts, the actual costs of performance are divided between the U.S. Government and EMCORE based on the contract terms. A contract is considered complete when all significant costs have been incurred, milestones have been reached, and any reporting obligations to the customer have been met. Revenues from Government contracts amounted to approximately \$4.6 million, \$5.2 million, and \$3.3 million for the years ended September 30, 2004, 2003, and 2002, respectively.

*Research and Development.* Research and development costs are charged to expense as incurred.

*Income Taxes.* Deferred tax assets and liabilities are recognized for the expected tax consequences of temporary differences between the tax bases of assets and liabilities and their reported amounts. Management provides valuation allowances against the deferred tax asset for amounts which are considered "more likely than not" to be realized.

*Use of Estimates.* The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America 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 and the reported amounts of revenues and expenses during the reporting period. Actual results may differ from those estimates. EMCORE's most significant estimates relate to accounts receivable bad debt reserves, inventory valuation reserves specifically relating to excess and obsolete inventory, the valuation of goodwill, intangibles and other long-lived assets, product warranty accruals and revenue recognition on contracts utilizing the percentage-of-completion method.

- Bad debt reserves - EMCORE regularly evaluates its accounts receivable and accordingly maintains allowances for doubtful accounts for estimated losses resulting from the inability of our customers to meet their financial obligation to us. The allowance for doubtful accounts at September 30, 2004 and 2003 was \$0.7 million and \$1.0 million, respectively. If the financial condition of our customers were to deteriorate, additional allowances may be required.

- Inventory reserves - EMCORE reserves against inventory once it has been determined that conditions exist which may not allow it to be sold for its intended purpose, the inventory's value is determined to be less than cost or it is determined to be obsolete. The charge for the inventory reserves is recorded in cost of revenue. EMCORE evaluates inventory levels at least quarterly against sales forecasts on a part-by-part basis, in addition to determining its overall inventory risk. Reserves are adjusted to reflect inventory values in excess of forecasted sales, as well as overall inventory risk assessed by management. Total inventory reserves at September 30, 2004 and 2003 were \$4.1 million and \$4.4 million, respectively. If future demand or market conditions are less favorable than our estimates, additional inventory write-downs may be required.

- Product warranty reserves - EMCORE provides its customers with limited rights of return for non-conforming shipments and warranty claims for up to 5 years for certain products. EMCORE makes estimates using historical data and accrues estimated warranty expense as a cost of revenue. Total warranty expense amounted to approximately \$1.4 million, \$2.2 million, and \$2.3 million for the years ended September 30, 2004, 2003, and 2002, respectively. Total warranty reserves at September 30, 2004 and 2003 were \$2.2 million and \$2.4 million, respectively. If our product reliability assessments change in the future, additional allowances may be required.

*Comprehensive Income.* SFAS No. 130, *Reporting Comprehensive Income*, establishes standards for reporting and display of comprehensive income and its components in financial statements. It requires that all items that are required to be recognized under accounting standards as components of comprehensive income be reported in the financial statement that is displayed with the same prominence as other financial statements. Comprehensive income consists of net earnings, the net unrealized gains or losses on available for sale marketable securities and foreign currency translation adjustments and is presented in the consolidated statements of shareholders' equity.

*Earnings (Loss) Per Share.* Basic earnings (loss) per share is calculated by dividing net earnings (loss) applicable to common stock by the weighted average number of common stock shares outstanding for the period. Diluted earnings per share reflect the potential dilution that could occur if EMCORE's outstanding stock options were exercised. The effect of outstanding common stock purchase options and warrants, the convertible preferred stock and the convertible subordinated notes have been excluded from the diluted earnings per share calculation since the effect of such securities is anti-dilutive.

*Stock Options.* In accordance with Accounting Principles Board Opinion No. 25, *Accounting for Stock Issued to Employees*, as amended (APB 25), no compensation expense is recorded for stock options or other stock-based awards that are granted to employees with an exercise price equal to or above the common stock price on the grant date.

EMCORE accounts for stock-based compensation in accordance with APB 25, and provides the pro forma disclosures required by SFAS No. 123, *Accounting for Stock-Based Compensation*, as amended by SFAS No. 148, *Accounting for Stock-Based Compensation Transition and Disclosure*.

Pro forma information regarding net income (loss) and net income (loss) per share is required by SFAS No. 148. EMCORE computes fair value for this purpose using the Black-Scholes option valuation model. The Black-Scholes model was developed for use in estimating the fair value of traded options that have no vesting restrictions and are fully transferable. In addition, option valuation models require the input of highly subjective assumptions, including the expected stock price volatility. EMCORE's options have characteristics significantly different from traded options, and the input assumptions used in the model can materially affect the fair value estimate. The assumptions used in this model to estimate fair value and resulting values are as follows:

	For the fiscal years ended September 30,		
	2004	2003	2002
Expected dividend yield	0%	0%	0%
Expected stock price volatility	109%	112%	112%
Risk-free interest rate	3.4%	2.8%	2.6%
Weighted average expected life (in years)	5	5	5

The following table illustrates the effect on the net loss and net loss per share if EMCORE had applied the fair value recognition provisions of SFAS No. 123 to stock based compensation:

(in thousands)	For the fiscal years ended September 30,		
	2004	2003	2002
Net loss	\$ (13,426)	\$ (38,525)	\$ (129,761)
Deduct: Total stock based employee compensation expense determined under fair value based methods for all awards, net of related tax effects	(3,476)	(3,339)	(4,998)
Pro forma net loss	\$ (16,902)	\$ (41,864)	\$ (134,759)

Reported net loss per basic and diluted share	\$	(0.31)	\$	(1.04)	\$	(3.55)
Pro forma net loss per basic and diluted share	\$	(0.39)	\$	(1.13)	\$	(3.69)

### NOTE 3. Stock Options and Warrants.

*Stock Option Plans.* EMCORE has stock option plans to provide incentives to eligible employees, officers and directors in the form of stock options. Most of the options vest and become exercisable over three to five years and have ten year terms.

EMCORE maintains two incentive stock option plans: the 2000 Stock Option Plan (2000 Plan), and the 1995 Incentive and Non Statutory Stock Option Plan (1995 Plan and, together with the 2000 Plan, the Option Plans). The 1995 Plan authorizes the grant of options to purchase up to 2,744,118 shares of EMCORE's common stock. As of September 30, 2004, no options were available for issuance under the 1995 Plan. The 2000 Plan authorizes the grant of options to purchase up to 6,850,000 shares of EMCORE's common stock. As of September 30, 2004, 1,597,766 options were available for issuance under the 2000 Plan. Certain options under the Option Plans are intended to qualify as incentive stock options pursuant to Secti on 422A of the Internal Revenue Code.

During fiscal 2004, 1,920,950 options were granted pursuant to the 2000 Plan at exercise prices ranging from \$1.79 to \$7.18 per share. As of September 30, 2004, 2003, and 2002, options with respect to 2,489,807, 3,088,389, and 2,493,083 were exercisable, respectively. The following table summarizes the activity under the Option Plans:

	Shares	Weighted Average Exercise Price
Outstanding as of October 1, 2001	3,402,731	\$ 15.49
Granted	3,156,782	7.93
Exercised	(133,441)	7.25
Cancelled	(1,419,484)	12.52
Outstanding as of September 30, 2002	5,006,588	11.79
Granted	4,181,349	1.87
Exercised	(156,716)	3.14
Cancelled	(3,280,155)	13.28
Outstanding as of September 30, 2003	5,751,066	3.98
Granted	1,920,950	3.03
Exercised	(1,327,819)	1.98
Cancelled	(842,884)	3.47
Outstanding as of September 30, 2004	5,501,313	\$ 4.21

At September 30, 2004, stock options outstanding were as follows:

Exercise Price	Options Outstanding	Weighted Average Remaining Contractual Life (Years)	Exercisable Options	Weighted Average Exercise Price
<\$1	1,920	3.18	1,920	\$ 0.23
\$1≤\$5	4,096,671	8.05	1,229,314	2.37
\$5≤\$10	1,153,132	5.02	1,009,303	6.90
>\$10	249,590	5.54	249,270	\$ 22.07
	5,501,313		2,489,807	

On September 30, 2002, EMCORE offered to all employees holding options with an exercise price of at least \$4.00 per share, excluding executive officers, the opportunity to exchange those options for new options to be issued on May 1, 2003. On October 30, 2002, EMCORE accepted all options tendered for exchange and canceled them all. On May 1, 2003, EMCORE issued 2,972,149 options in exchange for the tendered options. These options had an exercise price of \$1.82, which was the closing price for EMCORE common stock on May 1, 2003. With the exception of the new exercise price, the new options had the same terms as the tendered options.

*Warrants.* Set forth below is a summary of EMCORE's outstanding warrants at September 30, 2004:

Underlying Security	Exercise Price	Warrants	Expiration Date
Common Stock <sup>(1)</sup>	\$ 2.16	14,796	August 21, 2006
Common Stock <sup>(2)</sup>	\$ 15.16-31.18	16,739	March 5, 2006-September 1, 2006

<sup>(1)</sup> Issued in connection with EMCORE's December 1997 acquisition of MicroOptical Devices, Inc.

<sup>(2)</sup> Issued in connection with EMCORE's IP agreement with Sandia Laboratories.

### NOTE 4. Discontinued Operations.

On November 3, 2003, EMCORE sold its TurboDisc capital equipment business to a subsidiary of Veeco in a transaction that is valued at up to \$80.0 million. The selling price was \$60.0 million in cash at closing with an additional aggregate maximum payout of \$20.0 million over the next two years. EMCORE will receive in either cash or securities 50% of all revenues from this business that exceed \$40.0 million in each of the next two years, beginning January 1, 2004. EMCORE also received an additional \$2.0 million in cash for working capital adjustments and expense reimbursements. This transaction included the assets, products, product warranty liabilities, hardware-related technology, and intellectual pr operty used primarily in the operation of the TurboDisc business, including its manufacturing facility located in Somerset, New Jersey. 140 employees of EMCORE were involved in the TurboDisc business, of whom 118 became employees of Veeco. EMCORE's financial statements have been reclassified to reflect the TurboDisc business as a discontinued operation for all prior periods presented.

Operating results of the discontinued operations are as follows:

(in thousands)	For the fiscal years ended September 30,		
	2004	2003	2002



## STATEMENT OF OPERATIONS

Revenue	\$	1,001	\$	52,822	\$	36,536
Cost of revenue		<u>1,704</u>		<u>36,630</u>		<u>26,029</u>
Gross (loss) profit		(703)		16,192		10,507
Operating expenses:						
Selling, general and administrative		831		7,353		12,568
Research and development		512		5,179		10,390
Impairment and restructuring		<u>-</u>		<u>-</u>		<u>5,085</u>
Total operating expenses		<u>1,343</u>		<u>12,532</u>		<u>28,043</u>
Interest income (expense)		<u>1</u>		<u>22</u>		<u>(36)</u>
(Loss) income from operations	\$	<u>(2,045)</u>	\$	<u>3,682</u>	\$	<u>(17,572)</u>

The components of the gain on disposal of discontinued operations are as follows:

(in thousands)

Cash received	\$	62,043
Assets sold:		
Accounts receivable		(10,418)
Inventories		(11,887)
Prepaid and other current assets		(14)
Property, plant and equipment		(20,673)
Identifiable intangible assets		<u>(833)</u>
Total assets sold		(43,825)
Liabilities sold:		
Accounts payable		2,161
Accrued expenses		2,410
Customer deposits		<u>794</u>
Total liabilities sold		5,365
Less: disposal costs		<u>(3,999)</u>
Gain on disposal of discontinued operations	\$	<u>19,584</u>

The carrying values of the assets and liabilities of the discontinued operation included in the September 30, 2003 consolidated balance sheet are as follows:

(in thousands)

	As of September 30, 2003
Assets:	
Accounts receivable	\$ 11,375
Inventories	11,143
Other current assets	18
Property, plant and equipment	21,087
Identifiable intangible assets	<u>833</u>
Total assets to be disposed	<u>\$ 44,456</u>
Liabilities:	
Accounts payable	\$ 3,372
Accrued expenses	506
Customer deposits	<u>292</u>
Total liabilities to be disposed	<u>\$ 4,170</u>

### NOTE 5. Acquisitions.

**Ortel** - In January 2003, EMCORE purchased Agere Systems, Inc.'s CATV transmission systems, telecom access, and satellite communications components business, formerly Ortel Corporation (Ortel), for \$26.2 million in cash.

**Molex** - On October 9, 2003, EMCORE acquired Molex Inc.'s 10G Ethernet transceiver business (Molex) for an initial \$1.0 million in cash, \$1.5 million in cash earn out based upon initial LX4 unit volumes, and future cash earnout payments calculated as a percentage of revenue, ranging from 3.7% to 0.25%, on LX4 product sold through December 2007. EMCORE had paid \$0.4 million of the \$1.5 million earn out, leaving a balance of \$1.1 million accrued at September 30, 2004. EMCORE accounted for this transaction under the purchase method and allocated the purchase price on a preliminary basis, which included acquisition costs of \$0.2 million, using estimated fair values of the acquired assets as follows: \$1.5 million to goodwill, \$0.6 million to equipment, and \$0.6 million to net identifiable intangible assets. Future cash earn out payments made will be charged to goodwill accordingly. This acquisition is not significant on a pro forma basis, and therefore, pro forma financial statements are not provided. The operating results of the assets acquired are included in the accompanying consolidated statement of operations from the date of acquisition.

**Corona** - On June 30, 2004, EMCORE purchased Corona Optical Systems, Inc. (Corona), a parallel optics company, for \$1.2 million in a cash-for-stock merger. EMCORE accounted for this transaction under the purchase method and allocated the purchase price on a preliminary basis, which included acquisition costs of approximately \$0.2 million, using estimated fair values of the acquired assets and liabilities as follows: \$0.2 million of cash, \$0.1 million to accounts receivable, \$0.1 million to inventory, \$0.1

million to plant and equipment, \$1.0 million to net identifiable intangible assets, \$1.8 million to current liabilities, and \$1.7 million to goodwill. This acquisition is not significant on a pro forma basis, and therefore, pro forma financial statements are not provided. The operating results of the assets acquired are included in the accompanying consolidated statement of operations from the date of acquisition.

#### NOTE 6. Impairment and Severance Charges.

In fiscal 2004, EMCORE initiated a restructuring program to reduce corporate overhead expenses and realign certain shared service operations. As a result, EMCORE incurred \$1.2 million in severance and fringe benefit charges related to employee termination costs for 110 employees. As of September 30, 2004, \$0.7 million of these charges have been paid. Management expects the restructuring program to continue into fiscal 2005.

##### *Impairment Charges*

In fiscal 2002, we determined certain fixed assets were impaired. As a result, EMCORE recorded impairment charges of \$30.8 million. By December 2001, we completed new facilities in anticipation of expanding market prospects. Business forecasts updated in fiscal 2002 indicated significantly diminished prospects, primarily based on the downturn in the telecommunications industry. As a result of these circumstances, management determined that the long-lived assets should be assessed for impairment. Based on the outcome of this assessment, EMCORE recorded a \$23.5 million non-cash asset impairment charge to plant and equipment. The fair values of the assets were determined based upon a calculation of the present value of the expected future cash flows to be generated by its facilities. The remainder of the impairment charge totaling \$7.3 million related to certain manufacturing assets that were disposed of. Such decision was made based upon the downturn in the economic environment that affected certain product lines causing these manufacturing assets to become idle.

##### *Severance Charges*

In fiscal 2002, EMCORE proceeded with a restructuring program, consisting of the realignment of all engineering, manufacturing and sales/marketing operations, as well as workforce reductions. As a result, we incurred \$0.8 million of severance and fringe benefit charges related to employee termination costs for 330 employees.

##### *Other Charges*

In fiscal 2002, EMCORE recorded a \$7.7 million charge to cost of revenues. Consistent with the downturn in the markets served by EMCORE, management evaluated its inventory levels in light of actual and forecasted revenue. The inventory charge related to reserves for excess inventory that EMCORE believed it was carrying as a result of the market conditions. Included in SG&A expense was a \$1.4 million charge related to a loss provision for accounts receivable for customers whose current financial condition and payment history indicate payment is doubtful.

#### NOTE 7. GELcore (HB-LED) Joint Venture.

In January 1999, General Electric Lighting and EMCORE formed GELcore, a joint venture to develop and market HB-LED lighting products. General Electric Lighting and EMCORE have agreed that this joint venture will be the exclusive vehicle for each party's participation in solid-state lighting. EMCORE has a 49% non-controlling interest in the GELcore venture, and accounts for this investment using the equity method of accounting. As a result of GELcore's improved operations and recently reported profitable quarterly results, no additional investments were made to GELcore during the fiscal year ended September 30, 2004. Investments in GELcore totaled approximately \$2.0 million in fiscal 2003. For the years ended September 30, 2004, 2003, and 2002, EMCORE recognized income (loss) of \$0.8 million, \$(1.2) million, and \$(2.7) million, respectively, related to this joint venture, which was recorded as a component of other income and expenses. As of September 30, 2004 and 2003, EMCORE's net investment in this joint venture amounted to approximately \$10.0 million and \$9.2 million, respectively.

GELcore maintains a Revolving Loan Agreement (the "GELcore Credit Facility") with General Electric Canada, Inc., an affiliate of General Electric. EMCORE has guaranteed 49% (i.e., its proportionate share) of GELcore's obligations under the GELcore Credit Facility. As of September 30, 2004, there was no amount outstanding under this credit facility. As of September 30, 2003, EMCORE's share of this obligation was \$0.7 million. If GELcore's cash generated from operations and cash on hand are not sufficient to repay the amount outstanding under the facility, EMCORE would be required to make the necessary pro rata payment as outlined above.

#### NOTE 8. Balance Sheet Data.

##### *Accounts receivable*

Net accounts receivable consisted of the following:

	As of September 30,	
	2004	2003
(in thousands)		
Accounts receivable	\$ 19,270	\$ 13,128
Accounts receivable - unbilled	2,171	2,134
	21,441	15,262
Allowance for doubtful accounts	(666)	(1,041)
Total	\$ 20,775	\$ 14,221

The unbilled accounts receivable as of September 30, 2003 was completely invoiced and collected during fiscal 2004. The unbilled accounts receivable as of September 30, 2004 is expected to be completely invoiced by February 2005. The decrease in the allowance for doubtful accounts in fiscal 2004 resulted after EMCORE received partial payment on a fiscal 2001 accounts receivable.

The following table summarizes the changes in the allowance for doubtful accounts for the years ended September 30, 2004, 2003 and 2002:

	As of September 30,		
	2004	2003	2002
(in thousands)			
Balance at beginning of year	\$ 1,041	\$ 1,185	\$ 269
Additions charged to costs and expenses	(215)	443	1,589
Write-offs (deductions)	(160)	(587)	(673)

Balance at end of year	\$	666	\$	1,041	\$	1,185
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### Inventory

Net inventories consisted of the following:

	As of September 30,	
	2004	2003
Raw materials	\$ 9,000	\$ 6,858
Work-in-process	4,140	4,739
Finished goods	5,754	6,725
Reserves	(4,055)	(4,359)
Total	\$ 14,839	\$ 13,963

### Property, Plant, and Equipment

Net property, plant, and equipment consisted of the following:

	As of September 30,	
	2004	2003
Land	\$ 1,502	\$ 1,502
Building and improvements	37,938	38,980
Equipment	72,094	68,064
Furniture and fixtures	5,002	5,036
Leasehold improvements	2,893	1,802
Construction in progress	1,406	1,928
Property and equipment under capital lease	466	429
	121,301	117,741
Less: accumulated depreciation and amortization	(55,947)	(43,019)
Total	\$ 65,354	\$ 74,722

At September 30, 2004, minimum future lease payments due under the capital leases are as follows:

	Lease Payment
Year ending:	
September 30, 2005	\$ 47
September 30, 2006	21
September 30, 2007	8
Total minimum lease payments	76
Less: amount representing interest	6
Net minimum lease payments	70
Less: current portion	43
Long-term portion	\$ 27

Depreciation expense on owned property and equipment amounted to approximately \$13.2 million, \$16.8 million, and \$16.3 million in fiscal 2004, 2003, and 2002, respectively. Accumulated amortization on assets accounted under capital leases amounted to approximately \$0.4 million and \$0.3 million as of September 30, 2004 and 2003, respectively.

### Intangible Assets, net

Intangible assets include patents and other intellectual property. Patent costs reflect costs incurred related to obtaining product patents that enhance and maintain EMCORE's intellectual property position. Patent costs are amortized on a straight-line basis over five years or over the remaining life of the patent, whichever is less. Other intellectual property is amortized on a straight-line basis over a 4-5 year period (except for trademarks and tradenames, which are amortized over 15 years). During fiscal year 2004, EMCORE acquired \$0.6 million and \$1.0 million of intellectual property in connection with the Molex and Corona acquisitions, respectively. Total amortization expense amounted to a pproximately \$1.3 million, \$0.9 million, and \$0.2 million for the years ended September 30, 2004, 2003, and 2002, respectively.

The components of intangible assets consisted of the following:

	As of September 30, 2004			As of September 30, 2003		
	Gross Assets	Accumulated Amortization	Net Assets	Gross Assets	Accumulated Amortization	Net Assets
Patents	\$ 860	\$ (294)	\$ 566	\$ 469	\$ (165)	\$ 304
Acquired intellectual property:						
Ortel	3,274	(1,098)	2,176	3,274	(486)	2,788
Tecstar	1,900	(970)	930	1,900	(586)	1,314
Alvesta	193	(68)	125	193	(32)	161
Molex	558	(112)	446	-	-	-
Corona	1,000	(66)	934	-	-	-

Total	\$	7,785	\$	(2,608)	\$	5,177	\$	5,836	\$	(1,269)	\$	4,567
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Future amortization expense as of September 30, 2004 is as follows:

<i>(in thousands)</i>		Amortization
Year ending:		
September 30, 2005	\$	1,533
September 30, 2006		1,520
September 30, 2007		1,153
September 30, 2008		579
September 30, 2009		392
Future amortization expense	\$	5,177

#### Goodwill

The changes in the carrying value of goodwill for the years ended September 30, 2004 and 2003 are as follows:

<i>(in thousands)</i>		Goodwill
Balance as of September 30, 2002		
Ortel acquisition	\$	20,384
		9,982
Balance as of September 30, 2003		
Molex acquisition		1,518
Corona acquisition		1,700
Balance as of September 30, 2004		
	\$	33,584

#### Accrued Expenses

Accrued expenses consisted of the following:

<i>(in thousands)</i>	As of September 30,			
	2004		2003	
Compensation	\$	4,875	\$	4,447
Interest		1,814		3,055
Warranty		2,152		2,440
Professional fees		1,223		1,200
Royalty		1,554		200
Self insurance		1,182		750
Other		2,278		1,112
Total	\$	15,078	\$	13,204

#### NOTE 9. Convertible Subordinated Notes.

In May 2001, EMCORE issued \$175.0 million aggregate principal amount of its 5% convertible subordinated notes due in May 2006 (2006 Notes). Interest is payable in arrears semiannually on May 15 and November 15 of each year. The notes are convertible into EMCORE common stock at a conversion price of \$48.76 per share, subject to certain adjustments, at the option of the holder.

In December 2002, EMCORE purchased \$13.2 million principal amount of the 2006 Notes at prevailing market prices for an aggregate of approximately \$6.3 million, resulting in a gain of approximately \$6.6 million after netting unamortized debt issuance costs of approximately \$0.3 million.

On February 24, 2004, EMCORE exchanged approximately \$146.0 million, or 90.2%, of its remaining 2006 Notes for approximately \$80.3 million aggregate principal amount of new 5% Convertible Senior Subordinated Notes due May 15, 2011 (2011 Notes) and approximately 7.7 million shares of EMCORE common stock. Interest on the 2011 Notes is payable in arrears semiannually on May 15 and November 15 of each year. The notes are convertible into EMCORE common stock at a conversion price of \$8.06 per share, subject to adjustment under customary anti-dilutive provisions. They also are redeemable should EMCORE's common stock price reach \$12.09 per share. As a result of this transaction, EMCORE reduced debt by approximately \$65.7 million, recorded a gain from early debt extinguishment of approximately \$12.3 million, and approximately \$15.7 million of the original convertible subordinated notes remain outstanding.

For the years ended September 30, 2004, 2003, and 2002, interest expense relating to the notes approximated \$6.1 million, \$8.3 million, and \$8.8 million, respectively.

#### NOTE 10. Commitments and Contingencies.

EMCORE leases certain land, facilities, and equipment under non-cancelable operating leases. All of the leases provide for rental adjustments for increases in base rent (up to specific limits), property taxes, and general property maintenance that would be recorded as rent expense. EMCORE also has subleased a portion of one of its leased facilities to a third party. Net facility and equipment rent expense under such leases amounted to approximately \$2.3 million, \$2.1 million, and \$1.1 million for the years ended September 30, 2004, 2003, and 2002, respectively.

Future minimum rental payments under EMCORE's non-cancelable operating leases with an initial or remaining term of one year or more as of September 30, 2004 are as follows:

<i>(in thousands)</i>	Operating
-----------------------	-----------

Period ending:		
September 30, 2005	\$	2,078
September 30, 2006		1,067
September 30, 2007		528
September 30, 2008		133
September 30, 2009		133
Thereafter		2,662
Total minimum lease payments	\$	6,601

Future amounts to be received from third parties related to the sublease of certain of EMCORE's facilities are as follows:

<i>(in thousands)</i>		<b>Subleases</b>
Period ending:		
September 30, 2005	\$	193
September 30, 2006		136
Total minimum lease payments	\$	329

EMCORE is involved in lawsuits and proceedings that arise in the ordinary course of business. There are no matters pending that we expect to be material in relation to our business, consolidated financial condition, results of operations, or cash flows.

#### NOTE 11. Income Taxes.

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

	For the years ended September 30,		
	2004	2003	2002
US statutory income tax rate	(34.0)%	(34.0)%	(34.0)%
State rate, net of federal benefit	(5.9)%	(5.9)%	(5.9)%
Change in valuation allowance	39.9%	39.9%	39.9%
Effective tax rate	-	-	-

As a result of its losses, EMCORE did not incur any income tax expense during the fiscal years ended September 30, 2004, 2003, and 2002. The components of EMCORE's net deferred taxes were as follows:

(in thousands)		For the fiscal years ended September 30,	
		2004	2003
Deferred tax assets:			
Federal net operating loss carryforwards	\$	88,799	\$ 71,723
Research credit carryforwards (state and federal)		4,124	4,124
Inventory reserves		1,360	1,712
Accounts receivable reserves		233	573
Fixed assets		6,110	8,241
Accrued warranty reserve		852	933
State net operating loss carryforwards		15,277	13,942
Investment writedown		4,766	4,766
Other		1,993	1,670
Valuation reserve - federal		(93,675)	(96,677)
Valuation reserve - state		(19,809)	(9,409)
Total deferred tax assets		10,030	1,598
Deferred tax liabilities:			
Fixed assets and intangibles		10,030	1,598
Net deferred taxes	\$	-	\$ -

EMCORE 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 EMCORE's past earnings history.

As of September 30, 2004, EMCORE had net operating loss (NOL) carryforwards for tax purposes of approximately \$431.0 million that expire in the years 2005 through 2024. In fiscal 2004, \$0.8 million of NOL carryforwards expired and approximately \$13.9 million are due to expire in fiscal 2005. As of September 30, 2004, EMCORE had federal research credit carryovers for tax purposes of approximately \$1.0 million that expire in the years 2005 through 2024. EMCORE believes that the consummation of certain equity transactions and a significant change in the ownership during fiscal years 1995, 1998, and 1999 have constituted a change in control under Section 382 of the Internal Revenue Code (IRC). Due to the change in control, EMCORE's ability to use its federal NOL carryovers and federal research credit carryovers to offset future income and income taxes, respectively, are subject to annual limitations under IRC Sections 382 and 383.

#### NOTE 12. Shareholders' Equity.

**Preferred Stock.** EMCORE's certificate of incorporation authorizes the Board of Directors to issue up to 5,882,352 shares of preferred stock of EMCORE upon such terms and conditions having such rights, privileges, and preferences as the Board of Directors may determine.

**Future Issuances.** At September 30, 2004, EMCORE has reserved a total of 17,851,455 shares of its common stock for future issuances as follows:

	Number of shares
For exercise of outstanding warrants to purchase common stock	31,535
For exercise of outstanding common stock options	5,501,313
For conversion of subordinated notes	10,283,307
For future common stock option awards	1,599,966
For future issuances to employees under the Employee Stock Purchase Plan	435,334
Total reserved	17,851,455

#### NOTE 13. Related Parties.

From time to time, prior to July 2002, EMCORE has lent money to certain of its executive officers and directors. Pursuant to due authorization from EMCORE's Board of Directors, EMCORE lent \$3.0 million to the Chief Executive Officer (CEO) in February 2001. The promissory note matures on February 22, 2006 and bears interest (compounded annually) at a rate of (a) 5.18% per annum through May 23, 2002, and (b) 4.99% from May 24, 2002 through maturity. All interest is payable at maturity. The note is secured by a pledge of shares of EMCORE's common stock. Accrued interest at September 30, 2004 totaled \$0.6 and is recorded with the loan principal within other assets. During fiscal 2004, the highest amount of the CEO's indebtedness to EMCORE was \$3.6 million. In addition, pursuant to due authorization of our Board of Directors, EMCORE lent \$82,000 to the Chief Financial Officer (CFO) of EMCORE in December 1995. The promissory note executed by the CFO does not bear interest, and provides for offset of the loan via bonuses payable to the CFO over a period of up to 25 years. The balance outstanding on the loan is currently \$82,000, and no larger amount has been outstanding since the beginning of fiscal 2004.

#### NOTE 14. Segment Data and Related Information.

On November 3, 2003, EMCORE sold its TurboDisc capital equipment business to Veeco. Prior to this divestiture, EMCORE had two reportable operating segments: the systems segment, and the components and subsystems segment. As a result of this divestiture, EMCORE now reports only one operating segment: the components and subsystems segment. This segment is comprised of our Fiber Optics, Photovoltaics, and Electronic Materials and Devices product lines. EMCORE's Fiber Optics revenues are derived primarily from sales of optical components and subsystems for CATV and FTTP, VCSEL and PIN photodiodes components, 10G LX4, CX4, TOSA, ROSA packages and modules, and satcom transmitter and receiver components. EMCORE's Photovoltaic revenues are derived primarily from the sales of solar power conversion products, including solar cells, covered interconnect solar cells (CICs), and solar panels. EMCORE's Electronic Materials and Devices revenues are derived primarily from sales of wireless components, such as RF materials including HBTs and enhancement-mode pHEMTs, MR sensors, and process development technology.

##### Product Revenue

The table below sets forth the revenues and percentage of total revenues attributable to each of EMCORE's product lines for each of the past three fiscal years:

(in thousands)

	For the fiscal years ended September 30,					
	FY 2004	% of revenue	FY 2003	% of revenue	FY 2002	% of revenue
<b>Product Revenue</b>						
Fiber Optics	\$ 56,169	60.4%	\$ 32,658	54.2%	\$ 9,077	17.7%
Photovoltaics	25,716	27.6%	18,196	30.2%	23,621	46.1%
Electronic Materials and Devices	11,184	12.0%	9,430	15.6%	18,538	36.2%
Total Revenues	\$ 93,069	100.0%	\$ 60,284	100.0%	\$ 51,236	100.0%

##### Customers

EMCORE's customer base includes many of the largest semiconductor, telecommunications, data communications, consumer goods, and computer manufacturing companies in the world. In fiscal 2004, Motorola and Cisco accounted for 13% and 8% of our total revenue, respectively. In fiscal 2003, Motorola accounted for 14% of total revenue. In fiscal 2002, revenues from Motorola, Boeing, and SS/L accounted for 22%, 15% and 14% of total revenue, respectively.

The following chart contains a breakdown of EMCORE's consolidated revenues by geographic region. North American sales include sales to Canada, which historically have not been material.

(in thousands)

	For the fiscal years ended September 30,					
	FY 2004	% of revenue	FY 2003	% of revenue	FY 2002	% of revenue
<b>Revenue by Region</b>						
North America	\$ 66,485	71.4%	\$ 44,136	73.2%	\$ 42,983	83.9%
South America	416	0.5%	-	-%	-	-%
AsiaPac	15,496	16.6%	9,018	15.0%	3,638	7.1%
Europe	10,672	11.5%	7,130	11.8%	4,615	9.0%
Total revenues	\$ 93,069	100.0%	\$ 60,284	100.0%	\$ 51,236	100.0%

#### NOTE 15. Employee Benefits.

EMCORE has a savings plan (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. All employer contributions are made in EMCORE's common stock. For the years ended September 30, 2004, 2003, and 2002, EMCORE contributed approximately \$739,000, \$701,000, and \$714,000, respectively, in common stock to the Savings Plan.

EMCORE adopted an Employee Stock Purchase Plan (ESPP) in fiscal 2000, which was amended in fiscal 2004. The amendment changed the ESPP plan from a 12-month duration plan to a 6-month duration plan, with new participation periods beginning in January and July of each year. The ESPP provides employees of EMCORE with an opportunity to purchase common stock through payroll deductions. The option price is set at 85% of the market price for EMCORE's common stock on either the first or last day of the participation period, whichever is lower. Contributions are limited to 10% of an employee's compensation. The Board of Directors has reserved 1,000,000 shares of common stock for issuance under the ESPP. The remaining amount of shares reserved for the ESPP are as follows:

	Number of shares
Original amount of shares reserved for the ESPP	1,000,000
Number of shares issued in January 2001 for CY2000	(16,534)
Number of shares issued in January 2002 for CY2001	(48,279)
Number of shares issued in January 2003 for CY2002	(89,180)
Number of shares issued in January 2004 for CY2003	(244,166)
Number of shares issued in July 2004 for first half of CY2004	(166,507)
Remaining shares reserved for the ESPP as of September 30, 2004	435,334

**NOTE 16. Quarterly Financial Data (Unaudited).**

(in thousands)	Dec. 31, 2002	Mar. 31, 2003	Jun. 30, 2003	Sept. 30, 2003	Dec. 31, 2003	Mar. 31, 2004	June 30, 2004	Sept. 30, 2004
Revenue	\$ 9,382	\$ 16,864	\$ 16,986	\$ 17,052	\$ 23,125	\$ 23,180	\$ 21,225	\$ 25,539
Cost of revenue	12,007	17,705	16,361	15,886	19,945	20,499	20,811	24,525
Gross (loss) profit	(2,625)	(841)	625	1,166	3,180	2,681	414	1,014
Operating expenses:								
Selling, general & administrative	3,974	5,499	5,979	6,185	5,307	5,644	5,723	4,097
Research and development	2,449	4,212	4,283	6,058	6,046	5,714	6,535	5,260
Severance charges	-	-	-	-	-	-	-	1,156
Total operating expenses	6,423	9,711	10,262	12,243	11,353	11,358	12,258	10,513
Operating loss	(9,048)	(10,552)	(9,637)	(11,077)	(8,173)	(8,677)	(11,844)	(9,499)
Other (income) expenses:								
Interest expense, net	1,786	1,746	1,827	1,920	1,867	1,486	1,004	1,016
Gain from debt extinguishment	(6,614)	-	-	-	-	(12,312)	-	-
Investment loss	-	-	-	-	-	-	-	500
Equity in net loss (income) of GELcore	571	731	33	(107)	(267)	51	(341)	(232)
Total other (income) expenses	(4,257)	2,477	1,860	1,813	1,600	(10,775)	663	1,284
(Loss) income from continuing operations	(4,791)	(13,029)	(11,497)	(12,890)	(9,773)	2,098	(12,507)	(10,783)
Discontinued operations:								
Income (loss) from discontinued operations	1,894	488	2,265	(965)	(1,697)	(348)	-	-
Gain on disposal of discontinued operations	-	-	-	-	19,584	-	-	-
Income (loss) from discontinued operations	1,894	488	2,265	(965)	17,887	(348)	-	-
Net (loss) income	\$ (2,897)	\$ (12,541)	\$ (9,232)	\$ (13,855)	\$ 8,114	\$ 1,750	\$ (12,507)	\$ (10,783)

**NOTE 17. Subsequent Events.**

In October 2004, EMCORE invested \$1.0 million in K2 Optronics, Inc., a California-based company specializing in the design and manufacture of external cavity lasers, to strengthen its partnership in designing next-generation long wavelength components for the CATV and FTTP markets. EMCORE does not exercise significant influence over financial and operating policies, and the investment represents approximately 6.6% ownership. Therefore, EMCORE accounts for this investment under the cost method of accounting.



**Report of Independent Registered Public Accounting Firm**

To the Board of Directors and Shareholders of  
EMCORE Corporation  
Somerset, New Jersey

We have audited the accompanying consolidated balance sheets of EMCORE Corporation (the "Company") as of September 30, 2004 and 2003, and the related consolidated statements of operations, shareholders' equity, and cash flows for each of the three years in the period ended September 30, 2004. These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these financial statements based on our audits.

We conducted our audits in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

In our opinion, such consolidated financial statements present fairly, in all material respects, the financial position of EMCORE Corporation as of September 30, 2004 and 2003, and the results of its operations and its cash flows for each of the three years in the period ended September 30, 2004, in conformity with accounting principles generally accepted in the United States of America.

*DELOITTE & TOUCHE LLP*

Parsippany, New Jersey  
December 14, 2004

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**Item 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure.**

None.

**Item 9A. Controls and Procedures.**

**(a) Evaluation of Disclosure Controls and Procedures**

The term “disclosure controls and procedures” is defined in Rules 13a-15(e) and 15d-15(e) of the Securities Exchange Act of 1934, as amended (Exchange Act). This term refers to the controls and procedures of a company that are designed to ensure that information required to be disclosed by a company in the reports that it files under the Exchange Act is recorded, processed, summarized, and reported within required time periods. Our Chief Executive Officer and our Chief Financial Officer have evaluated the effectiveness of our disclosure controls and procedures as of the end of the period covered by this annual report. They have concluded that, as of that date, our disclosure controls and procedures were effective at ensuring that required information will be disclosed on a timely basis in our reports filed under the Exchange Act.

**(b) Changes in Internal Control over Financial Reporting**

No change in our internal control over financial reporting (as defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act) occurred during the fiscal quarter ended September 30, 2004 that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

**Item 9B. Other Information.**

None.

**PART III**

**Item 10. Directors and Executive Officers of the Registrant.**

Information regarding our executive officers and directors required by this Item is incorporated by reference to EMCORE’s Definitive Proxy Statement in connection with the 2005 Annual Meeting of Stockholders (the “Proxy Statement”), which will be filed with the Securities and Exchange Commission within 120 days after the fiscal year ended September 30, 2004. Information required by Item 405 of Regulation S-K is incorporated by reference to the section entitled “Section 16(a) Beneficial Ownership Reporting Compliance” in the Proxy Statement.

We have adopted a code of ethics entitled the “EMCORE Corporate Code of Conduct,” which is applicable to all employees, officers, and directors of EMCORE. The full text of our Corporate Code of Conduct is included with the Corporate Governance information available on our website (www.emcore.com).

**Item 11. Executive Compensation.**

Information required by this Item is incorporated by reference to the section entitled “Executive Compensation” in the Proxy Statement.

**Item 12. Security Ownership of Certain Beneficial Owners and Management.**

Information regarding security ownership of certain beneficial owners and management is incorporated by reference to the section entitled “Security Ownership of Certain Beneficial Owners and Management” in the Proxy Statement.

Information regarding EMCORE’s equity compensation plans is incorporated by reference to the section entitled “Equity Compensation Plans” in the Proxy Statement.

**Item 13. Certain Relationships and Related Transactions.**

Information required by this Item is incorporated by reference to the sections entitled “Certain Relationships and Related Transactions” and “Compensation Committee Interlocks and Insider Participation” in the Proxy Statement.

**Item 14. Principal Accounting Fees and Services.**

Information required by this Item is incorporated by reference to the sections entitled “Independent Auditors” in the Proxy Statement.

**PART IV**

**Item 15. Exhibits, Financial Statement Schedules.**

**(a)(1) Financial Statements**

Included in Part II, Item 8 of this Annual Report on Form 10-K:

[Consolidated Statements of Operations for the years ended September 30, 2004, 2003, 2002](#)

[Consolidated Balance Sheets as of September 30, 2004 and 2003](#)

[Consolidated Statements of Shareholders’ Equity for the years ended September 30, 2004, 2003, 2002](#)

[Consolidated Statements of Cash Flows for the years ended September 30, 2004, 2003, 2002](#)

[Notes to Consolidated Financial Statements](#)

[Report of Independent Registered Public Accounting Firm](#)

See [Item 8, Note 8 - Balance Sheet Data](#).

(a)(3)	Exhibits
Exhibit No.	Description
2.1	Asset Purchase Agreement, dated as of November 3, 2003, by and among Veeco St. Paul Inc., Veeco Instruments Inc. and Registrant (incorporated by reference to Exhibit 2.1 to Registrant's current report on Form 8-K filed November 18, 2003).
3.1	Restated Certificate of Incorporation, dated December 21, 2000 (incorporated by reference to Exhibit 3.1 the registrant's annual report on Form 10-K for the fiscal year ended September 30, 2000).
3.2	Amended By-Laws, as amended through December 21, 2000 (incorporated by reference to Exhibit 3.2 to the registrant's annual report on Form 10-K for the fiscal year ended September 30, 2000).
4.1	Indenture, dated as of May 7, 2001, between the registrant and Wilmington Trust Company, as Trustee (incorporated by reference to Exhibit 4.1 to the registrant's quarterly report on Form 10-Q for the fiscal quarter ended March 31, 2001).
4.2	Note, dated as of May 7, 2001, in the amount of \$175,000,000 (incorporated by reference to Exhibit 4.2 to the registrant's quarterly report on Form 10-Q for the fiscal quarter ended March 31, 2001).
4.3	Indenture, dated as of February 24, 2004, between the registrant and Deutsche Bank Trust Company Americas, as Trustee.*
4.4	Note dated as of February 24, 2004, in the amount of \$80,276,000.*
10.1	Specimen certificate for shares of common stock (incorporated by reference to Exhibit 4.1 to Amendment No. 3 to the Registration Statement on Form S-1 (File No. 333-18565) filed with the Commission on February 24, 1997).
10.2	Form of \$11.375 (pre-split) Warrant (incorporated by reference to Exhibit 4.2 to the registrant's annual report on Form 10-K for the fiscal year ended September 30, 1998).
10.3	Registration Rights Agreement, dated November 30, 1998 by and between the registrant, Hakuto, UMI and UTC (incorporated by reference to Exhibit 10.16 to the registrant's annual report on Form 10-K for the fiscal year ended September 30, 1998).
10.4	Registration Rights Agreement, dated as of May 26, 1999, by and between EMCORE Corporation and GE Capital Equity Investments, Inc. (incorporated by reference to Exhibit 10.19 to Amendment No. 2 to the Registration Statement on Form S-3 (File No. 333-71791) filed with the Commission on June 9, 1999).
10.5	Registration Rights Agreement, dated as of May 7, 2001, among EMCORE and the Credit Suisse First Boston Corporation, on behalf of the initial purchasers (incorporated by reference to Exhibit 10.1 to the registrant's quarterly report on Form 10-Q for the fiscal quarter ended March 31, 2001).
10.6	Transaction Agreement dated January 20, 1999 between General Electric Company and the registrant (incorporated by reference to Exhibit 10.1 to EMCORE's filing on Form 10-Q/A, filed on May 17, 1999). Confidential treatment has been requested by EMCORE for portions of this document. Such portions are indicated by "[*]".
10.7	1995 Incentive and Non-Statutory Stock Option Plan (incorporated by reference to Exhibit 10.1 to the Amendment No. 1 to the Registration Statement on Form S-1 filed on February 6, 1997).
10.8	1996 Amendment to Option Plan (incorporated by reference to Exhibit 10.2 to Amendment No. 1 to the Registration Statement on Form S-1 filed on February 6, 1997).
10.9	MicroOptical Devices 1996 Stock Option Plan (incorporated by reference to Exhibit 99.1 to the Registration Statement on Form S-8 filed on February 6, 1998).
10.10	2000 Stock Option Plan, as amended and restated, effective February 20, 2004 (incorporated by reference to Exhibit 4.1 to the Registration Statement on Form S-8 filed on August 10, 2004).
10.11	2000 Employee Stock Purchase Plan (incorporated by reference to Exhibit 4.3 to the Registration Statement on Form S-8 filed on May 18, 2000).
10.12	Directors' Stock Award Plan (incorporated herein by reference to Exhibit 99.1 to Registrant's Original Registration Statement of Form S-8 filed on November 5, 1997), as amended by the Registration Statement on Form S-8 filed on August 10, 2004.
10.13	Amended and Restated Note, dated as of May 23, 2002 between the registrant and Reuben F. Richards, Jr. (incorporated by reference to Exhibit 10.1 to the registrant's quarterly report on Form 10-Q for the fiscal quarter ended June 30, 2002).
10.14	Amended and Restated Stock Pledge Agreement, dated as of May 23, 2002 between the registrant and Reuben F. Richards, Jr. (incorporated by reference to Exhibit 10.2 to the registrant's quarterly report on Form 10-Q for the fiscal quarter ended June 30, 2002).
10.15	Membership Interest Purchase Agreement, dated as of August 2, 2001, by and among Uniroyal Technology Corporation, Uniroyal Compound Semiconductor, Inc., Uniroyal Optoelectronics, LLC and the registrant (incorporated by reference to Exhibit 2.1 to the registrant's quarterly report on Form 10-Q for the fiscal quarter ended June 30, 2001).
14.1	Code of Ethics for Financial Professionals (incorporated by reference to Exhibit 14.1 to the registrant's annual report on Form 10-K for the fiscal year ended September 30, 2003).
21.1	Subsidiaries of the Registrant.*

23.1	Consent of Deloitte & Touche LLP.*
31.1	Certificate of Chief Executive Officer pursuant to Securities Exchange Act Rules 13a-14(a) and 15d-14(a) as Adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002, dated December 14, 2004.*
31.2	Certificate of Chief Financial Officer pursuant to Securities Exchange Act Rules 13a-14(a) and 15d-14(a) as Adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002, dated December 14, 2004.*
32.1	Certificate of Chief Executive Officer pursuant to section 18 U.S.C. § 1350, dated December 14, 2004.*
32.2	Certificate of Chief Financial Officer pursuant to section 18 U.S.C. § 1350, dated December 14, 2004.*

\_\_\_\_\_

\* *Filed herewith*

## SIGNATURES

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

# EMCORE CORPORATION

14, 2004

By: F. Richards, Jr. \_\_\_\_\_ /s/ Reuben F. Richards, Jr.  
President and Chief Executive Officer

**POWER OF ATTORNEY**

Each person whose signature appears below constitutes and appoints and hereby authorizes Reuben F. Richards, Jr. and Thomas G. Werthan, severally, such person's true and lawful attorneys-in-fact, with full power of substitution or resubstitution, for such person and in his name, place and stead, in any and all capacities, to sign on such person's behalf, individually and in each capacity stated below, any and all amendments, including post-effective amendments to this Form 10-K, and to file the same, with all exhibits thereto, and other documents in connection therewith, with the Commission granting unto said attorneys-in-fact, full power and authority to do and perform each and every act and thing requisite or necessary to be done in and about the premises, as fully to all intents and purposes as such person might or could do in person, hereby ratifying and confirming all that said attorneys-in-fact, or their substitute or substitutes, may lawfully do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the registrant in the capacities indicated, on December 14, 2004.

<b><u>Signature</u></b>	<b><u>Title</u></b>
<u>/s/ Thomas J. Russell</u> Thomas J. Russell	Chairman of the Board and Director
<u>/s/ Reuben F. Richards, Jr.</u> Reuben F. Richards, Jr.	President, Chief Executive Officer, and Director (Principal Executive Officer)
<u>/s/ Thomas G. Werthan</u> Thomas G. Werthan	Executive Vice President, Chief Financial Officer, and Director (Principal Accounting and Financial Officer)
<u>/s/ Richard A. Stall</u> Richard A. Stall	Executive Vice President, Chief Technology Officer, and Director
<u>/s/ Robert Louis-Dreyfus</u> Robert Louis-Dreyfus	Director
<u>/s/ Charles T. Scott</u> Charles T. Scott	Director
<u>/s/ Robert Bogomolny</u> Robert Bogomolny	Director
<u>/s/ John Gillen</u> John Gillen	Director

## EXHIBIT INDEX

<u>Exhibit No.</u>	<u>Description</u>
2.1	Asset Purchase Agreement, dated as of November 3, 2003, by and among Veeco St. Paul Inc., Veeco Instruments Inc. and Registrant (incorporated by reference to Exhibit 2.1 to Registrant's current report on Form 8-K filed November 18, 2003).
3.1	Restated Certificate of Incorporation, dated December 21, 2000 (incorporated by reference to Exhibit 3.1 the registrant's annual report on Form 10-K for the fiscal year ended September 30, 2000).
3.2	Amended By-Laws, as amended through December 21, 2000 (incorporated by reference to Exhibit 3.2 to the registrant's annual report on Form 10-K for the fiscal year ended September 30, 2000).
4.1	Indenture, dated as of May 7, 2001, between the registrant and Wilmington Trust Company, as Trustee (incorporated by reference to Exhibit 4.1 to the registrant's quarterly report on Form 10-Q for the fiscal quarter ended March 31, 2001).
4.2	Note, dated as of May 7, 2001, in the amount of \$175,000,000 (incorporated by reference to Exhibit 4.2 to the registrant's quarterly report on Form 10-Q for the fiscal quarter ended March 31, 2001).
4.3	Indenture, dated as of February 24, 2004, between the registrant and Deutsche Bank Trust Company Americas, as Trustee.*
4.4	Note dated as of February 24, 2004, in the amount of \$80,276,000.*
10.1	Specimen certificate for shares of common stock (incorporated by reference to Exhibit 4.1 to Amendment No. 3 to the Registration Statement on Form S-1 (File No. 333-18565) filed with the Commission on February 24, 1997).
10.2	Form of \$11.375 (pre-split) Warrant (incorporated by reference to Exhibit 4.2 to the registrant's annual report on Form 10-K for the fiscal year ended September 30, 1998).
10.3	Registration Rights Agreement, dated November 30, 1998 by and between the registrant, Hakuto, UMI and UTC (incorporated by reference to Exhibit 10.16 to the registrant's annual report on Form 10-K for the fiscal year ended September 30, 1998).
10.4	Registration Rights Agreement, dated as of May 26, 1999, by and between EMCORE Corporation and GE Capital Equity Investments, Inc. (incorporated by reference to Exhibit 10.19 to Amendment No. 2 to the Registration Statement on Form S-3 (File No. 333-71791) filed with the Commission on June 9, 1999).
10.5	Registration Rights Agreement, dated as of May 7, 2001, among EMCORE and the Credit Suisse First Boston Corporation, on behalf of the initial purchasers (incorporated by reference to Exhibit 10.1 to the registrant's quarterly report on Form 10-Q for the fiscal quarter ended March 31, 2001).
10.6	Transaction Agreement dated January 20, 1999 between General Electric Company and the registrant (incorporated by reference to Exhibit 10.1 to EMCORE's filing on Form 10-Q/A, filed on May 17, 1999). Confidential treatment has been requested by EMCORE for portions of this document. Such portions are indicated by "[*]".
10.7	1995 Incentive and Non-Statutory Stock Option Plan (incorporated by reference to Exhibit 10.1 to the Amendment No. 1 to the Registration Statement on Form S-1 filed on February 6, 1997).
10.8	1996 Amendment to Option Plan (incorporated by reference to Exhibit 10.2 to Amendment No. 1 to the Registration Statement on Form S-1 filed on February 6, 1997).
10.9	MicroOptical Devices 1996 Stock Option Plan (incorporated by reference to Exhibit 99.1 to the Registration Statement on Form S-8 filed on February 6, 1998).
10.10	2000 Stock Option Plan, as amended and restated, effective February 20, 2004 (incorporated by reference to Exhibit 4.1 to the Registration Statement on Form S-8 filed on August 10, 2004).
10.11	2000 Employee Stock Purchase Plan (incorporated by reference to Exhibit 4.3 to the Registration Statement on Form S-8 filed on May 18, 2000).
10.12	Directors' Stock Award Plan (incorporated herein by reference to Exhibit 99.1 to Registrant's Original Registration Statement of Form S-8 filed on November 5, 1997), as amended by the Registration Statement on Form S-8 filed on August 10, 2004.
10.13	Amended and Restated Note, dated as of May 23, 2002 between the registrant and Reuben F. Richards, Jr. (incorporated by reference to Exhibit 10.1 to the registrant's quarterly report on Form 10-Q for the fiscal quarter ended June 30, 2002).
10.14	Amended and Restated Stock Pledge Agreement, dated as of May 23, 2002 between the registrant and Reuben F. Richards, Jr. (incorporated by reference to Exhibit 10.2 to the registrant's quarterly report on Form 10-Q for the fiscal quarter ended June 30, 2002).
10.15	Membership Interest Purchase Agreement, dated as of August 2, 2001, by and among Uniroyal Technology Corporation, Uniroyal Compound Semiconductor, Inc., Uniroyal Optoelectronics, LLC and the registrant (incorporated by reference to Exhibit 2.1 to the registrant's quarterly report on Form 10-Q for the fiscal quarter ended June 30, 2001).
14.1	Code of Ethics for Financial Professionals (incorporated by reference to Exhibit 14.1 to the registrant's annual report on Form 10-K for the fiscal year ended September 30, 2003).
21.1	Subsidiaries of the Registrant.*
23.1	Consent of Deloitte & Touche LLP.*
31.1	Certificate of Chief Executive Officer pursuant to Securities Exchange Act Rules 13a-14(a) and 15d-14(a) as Adopted Pursuant to Section 302 of the

Sarbanes-Oxley Act of 2002, dated December 14, 2004.\*

31.2	Certificate of Chief Financial Officer pursuant to Securities Exchange Act Rules 13a-14(a) and 15d-14(a) as Adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002, dated December 14, 2004.*
32.1	Certificate of Chief Executive Officer pursuant to section 18 U.S.C. § 1350, dated December 14, 2004.*
32.2	Certificate of Chief Financial Officer pursuant to section 18 U.S.C. § 1350, dated December 14, 2004.*

\* Filed herewith



EMCORE CORPORATION

5% CONVERTIBLE SENIOR SUBORDINATED NOTES DUE 2011

INDENTURE

Dated as of February 24, 2004

Deutsche Bank Trust Company Americas

Trustee

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INDENTURE dated as of February 24, 2004 between EMCORE Corporation, a New Jersey corporation (the “*Company*”), and Deutsche Bank Trust Company Americas, as trustee (the “*Trustee*”).

The Company and the Trustee agree as follows for the benefit of each other and for the equal and ratable benefit of the Holders of the 5% Convertible Senior Subordinated Notes due 2011 (the “*Notes*”):

## ARTICLE 1.

### DEFINITIONS AND INCORPORATION BY REFERENCE

#### *Section 1.01. Definitions*

“*Affiliate*” of any specified Person means any other Person directly or indirectly controlling or controlled by or under direct or indirect common control with such specified Person. For purposes of this definition, “control” (including, with correlative meanings, the terms “controlling,” “controlled by” and “under common control with”), as used with respect to any Person, shall mean the possession, directly or indirectly, of the power to direct or cause the direction of the management or policies of such Person, whether through the ownership of voting securities, by agreement or otherwise; provided, however, that beneficial ownership of 10% or more of the voting securities of a Person shall be deemed to be control.

“*Agent*” means any Registrar, Paying Agent or co-registrar.

“*Applicable Procedures*” means, with respect to any transfer or exchange of or for beneficial interests in any Global Note, the rules and procedures of the Depositary, Euroclear and Cedel that apply to such transfer or exchange.

“*Bankruptcy Law*” means Title 11, U.S. Code or any similar federal or state law for the relief of debtors.

“*Board of Directors*” means the Board of Directors of the Company, or any authorized committee of the Board of Directors.

“*Business Day*” means any day other than a Legal Holiday.

“*Capital Lease Obligation*” means, at the time any determination thereof is to be made, the amount of the liability in respect of a capital lease that would at such time be required to be capitalized on a balance sheet in accordance with GAAP.

“*Capital Stock*” means any and all shares, interests, participations, rights or other equivalents (however designated) of corporate stock, including, without limitation, with respect to partnerships, partnership interests (whether general or limited) and any other interest or participation that confers on a Person the right to receive a share of the profits and losses of, or distributions of assets of, such partnership.

“*Closing Sale Price*” means the last reported sales price or, in case no such reported sale takes place on such date, the average of the reported closing bid and asked prices in either case on The Nasdaq National Market or, if the Common Stock is not listed or admitted to trading on The Nasdaq National Market, on the principal national securities exchange on which the Common Stock is listed or admitted to trading or, if not listed or admitted to trading on The Nasdaq National Market or any national securities exchange, the last reported sales price of the Common Stock as quoted on The Nasdaq National Market or, in case no reported sales takes place, the average of the closing bid and asked prices as quoted on The Nasdaq National Market or any comparable system or, if the Common Stock is not quoted on The Nasdaq National Market or any comparable system, the closing sales price or, in case no reported sale takes place, the average of the closing bid and asked prices, as furnished by any two members of the National Association of Securities Dealers, Inc. selected from time to time by the Company for that purpose.

“*Company*” means the issuer, and any and all successors thereto.

“*Common Stock*” means the common stock, no par value per share, of the Company.

“*Corporate Trust Office of the Trustee*” shall be at the address of the Trustee specified in Section 12.02 hereof or such other address as to which the Trustee may give notice to the Company.

“*Custodian*” means the Trustee, as custodian with respect to the Global Notes or any successor entity thereto.

“*Default*” means any event that is or with the passage of time or the giving of notice or both would be an Event of Default.

“*Definitive Note*” means a certificated Note registered in the name of the Holder thereof and issued in accordance with Section 2.06 hereof, substantially in the form of Exhibit A hereto except that such Note shall not bear the Global Note Legend and shall not have the “Schedule of Exchanges of Interests in the Global Note” attached thereto.

“*Depositary*” means, with respect to any Global Notes, the Person specified in Section 2.03 hereof as the Depositary with respect to such Global Notes, and any and all successors thereto appointed as depositary hereunder and having become such pursuant to the applicable provision of this Indenture.

“*Designated Senior Indebtedness*” means any Senior Indebtedness permitted hereunder the principal amount of which is \$10.0 million or more and that has been designated by the Company as “Designated Senior Indebtedness.”

“*Equity Interests*” means Capital Stock and all warrants, options or other rights to acquire Capital Stock (but excluding any debt security that is convertible into, or exchangeable for, Capital Stock).

“*Exchange Act*” means the Securities Exchange Act of 1934, as amended.

“*Existing Notes*” means the Company’s 5% Convertible Subordinated Notes due 2006.

“*Existing Notes Indenture*” means that Indenture, dated as of May 7, 2001, between the Company and Wilmington Trust Company.

“*GAAP*” means generally accepted accounting principles set forth in the opinions and pronouncements of the Accounting Principles Board of the American Institute of Certified Public Accountants and statements and pronouncements of the Financial Accounting Standards Board or in such other statements by such other entity as have been approved by a significant segment of the accounting profession, which are in effect on the date of this Indenture.

“*Global Note*” means a permanent global Note substantially in the form of Exhibit A hereto issued in accordance with this Indenture, that is deposited with or on behalf of and registered in the name of the Depositary and that bears the Global Note Legend and has the “Schedule of Exchanges of Notes” attached thereto.

“*Global Note Legend*” means the legend set forth in Exhibit A hereto, which is required to be placed on all Global Notes issued under this Indenture.

“*Government Securities*” means direct obligations of, or obligations guaranteed by, the United States of America, and the payment for which the United States pledges its full faith and credit.

“*Holder*” means a Person in whose name a Note is registered.

“*Indebtedness*” means, with respect to any Person, without duplication, (a) all indebtedness, obligations and other liabilities (contingent or otherwise) of such Person for borrowed money (including obligations of such Person in respect of overdrafts, foreign exchange contracts, currency exchange agreements, interest rate protection agreements, and any loans or advances from banks, whether or not evidenced by notes or similar instruments) or evidenced by credit or loan agreements, bonds, debentures, notes or other written obligations (whether or not the recourse of the lender is to the whole of the assets of such Person or to only a portion thereof) (other than any accounts payable or other accrued current liability or obligation incurred in the ordinary course of business in connection with the obtaining of materials or services), (b) all reimbursement obligations and other liabilities (contingent or otherwise) of such Person with respect to letters of credit, bank guarantees or bankers’ acceptances, (c) all obligations and liabilities (contingent or otherwise) of such Person in respect of leases of such Person required, in conformity with generally accepted accounting principles, to be accounted for as Capitalized Lease Obligations on the balance sheet of such Person, (d) all obligations of such Person evidenced by a note or similar instrument given in connection with the acquisition of any business, properties or assets of any kinds, (e) all obligations of such Person issued or assumed as the deferred purchase price of property or services (excluding trade account payables and accrued liabilities arising in the ordinary course of business), (f) all obligations (contingent or otherwise) of such Person under any lease or related document (including a purchase agreement) in connection with the lease of real property or improvements (or any personal property included as part of any such lease) which provides that such Person is contractually obligated to purchase or cause a third party to purchase the leased property and thereby guarantee a minimum residual value of the leased property to the lessor and the obligations of such Person under such lease or related document to purchase or to cause a third party to purchase such leased property (whether or not such lease transaction is characterized as an operating lease or a capitalized lease in accordance with generally accepted accounting principles), (g) all obligations (contingent or otherwise) of such Person with respect to any interest rate, currency or other swap, cap, floor or collar agreement, hedge agreement, forward contract, or other similar instrument or agreement or foreign currency hedge, exchange, purchase or similar instrument or agreement, (h) all direct or indirect guaranties, agreements to be jointly liable or similar agreements by such Person in respect of, and obligations or liabilities (contingent or otherwise) of such Person to purchase or otherwise acquire or otherwise assure a creditor against loss in respect of, indebtedness, obligations or liabilities of another Person of the kind described in clauses (a) through (g), and (i) any and all deferrals, renewals, extensions and refundings of, or amendments, modifications or supplements to, any indebtedness, obligation or liability of the kind described in clauses (a) through (h).

“*Indenture*” means this Indenture, as amended or supplemented from time to time.

“*Indirect Participant*” means a Person who holds a beneficial interest in a Global Note through a Participant.

“*Legal Holiday*” means a Saturday, a Sunday or a day on which banking institutions in the City of New York or at a place of payment are authorized by law, regulation or executive order to remain closed. If a payment date is a Legal Holiday at a place of payment, payment may be made at that place on the next succeeding day that is not a Legal Holiday, and no interest shall accrue on such payment for the intervening period.

“*Notes*” has the meaning assigned to it in the preamble to this Indenture.

“*Obligations*” means any principal, interest, penalties, fees, indemnifications, reimbursements, fees and expenses, damages and other liabilities payable under the documentation governing any Indebtedness.

“*Offering*” means the offering of the Notes by the Company.

“*Officer*” means, with respect to any Person, the Chairman of the Board, the Chief Executive Officer, the President, the Chief Operating Officer, the Chief Financial Officer, the Treasurer, any Assistant Treasurer, the Controller, the Secretary or any Vice-President of such Person.

“*Officers’ Certificate*” means a certificate signed on behalf of the Company by two Officers of the Company, one of whom must be the principal executive officer, the principal financial officer, the treasurer or the principal accounting officer of the Company, that meets the requirements of Section 12.05 hereof.

“*Opinion of Counsel*” means an opinion from legal counsel who is reasonably acceptable to the Trustee, that meets the requirements of Section 12.05 hereof. The counsel may be an employee of or counsel to the Company, any Subsidiary of the Company or the Trustee.

“*Participant*” means, with respect to the Depositary, Euroclear or Cedel, a Person who has an account with the Depositary, Euroclear or Cedel, respectively (and, with respect to DTC, shall include Euroclear and Cedel).

“*Permitted Junior Securities*” means Equity Interests in the Company or debt securities that are subordinated to all Senior Indebtedness (and any debt securities issued in exchange for Senior Indebtedness) to substantially the same extent as, or to a greater extent than, the Notes are subordinated to Senior Indebtedness pursuant to the Indenture.

“*Person*” means any individual, corporation, partnership, limited liability company, joint venture, association, joint-stock company, trust, unincorporated organization or government or agency or political subdivision thereof (including any subdivision or ongoing business of any such entity or substantially all of the assets of any such entity, subdivision or business).

“*Representative*” means the indenture trustee or other trustee, agent or representative for any Senior Indebtedness.

“*Responsible Officer*,” when used with respect to the Trustee, means any officer within the Corporate Trust Administration of the Trustee (or any successor group of the Trustee) with direct responsibilities for the administration of this Indenture and also means, with respect to a particular corporate trust matter, any other officer to whom such matter is referred because of his knowledge of and familiarity with the particular subject.

“*SEC*” means the Securities and Exchange Commission.

“*Securities Act*” means the Securities Act of 1933, as amended.

“*Senior Indebtedness*” means (i) the principal of, premium, if any, interest including all interest accruing subsequent to the commencement of any bankruptcy or similar proceeding, whether or not a claim for post-petition interest is allowable as a claim in any such proceeding, and rent payable on or in connection with, Indebtedness of the Company unless the instrument under which such Indebtedness is incurred expressly provides that it is on a parity with or subordinated in right of payment to the Notes, and (ii) all Obligations with respect to any of the foregoing, whether secured or unsecured, absolute or contingent, due or to become due, outstanding on the date hereof or hereafter credited, incurred, assumed, guaranteed or in effect guaranteed by the Company, including all deferrals, renewals, extensions and refundings of or amendments, modifications or supplements to, the foregoing. Notwithstanding anything to the contrary in the foregoing, Senior Indebtedness shall not include (x) any of the Existing Notes, (y) any Indebtedness of the Company to any of its Subsidiaries or other Affiliates, (z) any Indebtedness incurred for the purchase of goods or materials or for services obtained in the ordinary course of business (other than with the proceeds of revolving credit borrowings permitted hereby) and (aa) any Indebtedness that is incurred in violation of this Indenture.

“*Subsidiary*” means, with respect to any Person, any corporation, association or other business entity of which more than 50% of the total voting power of shares of Capital Stock entitled (without regard to the occurrence of any contingency) to vote in the election of directors, managers or trustees thereof is at the time owned or controlled, directly or indirectly, by such Person or one or more of the other Subsidiaries of such Person or a combination thereof.

“TIA” means the Trust Indenture Act of 1939 (15 U.S.C. §§ 77aaa-77bbb) as in effect on the date on which this Indenture is qualified under the TIA; *provided, however*, that in the event the Trust Indenture Act of 1939 is amended after such date, “TIA” means, to the extent required by any such amendment, the Trust Indenture Act of 1939 as so amended.

“Trading Day” means a day on which trades may be made on The Nasdaq National Market.

“Trustee” means the party named as such above until a successor replaces it in accordance with the applicable provisions of this Indenture and thereafter means the successor serving hereunder.

“Voting Stock” of a Person means any class or classes of Capital Stock pursuant to which the holders of capital stock under ordinary circumstances have the power to vote in the election of the board of directors, managers or trustees thereof of such Person or other persons performing similar functions irrespective of whether or not, at the time Capital Stock of any other class or classes shall have, or might have, voting power by reason of the happening of any contingency.

Section 1.02. Other Definitions

Term	Defined in Section
“Authentication Order”	2.02
“Change of Control”	6.08
“Change of Control Offer”	6.08
“Change of Control Payment”	6.08
“Change of Control Payment Date”	6.08
“Change of Control Payment Notice”	6.08
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Section 1.03. Incorporation by Reference of Trust Indenture Act

Whenever this Indenture refers to a provision of the TIA, the provision is incorporated by reference in and made a part of this Indenture.

The following TIA terms used in this Indenture have the following meanings:

- “indenture securities” means the Notes;
- “indenture security Holder” means a Holder of a Note;
- “indenture to be qualified” means this Indenture;
- “indenture trustee” or “institutional trustee” means the Trustee; and
- “obligor” on the Notes means the Company and any successor obligor upon the Notes.

All other terms used in this Indenture that are defined by the TIA, defined by TIA reference to another statute or defined by SEC rule under the TIA have the meanings so assigned to them.

Section 1.04. Rules of Construction

Unless the context otherwise requires:

- (a) a term has the meaning assigned to it;
- (b) an accounting term not otherwise defined has the meaning assigned to it in accordance with GAAP;
- (c) “or” is not exclusive;
- (d) words in the singular include the plural, and in the plural include the singular;
- (e) provisions apply to successive events and transactions; and
- (f) references to sections of or rules under the Securities Act shall be deemed to include substitute, replacement of successor sections or rules adopted by the SEC from time to time.

ARTICLE 2.

THE NOTES

Section 2.01. Form and Dating



(a) *General.* The Notes and the Trustee's certificate of authentication shall be substantially in the form of Exhibit A hereto. The Notes may have notations, legends or endorsements required by law, stock exchange rule or usage. Each Note shall be dated the date of its authentication. The Notes shall be in denominations of \$1,000 and integral multiples thereof.

The terms and provisions contained in the Notes shall constitute, and are hereby expressly made, a part of this Indenture and the Company and the Trustee, by their execution and delivery of this Indenture, expressly agree to such terms and provisions and to be bound thereby. However, to the extent any provision of any Note conflicts with the express provisions of this Indenture, the provisions of this Indenture shall govern and be controlling.

(b) *Global Notes.* Notes issued in global form shall be substantially in the form of Exhibit A attached hereto (including the Global Note Legend thereon and the "Schedule of Exchanges of Interests in the Global Note" attached thereto). Notes issued in definitive form shall be substantially in the form of Exhibit A attached hereto (but without the Global Note Legend thereon and without the "Schedule of Exchanges of Interests in the Global Note" attached thereto). Each Global Note shall represent such of the outstanding Notes as shall be specified therein and each shall provide that it shall represent the aggregate principal amount of outstanding Notes from time to time endorsed thereon and that the aggregate principal amount of outstanding Notes represented thereby may from time to time be reduced or increased, as appropriate, to reflect exchanges and redemptions. Any endorsement of a Global Note to reflect the amount of any increase or decrease in the aggregate principal amount of outstanding Notes represented thereby shall be made by the Trustee or the Custodian, at the direction of the Trustee, in accordance with instructions given by the Holder thereof as required by Section 2.13 hereof.

## **Section 2.02. Execution and Authentication**

An Officer shall sign the Notes for the Company by manual or facsimile signature. The Company's seal shall be reproduced on the Notes and may be in facsimile form.

If an Officer whose signature is on a Note no longer holds that office at the time a Note is authenticated, the Note shall nevertheless be valid.

A Note shall not be valid until authenticated by the manual signature of the Trustee. The signature shall be conclusive evidence that the Note has been authenticated under this Indenture.

The Trustee shall, upon receipt of a written order of the Company signed by an Officer (an "Authentication Order"), authenticate Notes for original issue in the aggregate principal amount of up to \$80,276,000. The Authentication Order shall specify the amount of Notes to be authenticated, shall provide that all Notes will be represented by a Global Note and the date on which each original issue of Notes is to be authenticated. The aggregate principal amount of Notes outstanding at any time may not exceed \$80,276,000 except as provided in Section 2.08 hereof.

The Trustee shall act as initial authenticating agent. Thereafter, the Trustee may appoint an authenticating agent acceptable to the Company to authenticate Notes. An authenticating agent may authenticate Notes whenever the Trustee may do so. Each reference in this Indenture to authentication by the Trustee includes authentication by such agent. An authenticating agent has the same rights as an Agent to deal with the Company or an Affiliate of the Company.

## **Section 2.03. Registrar, Paying Agent and Conversion Agent**

The Company shall maintain an office or agency where Notes may be presented for registration of transfer or for exchange ("Registrar"), an office or agency where Notes may be presented for payment ("Paying Agent"), an office or agency where Notes may be presented for conversion ("Conversion Agent") and an office or agent where notices and demands to or upon the Company in respect of the Notes and this Indenture may be served. The Registrar shall keep a register of the Notes and of their registration of transfer and exchange. The Company may appoint one or more co-registrars and one or more additional paying agents and conversion agents. The term "Registrar" includes any co-registrar, the term "Paying Agent" includes any additional paying agent and the term "Conversion Agent" includes any additional conversion agent. The Company may change any Paying Agent, Conversion Agent or Registrar without notice to any Holder. The Company shall notify the Trustee in writing of the name and address of any Agent not a party to this Indenture. If the Company fails to appoint or maintain another entity as Registrar, Paying Agent, Conversion Agent or agent for service of notices and demands in any place required by this Indenture, or fails to give the foregoing notice, the Trustee shall act as such. The Company or any of its Subsidiaries may act as Paying Agent, Conversion Agent or Registrar.

The Company initially appoints The Depository Trust Company ("DTC") to act as Depository with respect to the Global Notes.

The Company initially appoints the Trustee to act as the Registrar, Paying Agent and Conversion Agent and to act as Custodian with respect to the Global Notes.

## **Section 2.04. Paying Agent to Hold Money in Trust**

Prior to 10:00 a.m., New York City time, on each due date of the principal of, premium, if any, or interest, on any Notes, the Company shall deposit with the Paying Agent a sum sufficient to pay such principal, premium, if any, or interest so becoming due. The Company shall require each Paying Agent other than the Trustee to agree in writing that the Paying Agent will hold in trust for the benefit of Holders or the Trustee all money held by the Paying Agent for the payment of principal, premium or interest on the Notes, and will notify the Trustee of any default by the Company in making any such payment. While any such default continues, the Trustee may require a Paying Agent to pay all money held by it to the Trustee. The Company at any time may require a Paying Agent to pay all money held by it to the Trustee. Upon payment over to the Trustee, the Paying Agent (if other than the Company or a Subsidiary) shall have no further liability for the money. If the Company or a Subsidiary acts as Paying Agent, it shall before 10:00 a.m. New York City time on each due date of the principal of, premium, if any, or interest, segregate and hold in a separate trust fund for the benefit of the Holders all money held by it as Paying Agent. Upon any bankruptcy or reorganization proceedings relating to the Company, the Trustee shall serve as Paying Agent for the Notes.

## **Section 2.05. Holder Lists**

The Trustee shall preserve in as current a form as is reasonably practicable the most recent list available to it of the names and addresses of all Holders and shall otherwise comply with TIA § 312(a). If the Trustee is not the Registrar, the Company shall furnish to the Trustee at least seven Business Days before each interest payment date and at such other times as the Trustee may request in writing, a list in such form and as of such date as the Trustee may reasonably require of the names and addresses of the Holders of Notes and the Company shall otherwise comply with TIA § 312(a).

## **Section 2.06. Transfer and Exchange**

(a) Subject to compliance with any applicable additional requirements contained in Section 2.12, when a Note is presented to a Registrar with a request to register a transfer thereof or to exchange such Note for an equal principal amount of Notes of other authorized denominations, the Registrar shall register the transfer or make the exchange as requested; *provided, however*, that every Note presented or surrendered for registration of transfer or exchange shall be duly endorsed or accompanied by an assignment form and, if applicable, a transfer certificate each in the form included in Exhibit A, and in form satisfactory to the Registrar duly executed by the Holder thereof or its attorney duly authorized in writing. To permit registration of transfers and exchanges, upon surrender of any Note for registration of transfer or exchange at an office or agency maintained pursuant to Section 2.03, the Company shall execute and the Trustee shall authenticate Notes of a like aggregate principal amount at the Registrar's request. Any exchange or registration of transfer shall be without charge, except that the Company or the Registrar may require payment of a sum sufficient to cover any tax or other governmental charge that may be imposed in relation thereto, and provided, that this sentence shall not apply to any exchange pursuant to Section 2.07, 2.10, 2.12(a), 3.06, 4.02 (last paragraph), 6.08(a) (7) or 11.05.

Neither the Company, any Registrar nor the Trustee shall be required to exchange or register a transfer of (a) any Notes for a period of 15 days next preceding any mailing of a notice of Notes to be redeemed, (b) any Notes or portions thereof selected or called for redemption (except, in the case of redemption of a Note in part, the portion not to be redeemed) or (c) any Notes or portions thereof in respect of which a Note has been delivered and not withdrawn by the Holder thereof (except, in the case of the purchase of a Note in part, the portion not to be purchased).

All Notes issued upon any registration of transfer or exchange of Notes shall be valid obligations of the Company, evidencing the same debt and entitled to the same benefits under this Indenture, as the Notes surrendered upon such registration of transfer or exchange.

(b) Any Registrar appointed pursuant to Section 2.03 hereof shall provide to the Trustee such information as the Trustee may reasonably require in connection with the delivery by such Registrar of Notes upon registration of transfer or exchange of Notes.

(c) Each Holder of a Note agrees to indemnify the Company, the Registrar and the Trustee against any liability that may result from the registration of transfer, exchange or assignment of such Holder's Note in violation of any provision of this Indenture and/or applicable United States federal or state securities law.

The Trustee shall have no obligation or duty to monitor, determine or inquire as to compliance with any restrictions on registration of transfer imposed under this Indenture or under applicable law with respect to any transfer of any interest in any Note (including any transfers between or among Participants or other beneficial owners of interests in any Global Note) other than to require delivery of such certificates and other documentation or evidence as are expressly required by, and to do so if and when expressly required by the terms of, this Indenture, and to examine the same to determine substantial compliance as to form with the express requirements hereof.

#### **Section 2.07. Replacement Notes**

If any mutilated Note is surrendered to the Trustee or the Company and the Trustee receives evidence to its satisfaction of the destruction, loss or theft of any Note, the Company shall issue and the Trustee, upon receipt of an Authentication Order, shall authenticate a replacement Note if the Trustee's requirements are met. If required by the Trustee or the Company, an indemnity bond must be supplied by the Holder that is sufficient in the judgment of the Trustee and the Company to protect the Company, the Trustee, any Agent and any authenticating agent from any loss that any of them may suffer if a Note is replaced. The Company may charge for its expenses in replacing a Note.

Every replacement Note is an additional obligation of the Company and shall be entitled to all of the benefits of this Indenture equally and proportionately with all other Notes duly issued hereunder.

#### **Section 2.08. Outstanding Notes**

The Notes outstanding at any time are all the Notes authenticated by the Trustee except for those canceled by it, those delivered to it for cancellation, those reductions in the interest in a Global Note effected by the Trustee in accordance with the provisions hereof, and those described in this Section as not outstanding. Except as set forth in Section 2.09 hereof, a Note does not cease to be outstanding because the Company or an Affiliate of the Company holds the Note.

If a Note is replaced pursuant to Section 2.07 hereof, it ceases to be outstanding unless the Trustee receives proof satisfactory to it that the replaced Note is held by a protected purchaser.

If the principal amount of any Note is considered paid under Section 6.01 hereof, it ceases to be outstanding and interest on it ceases to accrue.

If the Paying Agent (other than the Company, a Subsidiary or an Affiliate of any thereof) holds, on a redemption date, a Change of Control Payment Date or maturity date, money sufficient to pay Notes payable on that date, then on and after that date such Notes shall be deemed to be no longer outstanding and shall cease to accrue interest.

#### **Section 2.09. Treasury Notes**

In determining whether the Holders of the required principal amount of Notes have concurred in any notice, direction, waiver or consent, Notes owned by the Company, or by any Person directly or indirectly controlling or controlled by or under direct or indirect common control with the Company, shall be considered as though not outstanding, except that for the purposes of determining whether the Trustee shall be protected in relying on any such notice, direction, waiver or consent, only Notes that the Trustee knows are so owned shall be so disregarded.

#### **Section 2.10. Temporary Notes**

Until certificates representing Notes are ready for delivery, the Company may prepare and execute, and the Trustee, upon receipt of an Authentication Order, shall authenticate and deliver temporary Notes. Temporary Notes shall be substantially in the form of definitive Notes but may have variations that the Company considers appropriate for temporary Notes and as shall be reasonably acceptable to the Trustee. Without unreasonable delay, the Company shall prepare and the Trustee, upon receipt of an Authentication Order, shall authenticate and deliver definitive Notes in exchange for temporary Notes.

Holders of temporary Notes shall be entitled to all of the benefits of this Indenture.

#### **Section 2.11. Cancellation**

The Company at any time may deliver Notes to the Trustee for cancellation. The Registrar, Paying Agent and Conversion Agent shall forward to the Trustee any Notes surrendered to them for registration of transfer, exchange, redemption, payment or conversion. The Trustee and no one else shall cancel all Notes surrendered for registration of transfer, exchange, redemption, payment, conversion, replacement or cancellation and shall destroy canceled Notes (subject to the record retention requirement of the Exchange Act), in accordance with their normal procedures. All Notes which are redeemed, purchased or otherwise acquired by the Company or any of its Subsidiaries prior to the maturity date shall be delivered to the Trustee for cancellation. Certification of the destruction of all canceled Notes shall be delivered to the Company. The Company may not hold or resell such Notes or issue new Notes to replace Notes that it has purchased or otherwise acquired or that have been delivered to the Trustee for cancellation.

#### **Section 2.12. Additional Transfer and Exchange Requirements**

##### **(a) Transfer And Exchange Of Global Notes.**

(1) Definitive Notes shall be issued in exchange for interests in the Global Notes only if (x) the Depositary notifies the Company that it is unwilling or unable to continue as depositary for the Global Notes or if it at any time ceases to be a "clearing agency" registered under the Exchange Act, if so required by applicable law or regulation and a successor depositary is not appointed by the Company within 90 days, or (y) an Event of Default has occurred and is continuing. In either case, the Company shall execute, and the Trustee shall, upon receipt of an Authentication Order (which the Company agrees to deliver promptly), authenticate and deliver Definitive Notes in an aggregate principal amount equal to the principal amount of such Global Notes in exchange therefor. Definitive Notes issued in exchange for beneficial interests in Global Notes shall be registered in such names and shall be in such authorized denominations as the Depositary, pursuant to instructions from its direct or Indirect Participants or otherwise, shall instruct the Trustee. The Trustee shall deliver or cause to be delivered such Definitive Notes to the persons in whose names such Notes are so registered. Such exchange shall be effected in accordance with the Applicable Procedures.

(2) Notwithstanding any other provisions of this Indenture other than the provisions set forth in Section 2.12(a)(1), a Global Note may not be transferred as a whole except by the Depositary to a nominee of the Depositary or by a nominee of the Depositary to the Depositary or another nominee of the Depositary or by the Depositary or any such nominee to a successor Depositary or a nominee of such successor Depositary.

(b) **Transfer And Exchange Of Definitive Notes.** In the event that Definitive Notes are issued in exchange for beneficial interests in Global Notes in accordance with Section 2.12(a)(1) of this Indenture, on or after such event when Definitive Notes are presented by a Holder to a Registrar with a request:

(x) to register the transfer of the Definitive Notes to a person who will take delivery thereof in the form of Definitive Notes only; or

(y) to exchange such Definitive Notes for an equal principal amount of Definitive Notes of other authorized denominations,

such Registrar shall register the transfer or make the exchange as requested; provided, however, that the Definitive Notes presented or surrendered for register of transfer or exchange: shall be duly endorsed or accompanied by a written instrument of transfer in accordance with the proviso to the first paragraph of Section 2.06(a).

(c) *Transfers of Definitive Notes for Beneficial Interest in Global Notes.* In the event that Definitive Notes are issued in exchange for beneficial interests in Global Notes and, thereafter, the events or conditions specified in Section 2.12(a)(1) which required such exchange shall cease to exist, the Company shall mail notice to the Trustee and to the Holders stating that Holders may exchange Definitive Notes for interests in Global Notes by complying with the procedures set forth in this Indenture and briefly describing such procedures and the events or circumstances requiring that such notice be given. Thereafter, if Definitive Notes are presented by a Holder to a Registrar with a request:

(x) to register the transfer of such Definitive Notes to a person who will take delivery thereof in the form of a beneficial interest in a Global Note; or

(y) to exchange such Definitive Notes for an equal principal amount of beneficial interests in a Global Note, which beneficial interests will be owned by the Holder transferring such Definitive Notes,

the Registrar shall register the transfer or make the exchange as requested by canceling such Definitive Note and causing, or directing the Custodian to cause, the aggregate principal amount of the applicable Global Note to be increased accordingly and, if no such Global Note is then outstanding, the Company shall issue and the Trustee, upon receipt of an Authentication Order, shall authenticate and deliver a new Global Note; provided, however, that the Definitive Notes presented or surrendered for registration of transfer or exchange:

(1) shall be duly endorsed or accompanied by a written instrument of transfer in accordance with the proviso to Section 2.06; and

(2) in the case of a Definitive Note to be transferred or exchanged for a beneficial interest in a Global Note, such request need not be accompanied by any additional information or documents.

(d) *Transfers to the Company.* Nothing in this Indenture or in the Notes shall prohibit the sale or other transfer of any Notes (including beneficial interests in Global Notes) to the Company or any of its Subsidiaries, which Notes shall thereupon be cancelled in accordance with Section 2.11.

### **Section 2.13. CUSIP Numbers**

The Company in issuing the Notes may use “CUSIP” numbers (if then generally in use), and, if so, the Trustee shall use “CUSIP” numbers in notices of redemption or purchase as a convenience to Holders; provided that any such notice may state that no representation is made as to the correctness of such numbers either as printed on the Notes or as contained in any notice of a redemption or purchase and that reliance may be placed only on the other identification numbers printed on the Notes, and any such redemption or purchase shall not be affected by any defect in or omission of such numbers. The Company will promptly notify the Trustee of any change in the “CUSIP” numbers.

### **Section 2.14. Defaulted Interest**

If the Company defaults in a payment of interest on the Notes, it shall pay the defaulted interest in any lawful manner plus, to the extent lawful, interest payable on the defaulted interest, to the Persons who are Holders on a subsequent special record date, in each case at the rate provided in the Notes and in Section 4.01 hereof. The Company shall notify the Trustee in writing of the amount of defaulted interest proposed to be paid on each Note and the date of the proposed payment. The Company shall fix or cause to be fixed each such special record date and payment date, *provided* that no such special record date shall be less than 10 days prior to the related payment date for such defaulted interest. At least 15 days before the special record date, the Company (or, upon the written request of the Company, the Trustee in the name and at the expense of the Company) shall mail or cause to be mailed to Holders a notice that states the special record date, the related payment date and the amount of such interest to be paid.

## **ARTICLE 3.**

### **REDEMPTION AND PREPAYMENT**

#### **Section 3.01. Notices to Trustee**

If the Company elects to redeem Notes pursuant to the provisional or optional redemption provisions of Section 3.07 hereof, it shall furnish to the Trustee, at least 20 days but not more than 60 days before a redemption date, an Officers’ Certificate setting forth (i) the clause of this Indenture pursuant to which the redemption shall occur, (ii) the redemption date, (iii) the principal amount of Notes to be redeemed and (iv) the redemption price.

#### **Section 3.02. Selection of Notes to Be Redeemed**

If less than all of the Notes are to be redeemed or purchased in an offer to purchase at any time, the Trustee shall select the Notes to be redeemed or purchased among the Holders of the Notes in compliance with the requirements of the principal national securities exchange, if any, on which the Notes are listed or, if the Notes are not so listed, on a *pro rata* basis, by lot or in accordance with any other method the Trustee considers fair and appropriate. In the event of partial redemption by lot, the particular Notes to be redeemed shall be selected, unless otherwise provided herein, not less than 20 nor more than 60 days prior to the redemption date by the Trustee from the outstanding Notes not previously called for redemption.

The Trustee shall promptly notify the Company in writing of the Notes selected for redemption and, in the case of any Note selected for partial redemption, the principal amount thereof to be redeemed. Notes and portions of Notes selected shall be in amounts of \$1,000 or whole multiples of \$1,000; except that if all of the Notes of a Holder are to be redeemed, the entire outstanding amount of Notes held by such Holder, even if not a multiple of \$1,000, shall be redeemed. Except as provided in the preceding sentence, provisions of this Indenture that apply to Notes called for redemption also apply to portions of Notes called for redemption.

#### **Section 3.03. Notice of Redemption**

At least 20 days but not more than 60 days before a redemption date, the Company shall mail or cause to be mailed, by first class mail, a notice of redemption to each Holder whose Notes are to be redeemed at its registered address.

The notice shall identify the Notes to be redeemed and shall state:

(a) the redemption date;

(b) the redemption price;

(c) the then current Conversion Price;

- (d) if any Note is being redeemed in part, the portion of the principal amount of such Note to be redeemed and that, after the redemption date upon surrender of such Note, a new Note or Notes in principal amount equal to the unredeemed portion shall be issued upon cancellation of the original Note;
- (e) the name and address of the Paying Agent and Conversion Agent;
- (f) that Notes called for redemption must be surrendered to the Paying Agent to collect the redemption price;
- (g) that Notes called for redemption must be presented and surrendered to a Paying Agent to collect the Redemption Price;
- (h) that Holders who wish to convert Notes must surrender such Notes for conversion no later than the close of business on the Business Day immediately preceding the Redemption Date and must satisfy the other requirements in paragraph 8 of the Notes;
- (i) that, unless the Company defaults in making such redemption payment, interest on Notes called for redemption ceases to accrue on and after the redemption date;
- (j) the paragraph of the Notes and/or Section of this Indenture pursuant to which the Notes called for redemption are being redeemed; and
- (k) that no representation is made as to the correctness or accuracy of the CUSIP number, if any, listed in such notice or printed on the Notes.

At the Company's request, the Trustee shall give the notice of redemption in the Company's name and at its expense; *provided, however*, that the Company shall have delivered to the Trustee, at least 40 days prior to the redemption date, an Officers' Certificate requesting that the Trustee give such notice and setting forth the information to be stated in such notice as provided in the preceding paragraph.

#### **Section 3.04. Effect of Notice of Redemption**

Once notice of redemption is mailed in accordance with Section 3.03 hereof, Notes called for redemption become irrevocably due and payable on the redemption date at the redemption price. A notice of redemption may not be conditional.

#### **Section 3.05. Deposit of Redemption Price**

One Business Day prior to the redemption date, the Company shall deposit with the Trustee or with the Paying Agent money sufficient to pay the redemption price of and accrued interest on all Notes to be redeemed on that date. The Trustee or the Paying Agent shall promptly return to the Company any money deposited with the Trustee or the Paying Agent by the Company in excess of the amounts necessary to pay the redemption price of, and accrued interest on, all Notes to be redeemed.

If the Company complies with the provisions of the preceding paragraph, on and after the redemption date, interest shall cease to accrue on the Notes or the portions of Notes called for redemption. If a Note is redeemed on or after an interest record date but on or prior to the related interest payment date, then any accrued and unpaid interest shall be paid to the Person in whose name such Note was registered at the close of business on such record date. If any Note called for redemption shall not be so paid upon surrender for redemption because of the failure of the Company to comply with the preceding paragraph, interest shall be paid on the unpaid principal, from the redemption date until such principal is paid, and to the extent lawful on any interest not paid on such unpaid principal, in each case at the rate provided in the Notes and in Section 6.01 hereof.

#### **Section 3.06. Notes Redeemed in Part**

Upon surrender of a Note that is redeemed in part, the Company shall issue and, upon the Company's written request, the Trustee shall authenticate for the Holder at the expense of the Company a new Note equal in principal amount to the unredeemed portion of the Note surrendered.

#### **Section 3.07. Provisional Redemption**

(a) The Notes may be redeemed at the election of the Company, as a whole or in part from time to time, at any time (a "Provisional Redemption"), upon at least 20 and not more than 60 days' notice by mail to the Holders of the Notes (a "Provisional Redemption Notice" ; ) at a redemption price equal to \$1,000 per \$1,000 principal amount of the Notes redeemed plus accrued and unpaid interest, if any (such amount, together with the Early Call Premium described below, the "Provisional Redemption Price"), to but excluding the date of redemption (the "Provisional Redemption Date") if the Closing Sale Price of the Common Stock has exceeded 150% of the Conversion Price for at least 20 Trading Days within a period of any 30 consecutive Trading Days ending on the Trading Day prior to the date of mailing of the notice of Provisional Redemption (the "Provisional Redemption Notice Date").

- (b) Except as set forth in clause (a) of this Section 3.07, the Company shall not have the option to redeem the Notes pursuant to this Section 3.07.
- (c) Any redemption pursuant to this Section 3.07 shall be made pursuant to the provisions of Section 3.01 through 3.06 hereof.

#### **Section 3.08. Early Call Premium**

If the Company delivers a Provisional Redemption Notice pursuant to Section 3.07(a) on or prior to May 15, 2007, the Company shall make an additional payment, at its option, in cash or Common Stock or a combination of cash and Common Stock (the "Early Call Premium") with respect to the Notes called for redemption to holders on the Provisional Redemption Notice Date in an amount equal to \$150.00 per \$1,000 principal amount of the Notes, less the amount of any interest actually paid (including, if the Provisional Redemption Date occurs after a record date but before an interest payment date, any interest paid or to be paid in connection with such interest payment date) on such Notes prior to the Provisional Redemption Date. Payments made in Common Stock will be valued at 95% of the average closing sales prices of Common Stock for the five Trading Days ending on and including the third day prior to the Provisional Redemption Date. The Company shall pay the Early Call Premium on all Notes called for Provisional Redemption, including those Notes converted into Common Stock between the Provisional Redemption Notice Date and the Provisional Redemption Date.

#### **Section 3.09. Mandatory Redemption**

The Company shall not be required to make mandatory redemption payments with respect to the Notes.

### **ARTICLE 4.**

#### **CONVERSION**

##### **Section 4.01. Conversion Privilege**

A Holder of a Note may convert it into fully paid and nonassessable shares of Common Stock at any time prior to maturity at the Conversion Price then in effect, except that, with respect to any Note called for redemption or submitted or presented for purchase pursuant to Section 6.08, such conversion right shall terminate at the close of business on the Business Day immediately preceding the Redemption Date or Change of Control Payment Date, as the case may be (unless the Company shall default in making the redemption payment or Change of Control Payment when it becomes due, in which case the conversion right shall terminate on the date such default is cured and such Note is

redeemed or purchased, as the case may be). The number of shares of Common Stock issuable upon conversion of a Note is determined by dividing the principal amount of such Note by the conversion price in effect on the Conversion Date (the “*Conversion Price*”).

The initial Conversion Price is stated in Section 8 of the Notes and is subject to adjustment as provided in this Article 4.

A Holder may convert a portion of a Note equal to any integral multiple of \$1,000. Provisions of this Indenture that apply to conversion of all of a Note also apply to conversion of a portion of it.

A Note in respect of which a Holder has delivered a Change of Control Payment Notice pursuant to Section 6.08 exercising the option of such Holder to require the Company to purchase such Note may be converted only if such Change of Control Payment Notice is withdrawn by a written notice of withdrawal delivered to a Paying Agent prior to the close of business on the Business Day immediately preceding the Change of Control Payment Date in accordance with Section 6.08.

A Holder of Notes is not entitled to any rights of a holder of Common Stock until such Holder has converted its Notes to Common Stock, and only to the extent such Notes are deemed to have been converted into Common Stock pursuant to this Article 4.

#### **Section 4.02. Conversion Procedure**

To convert a Note, a Holder must satisfy the requirements in Section 8 of the Notes. The date on which the Holder satisfies all of those requirements is the conversion date (the “*Conversion Date*”). As soon as practicable after the Conversion Date, the Company shall deliver to the Holder through the Conversion Agent a certificate for the number of whole shares of Common Stock issuable upon the conversion and a check for any fractional share determined pursuant to Section 4.03 hereof. The Person in whose name the certificate is registered shall become the stockholder of record on the Conversion Date and, as of such date, such Person’s rights as a Holder shall cease; *provided, however*, that no surrender of a Note on any date when the stock transfer books of the Company shall be closed shall be effective to constitute the Person entitled to receive the shares of Common Stock upon such conversion as the stockholder of record of such shares of Common Stock on such date, but such surrender shall be effective to constitute the Person entitled to receive such shares of Common Stock as the stockholder of record thereof for all purposes at the close of business on the next succeeding day on which such stock transfer books are open; *provided further, however*, that such conversion shall be at the Conversion Price in effect on the date that such Note shall have been surrendered for conversion, as if the stock transfer books of the Company had not been closed.

No payment or other adjustment shall be made for accrued interest or dividends or distributions on any Common Stock issued upon conversion of the Notes. If any Notes are converted during any period after any record date for the payment of an installment of interest but before the next interest payment date, interest for such notes will be paid on the next interest payment date, notwithstanding such conversion, to the Holders of such Notes. Any Notes that are, however, delivered to the Company for conversion after any record date but before the next interest payment date must, except as described in the next sentence, be accompanied by a payment equal to the interest payable on such interest payment date on the principal amount of Notes being converted. The payment to the Company described in the preceding sentence shall not be required if, during that period between a record date and the next interest payment date, a conversion occurs on or after the date that the Company has issued a redemption notice or Change of Control Offer and prior to the date of redemption stated in such notice or the Change of Control Payment Date, as the case may be. No fractional shares will be issued upon conversion, but a cash adjustment will be made for any fractional shares.

If a Holder converts more than one Note at the same time, the number of whole shares of Common Stock issuable upon the conversion shall be based on the total principal amount of Notes converted.

Upon surrender of a Note that is converted in part, the Trustee shall authenticate for the Holder a new Note equal in principal amount to the unconverted portion of the Note surrendered.

#### **Section 4.03. Fractional Shares**

The Company will not issue fractional shares of Common Stock upon conversion of a Note. In lieu thereof, the Company will pay an amount in cash based upon the Closing Sale Price of the Common Stock on the last trading day prior to the date of conversion.

#### **Section 4.04. Taxes on Conversion**

The issuance of certificates for shares of Common Stock upon the conversion of any Note shall be made without charge to the converting Holder for such certificates or for any tax in respect of the issuance of such certificates, and such certificates shall be issued in the respective names of, or in such names as may be directed by, the Holder or Holders of the converted Note; *provided, however*, that in the event that certificates for shares of Common Stock are to be issued in a name other than the name of the Holder of the Note converted, such Note, when surrendered for conversion, shall be accompanied by an instrument of transfer, in form satisfactory to the Company, duly executed by the registered holder thereof or his duly authorized attorney; and *provided further, however*, that the Company shall not be required to pay any tax which may be payable in respect of any transfer involved in the issuance and delivery of any such certificates in a name other than that of the Holder of the converted Note, and the Company shall not be required to issue or deliver such certificates unless or until the Person or Persons requesting the issuance thereof shall have paid to the Company the amount of such tax or shall have established to the satisfaction of the Company that such tax has been paid or is not applicable.

#### **Section 4.05. Company to Provide Stock**

The Company shall at all times reserve and keep available, free from preemptive rights, out of its authorized but unissued Common Stock, solely for the purpose of issuance upon conversion of Notes as herein provided, a sufficient number of shares of Common Stock to permit the conversion of all outstanding Notes for shares of Common Stock. All shares of Common Stock which may be issued upon conversion of the Notes shall be duly authorized, validly issued, fully paid and nonassessable and free of preemptive rights and free of any lien or adverse claim when so issued.

The Company will endeavor promptly to comply with all federal and state securities laws regulating the offer and delivery of shares of Common Stock upon conversion of Notes, if any, and will list or cause to have quoted such shares of Common Stock on each national securities exchange or on The Nasdaq National Market or other over-the-counter market or such other market on which the Common Stock is then listed or quoted; *provided, however*, that if rules of such automated quotation system or exchange permit the Company to defer the listing of such Common Stock until the first conversion of the Notes into Common Stock in accordance with the provisions of this Indenture, the Company covenants to list such Common Stock issuable upon conversion of the Notes in accordance with the requirements of such automated quotation system or exchange at such time.

#### **Section 4.06. Adjustment of Conversion Price**

The Conversion Price shall be subject to adjustment from time to time as follows:

(a) *Stock split and combinations.* In case the Company, at any time or from time to time after the issuance date of the Notes (a) subdivides or splits the outstanding shares of its Common Stock, (b) combines or reclassifies the outstanding shares of its Common Stock into a smaller number of shares or (c) issues by reclassification of the shares of its Common Stock any shares of its capital stock, then the Conversion Price in effect immediately prior to that event or the record date for that event, whichever is earlier, will be adjusted so that the holder of any Notes thereafter surrendered for conversion will be entitled to receive the number of shares of the Company’s Common Stock or of its other securities which the Holder would have owned or have been entitled to receive after the occurrence of any of the events described above, had those Notes been surrendered for conversion immediately before the occurrence of that event or the record date for that event, whichever is earlier.

(b) *Stock Dividends in Common Stock.* In case the Company, at any time or from time to time after the issuance date of the Notes, pays a dividend or makes a distribution in shares of its Common Stock on any class of its capital stock other than dividends or distributions of shares of Common Stock or other securities with respect to



which adjustments are provided in paragraph (a) above or with respect to payments of interest or dividend obligations with respect to a particular series of capital stock in accordance with the terms of such capital stock, the Conversion Price will be adjusted so that the Holder of each Note will be entitled to receive, upon conversion of that Note, the number of shares of the Company's Common Stock determined by multiplying (a) the Conversion Price by (b) a fraction, the numerator of which will be the number of shares of Common Stock outstanding and the denominator of which will be the sum of that number of shares and the total number of shares issued in that dividend or distribution;

(c) *Issuance of rights or warrants.* In case the Company issues to all holders of its Common Stock rights or warrants entitling those holders for a period of not more than 60 days to subscribe for or purchase its Common Stock or securities convertible into its Common Stock at a price per share or conversion price per share less than the Current Market Price, the Conversion Price in effect immediately before the close of business on the record date fixed for determination of shareholders entitled to receive those rights or warrants will be reduced by multiplying the Conversion Price by a fraction, the numerator of which is the sum of the number of shares of the Company's Common Stock outstanding at the close of business on that record date and the number of shares of Common Stock that the aggregate offering price of the total number of shares of the Company's Common Stock so offered for subscription or purchase would purchase at the Current Market Price and the denominator of which is the sum of the number of shares of Common Stock outstanding at the close of business on that record date and the number of additional shares of the Company's Common Stock so offered for subscription or purchase. For purposes of this paragraph (c), the issuance of rights or warrants to subscribe for or purchase securities convertible into shares of the Company's Common Stock will be deemed to be the issuance of rights or warrants to purchase shares of the Company's Common Stock into which those securities are convertible at an aggregate offering price equal to the sum of the aggregate offering price of those securities and the minimum aggregate amount, if any, payable upon conversion of those securities into shares of the Company's Common Stock. This adjustment will be made successively whenever any such event occurs.

(d) *Distribution of indebtedness, securities or assets.* In case the Company shall distribute to all or substantially all holders of its Common Stock any shares of capital stock of the Company (other than Common Stock), evidences of indebtedness or other non-cash assets (including securities of any person other than the Company but excluding (1) dividends or distributions paid exclusively in cash or (2) dividends or distributions referred to in subsection (b) of this Section 4.06), or shall distribute to all or substantially all holders of its Common Stock rights or warrants to subscribe for or purchase any of its securities (excluding those rights and warrants referred to in subsection (c) of this Section 4.06 and also excluding the distribution of rights to all holders of Common Stock pursuant to the adoption of a stockholders rights plan or the detachment of such rights under the terms of such stockholder rights plan), then in each such case the Conversion Price shall be adjusted so that the same shall equal the price determined by multiplying the current Conversion Price by a fraction of which the numerator shall be the current market price per share (as defined in subsection (g) of this Section 4.06) of the Common Stock on the record date mentioned below less the fair market value on such record date (as determined by the Board of Directors, whose determination shall be conclusive evidence of such fair market value and which shall be evidenced by an Officers' Certificate delivered to the Trustee) of the portion of the capital stock, evidences of indebtedness or other non-cash assets so distributed or of such rights or warrants applicable to one share of Common Stock (determined on the basis of the number of shares of Common Stock outstanding on the record date), and of which the denominator shall be the current market price per share (as defined in subsection (g) of this Section 4.06) of the Common Stock on such record date. Such adjustment shall be made successively whenever any such distribution is made and shall become effective immediately after the record date for the determination of shareholders entitled to receive such distribution.

(e) In case the Company shall, by dividend or otherwise, at any time distribute (a "*Triggering Distribution*") to all or substantially all holders of its Common Stock cash in an aggregate amount that, together with the aggregate amount of (A) any cash and the fair market value (as determined by the Board of Directors, whose determination shall be conclusive evidence thereof and which shall be evidenced by an Officers' Certificate delivered to the Trustee) of any other consideration payable in respect of any tender offer by the Company or a Subsidiary of the Company for Common Stock consummated within the 12 months preceding the date of payment of the Triggering Distribution and in respect of which no Conversion Price adjustment pursuant to this Section 4.06 has been made and (B) all other cash distributions to all or substantially all holders of its Common Stock made within the 12 months preceding the date of payment of the Triggering Distribution and in respect of which no Conversion Price adjustment pursuant to this Section 4.06 has been made, exceeds an amount equal to 10.0% of the product of the current market price per share of Common Stock (as determined in accordance with subsection (g) of this Section 4.06) on the Business Day (the "*Determination Date*";) immediately preceding the day on which such Triggering Distribution is declared by the Company multiplied by the number of shares of Common Stock outstanding on the Determination Date (excluding shares held in the treasury of the Company), the Conversion Price shall be reduced so that the same shall equal the price determined by multiplying such Conversion Price in effect immediately prior to the Determination Date by a fraction of which the numerator shall be the current market price per share of the Common Stock (as determined in accordance with subsection (g) of this Section 4.06) on the Determination Date less the sum of the aggregate amount of cash and the aggregate fair market value (determined as aforesaid in this Section 4.06(d)) of any such other consideration so distributed, paid or payable within such 12 months (including, without limitation, the Triggering Distribution) applicable to one share of Common Stock (determined on the basis of the number of shares of Common Stock outstanding on the Determination Date) and the denominator shall be such current market price per share of the Common Stock (as determined in accordance with subsection (g) of this Section 4.06) on the Determination Date, such reduction to become effective immediately prior to the opening of business on the day following the date on which the Triggering Distribution is paid.

(f) In case any tender offer made by the Company or any of its Subsidiaries for Common Stock shall expire and such tender offer (as amended upon the expiration thereof) shall involve the payment of aggregate consideration in an amount (determined as the sum of the aggregate amount of cash consideration and the aggregate fair market value (as determined by the Board of Directors, whose determination shall be conclusive evidence thereof and which shall be evidenced by an Officers' Certificate delivered to the Trustee thereof) of any other consideration) that, together with the aggregate amount of (A) any cash and the fair market value (as determined by the Board of Directors, whose determination shall be conclusive evidence thereof and which shall be evidenced by an Officers' Certificate delivered to the Trustee) of any other consideration payable in respect of any other tender offers by the Company or any Subsidiary of the Company for Common Stock consummated within the 12 months preceding the date of the Expiration Date (as defined below) and in respect of which no Conversion Price adjustment pursuant to this Section 4.06 has been made and (B) all cash distributions to all or substantially all holders of its Common Stock made within the 12 months preceding the Expiration Date and in respect of which no Conversion Price adjustment pursuant to this Section 4.06 has been made, exceeds an amount equal to 10.0% of the product of the current market price per share of Common Stock (as determined in accordance with subsection (g) of this Section 4.06) as of the last date (the "*Expiration Date*") tenders could have been made pursuant to such tender offer (as it may be amended) (the last time at which such tenders could have been made on the Expiration Date is hereinafter sometimes called the "*Expiration Time*") multiplied by the number of shares of Common Stock outstanding (including tendered shares but excluding any shares held in the treasury of the Company) at the Expiration Time, then, immediately prior to the opening of business on the day after the Expiration Date, the Conversion Price shall be reduced so that the same shall equal the price determined by multiplying the Conversion Price in effect immediately prior to close of business on the Expiration Date by a fraction of which the numerator shall be the product of the number of shares of Common Stock outstanding (including tendered shares but excluding any shares held in the treasury of the Company) at the Expiration Time multiplied by the current market price per share of the Common Stock (as determined in accordance with subsection (g) of this Section 4.06) on the Trading Day next succeeding the Expiration Date and the denominator shall be the sum of (x) the aggregate consideration (determined as aforesaid) payable to stockholders based on the acceptance (up to any maximum specified in the terms of the tender offer) of all shares validly tendered and not withdrawn as of the Expiration Time (the shares deemed so accepted, up to any such maximum, being referred to as the "*Purchased Shares*") and (y) the product of the number of shares of Common Stock outstanding (less any Purchased Shares and excluding any shares held in the treasury of the Company) at the Expiration Time and the current market price per share of Common Stock (as determined in accordance with subsection (g) of this Section 4.06) on the Trading Day next succeeding the Expiration Date, such reduction to become effective immediately prior to the opening of business on the day following the Expiration Date. In the event that the Company is obligated to purchase shares pursuant to any such tender offer, but the Company is permanently prevented by applicable law from effecting any or all such purchases or any or all such purchases are rescinded, the Conversion Price shall again be adjusted to be the Conversion Price which would have been in effect based upon the number of shares actually purchased. If the application of this Section 4.06(f) to any tender offer would result in an increase in the Conversion Price, no adjustment shall be made for such tender offer under this Section 4.06(f).

For purposes of this Section 4.06(e), the term "tender offer" shall mean and include both tender offers and exchange offers, all references to "purchases" of shares in tender offers (and all similar references) shall mean and include both the purchase of shares in tender offers and the acquisition of shares pursuant to exchange offers, and all references to "tendered shares" (and all similar references) shall mean and include shares tendered in both tender offers and exchange offers.

(g) For the purpose of any computation under subsections (b), (c), (d) and (e) of this Section 4.06, the current market price per share of Common Stock on any date shall be deemed to be the average of the daily Closing Sale Prices for the 30 consecutive Trading Days commencing 45 Trading Days before (i) the Determination Date or the Expiration Date, as the case may be, with respect to distributions or tender offers under subsections (d) and (e) of this Section 4.06 or (ii) the record date with respect to distributions, issuances or other events requiring such computation under subsection (c), (d) or (e) of this Section 4.06. If no such prices are available, the current market price per share shall be the fair value of share of Common Stock as determined by the Board of Directors (which shall be evidenced by an Officers' Certificate delivered to the Trustee).

(h) If any distribution in respect of which an adjustment to the Conversion Price is required to be made as of the record date or Determination Date or Expiration Date therefor is not thereafter made or paid by the Company for any reason, the Conversion Price shall be readjusted to the Conversion Price which would then be in effect if such record date had not been fixed or such effective date or Determination Date or Expiration Date had not occurred.

#### ***Section 4.07. No Adjustment***

No adjustment in the Conversion Price shall be required until cumulative adjustments amount to 1% or more of the Conversion Price as last adjusted; *provided, however*, that any adjustments which by reason of this Section 4.07 are not required to be made shall be carried forward and taken into account in any subsequent adjustment. All calculations under this Article 4 shall be made to the nearest cent or to the nearest one-hundredth of a share, as the case may be. No adjustment need be made for rights to purchase Common Stock pursuant to a Company plan for reinvestment of dividends or interest. No adjustment need be made for a change in the par value or no par value of the Common Stock.

#### ***Section 4.08. Other Adjustments***

(a) In the event that, as a result of an adjustment made pursuant to Section 4.06 hereof, the Holder of any Note thereafter surrendered for conversion shall become entitled to receive any shares of Capital Stock of the Company other than shares of its Common Stock, thereafter the Conversion Price of such other shares so receivable upon conversion of any Note 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 Common Stock contained in this Article 4.

(b) In the event that shares of Common Stock are not delivered after the expiration of any of the rights or warrants referred to in Section 4.06(b) and Section 4.06(c) hereof, the Conversion Price shall be readjusted to the Conversion Price which would otherwise be in effect had the adjustment made upon the issuance of such rights or warrants been made on the basis of delivery of only the number of shares of Common Stock actually delivered.

#### ***Section 4.09. Adjustments for Tax Purposes***

The Company may make such reductions in the Conversion Price, in addition to those required by Section 4.06 hereof, as it determines in its discretion to be advisable in order that any stock dividend, subdivision of shares, distribution or rights to purchase stock or securities or distribution of securities convertible into or exchangeable for stock made by the Company to its stockholders will not be taxable to the recipients thereof.

#### ***Section 4.10. Notice of Adjustment***

Whenever the Conversion Price is adjusted, the Company shall promptly mail to Holders at the addresses appearing on the Registrar's books a notice of the adjustment and file with the Trustee an Officers' Certificate briefly stating the facts requiring the adjustment and the manner of computing it. The certificate shall be conclusive evidence of the correctness of such adjustment. Unless and until a Trust Officer of the Trustee shall receive written notice of an adjustment of the Conversion Price, the Trustee may assume without inquiry that the Conversion Price has not been adjusted and that the last Conversion Price of which it has knowledge remains in effect.

#### ***Section 4.11. Notice of Certain Transactions***

In the event that:

- (1) the Company takes any action which would require an adjustment in the Conversion Price;
- (2) the Company takes any action that would require a supplemental indenture pursuant to Section 4.12; or
- (3) there is a dissolution or liquidation of the Company;

the Company shall mail to Holders at the addresses appearing on the Registrar's books and the Trustee a notice stating the proposed record or effective date, as the case may be, to permit a Holder of a Note to convert such Note into shares of Common Stock prior to the record date for or the effective date of the transaction in order to receive the rights, warrants, securities or assets which a holder of shares of Common Stock on that date may receive. The Company shall mail the notice at least 15 days before such date; however, failure to mail such notice or any defect therein shall not affect the validity of any transaction referred to in clause (1), (2) or (3) of this Section 4.11.

#### ***Section 4.12. Effect of Reclassifications, Consolidations, Mergers or Sales on Conversion Privilege***

If any of the following shall occur, namely: (i) any reclassification or change of outstanding shares of Common Stock issuable upon conversion of Notes (other than a change in par value, or from par value to no par value, or from no par value to par value, or as a result of a subdivision or combination or as a result of a reincorporation of the Company in another jurisdiction), (ii) any consolidation or merger to which the Company is a party other than a merger in which the Company is the continuing corporation and which does not result in any reclassification of, or change (other than a change in name, or par value, or from par value to no par value, or from no par value to par value or as a result of a subdivision or combination) in, outstanding shares of Common Stock or (iii) any sale or conveyance of a ll or substantially all of the property or business of the Company as an entirety, then the Company, or such successor or purchasing corporation, as the case may be, shall, as a condition precedent to such reclassification, change, consolidation, merger, sale or conveyance, execute and deliver to the Trustee a supplemental indenture in form reasonably satisfactory to the Trustee providing that the Holder of each Note then outstanding shall have the right to convert such Note into the kind and amount of shares of stock and other securities and property (including cash) receivable upon such reclassification, change, consolidation, merger, sale or conveyance by a Holder of the number of shares of Common Stock deliverable upon conversion of such Note immediately prior to such reclassification, change, consolidation, merger, sale or conveyance. In the event that the shares of Common Stock are exchanged or substituted for other securities in connection with any such reclassification, change, consolidation, merger, sale or conveyance, such supplemental indenture shall provide for adjustments of the Conversion Price which shall be as nearly equivalent as may be practicable to the adjustments of the Conversion Price provided for in this Article 4. If, in the case of any such consolidation, merger, sale or conveyance, the stock or other securities and property (including cash) receivable thereupon by a Holder of Common Stock includes shares of stock or other securities and property of a corporation other than the successor or purchasing corporation, as the case may be, in such consolidation, merger, sale or conveyance, then such supplemental indenture shall also be executed by such other corporation and shall contain such additional provisions to protect the interests of the Holders of the Notes as the Board of Directors of the Company shall reasonably consider necessary by reason of the foregoing. The provision of this Section 4.12 shall similarly apply to successive consolidations, mergers, sales or conveyances.

In the event the Company shall execute a supplemental indenture pursuant to this Section 4.12, the Company shall promptly file with the Trustee an Officers' Certificate briefly stating the reasons therefor, the kind or amount of shares of stock or securities or property (including cash) receivable by Holders of the Notes upon the conversion of their Notes after any such reclassification, change, consolidation, merger, sale or conveyance and any adjustment to be made with respect thereto.

#### ***Section 4.13. Trustee's Disclaimer***

The Trustee has no duty to determine when an adjustment under this Article 4 should be made, how it should be made or what such adjustment should be, but may accept as conclusive evidence of the correctness of any such adjustment, and shall be protected in relying upon, the Officers' Certificate with respect thereto which the Company is obligated to file with the Trustee pursuant to Section 4.10 hereof. The Trustee makes no representation as to the validity or value of any securities or assets issued upon conversion of Notes, and the Trustee shall not be responsible for the Company's failure to comply with any provisions of this Article 4.



The Trustee shall not be under any responsibility to determine the correctness of any provisions contained in any supplemental indenture executed pursuant to Section 4.12, but may accept as conclusive evidence of the correctness thereof, and shall be protected in relying upon, the Officers' Certificate with respect thereto which the Company is obligated to file with the Trustee pursuant to Section 4.12 hereof.

#### **Section 4.14. Voluntary Reduction**

The Company from time to time may reduce the Conversion Price by any amount for any period of time if the period is at least 20 days and if the reduction is irrevocable during the period if the Board of Directors determines that such reduction would be in the best interest of the Company and the Company provides 15 days prior notice of any reduction in the Conversion Price; provided, however, that in no event may the Company reduce the Conversion Price to be less than the par value of a share of Common Stock.

### **ARTICLE 5.**

#### **SUBORDINATION**

##### **Section 5.01. Agreement to Subordinate**

(a) The Company agrees, and each Holder by accepting a Note agrees, that the Indebtedness evidenced by the Notes (including the principal of, premium, if any, and interest on all the Notes and the redemption price and Early Call Premium, if any, with respect to any Notes being called for redemption and the Change of Control Payment with respect to all Notes subject to purchase pursuant to Section 6.08 hereof) is subordinated in right of payment, to the extent and in the manner provided in this Article 5, to the prior payment in full of all Senior Indebtedness (whether outstanding on the date hereof or hereafter created, incurred, assumed or guaranteed), and that the subordination is for the benefit of the holders of Senior Indebtedness. No provision of this Section 5 shall prevent the occurrence of any Default or Event of Default.

(b) The Notes issued under this Indenture shall be "Senior Indebtedness" (as such term is defined in the Existing Notes Indenture) for purposes of the Existing Notes and the Existing Notes Indenture, and in furtherance thereof, the Company agrees that the Notes shall be senior to the Existing Notes, and that nothing contained in this Indenture or in the definition of Senior Indebtedness under this Indenture is meant or shall be construed to provide that the Notes issued under this Indenture are not senior to the Existing Notes.

##### **Section 5.02. Liquidation; Dissolution; Bankruptcy**

Upon any distribution to creditors of the Company in a liquidation or dissolution of the Company or in a bankruptcy, reorganization, insolvency, receivership or similar proceeding relating to the Company or its property, in an assignment for the benefit of creditors or any marshaling of the Company's assets and liabilities:

(i) holders of Senior Indebtedness shall be entitled to receive payment in full of all Obligations due in respect of such Senior Indebtedness (including interest after the commencement of any such proceeding at the rate specified in the applicable Senior Indebtedness) before Holders of the Notes shall be entitled to receive any payment with respect to the Notes (except that Holders may receive Permitted Junior Securities); and

(ii) until all Obligations with respect to Senior Indebtedness (as provided in clause (i) above) are paid in full, any distribution to which Holders would be entitled but for this Article 5 shall be made to holders of Senior Indebtedness (except that Holders of Notes may receive Permitted Junior Securities), as their interests may appear.

##### **Section 5.03. Default on Designated Senior Indebtedness**

(a) The Company may not make any payment or distribution to the Trustee or any Holder in respect of Obligations with respect to the Notes and may not acquire from the Trustee or any Holder any Notes for cash or property (other than Permitted Junior Securities) until all principal and other Obligations with respect to the Senior Indebtedness have been paid in full if:

(i) a default in the payment of any principal or other Obligations with respect to Designated Senior Indebtedness occurs and is continuing beyond any applicable grace period in the agreement, indenture or other document governing such Designated Senior Indebtedness; or

(ii) a default, other than a payment default, on Designated Senior Indebtedness occurs and is continuing that then permits holders of the Designated Senior Indebtedness to accelerate its maturity and the Trustee receives a notice of the default (a "Payment Blockage Notice") from a Person who may give it pursuant to Section 5.12 hereof. If the Trustee receives any such Payment Blockage Notice, no subsequent Payment Blockage Notice shall be effective for purposes of this Section unless and until (A) at least 360 days shall have elapsed since the issuance of the immediately prior Payment Blockage Notice and (B) all scheduled payments of principal, premium, if any, and interest on the Notes that have come due have been paid in full in cash. No nonpayment default that existed or was continuing on the date of delivery of any Payment Blockage Notice to the Trustee shall be, or be made, the basis for a subsequent Payment Blockage Notice unless such default shall have been waived for a period of not less than 180 days.

(b) The Company may and shall resume payments on and distributions in respect of the Notes and may acquire them upon the earlier of:

(i) the date upon which the Trustee receives notice from the Company that the default is cured or waived or ceases to exist, or

(ii) in the case of a default referred to in clause (ii) of Section 5.03(a) hereof, 179 days pass after the Payment Blockage Notice is received if the maturity of such Designated Senior Indebtedness has not been accelerated, if this Article 5 otherwise permits the payment, distribution or acquisition at the time of such payment or acquisition.

##### **Section 5.04. Acceleration of Notes**

If payment of the Notes is accelerated because of an Event of Default, the Company shall promptly notify holders of Senior Indebtedness of the acceleration.

##### **Section 5.05. When Distribution Must Be Paid Over**

In the event that the Trustee or any Holder receives any payment of any Obligations or distribution of assets of the Company of any kind or character (other than Permitted Junior Securities pursuant to Section 5 hereof), whether in cash, property or securities (including, without limitation, by way of setoff or otherwise) with respect to the Notes at a time when the Trustee or such Holder, as applicable, has actual knowledge that such payment is prohibited by Section 5.03 hereof, such payment shall be held by the Trustee or such Holder, in trust for the benefit of, and shall be paid forthwith over and delivered, upon written request, to, the holders of Senior Indebtedness as their interests may appear or their Representative under the indenture or other agreement (if any) pursuant to which Senior Indebtedness may have been issued, as their respective interests may appear, for application to the payment of all Obligations with respect to Senior Indebtedness remaining unpaid to the extent necessary to pay such Obligations in full in accordance with their terms, after giving effect to any concurrent payment or distribution to or for the holders of Senior Indebtedness.

With respect to the holders of Senior Indebtedness, the Trustee undertakes to perform only such obligations on the part of the Trustee as are specifically set forth in this Article 5, and no implied covenants or obligations with respect to the holders of Senior Indebtedness shall be read into this Indenture against the Trustee. The Trustee shall not be deemed to owe any fiduciary duty to the holders of Senior Indebtedness, and shall not be liable to any such holders if the Trustee shall pay over or distribute to or on behalf of

Holders or the Company or any other Person money or assets to which any holders of Senior Indebtedness shall be entitled by virtue of this Article 5, except if such payment is made as a result of the willful misconduct or gross negligence of the Trustee.

#### **Section 5.06. Notice by Company**

The Company shall promptly notify the Trustee and the Paying Agent of any facts known to the Company that would cause a payment of any Obligations with respect to the Notes to violate this Article 5, but failure to give such notice shall not affect the subordination of the Notes to the Senior Indebtedness as provided in this Article 5.

#### **Section 5.07. Subrogation**

After all Senior Indebtedness is paid in full in cash or other payment satisfactory to the holders of the Senior Indebtedness and until the Notes are paid in full, Holders of Notes shall be subrogated (equally and ratably with all other Indebtedness *pari passu* with the Notes and entitled to similar rights of subrogation) to the rights of holders of Senior Indebtedness to receive payments or distributions applicable to Senior Indebtedness to the extent that payments or distributions otherwise payable to the Holders of Notes have been applied to the payment of Senior Indebtedness. A distribution made under this Article 5 to holders of Senior Indebtedness that otherwise would have been made to Holders of Notes (whether by the Company, any Holder, the Trustee or otherwise) is not, as between the Company and Holders, a payment by the Company on the Notes.

#### **Section 5.08. Relative Rights**

This Article 5 defines the relative rights of Holders of Notes and holders of Senior Indebtedness. Nothing in this Indenture shall:

- (i) impair, as between the Company and Holders of Notes, the obligation of the Company, which is absolute and unconditional, to pay principal of, premium, if any, and interest on the Notes in accordance with their terms;
- (ii) affect the relative rights of Holders of Notes and creditors of the Company other than their rights in relation to holders of Senior Indebtedness; or
- (iii) prevent the Trustee or any Holder of Notes from exercising its available remedies upon a Default or Event of Default, subject to the rights of holders and owners of Senior Indebtedness to receive distributions and payments otherwise payable to Holders of Notes.

If the Company fails because of this Article 5 to pay principal of, premium, if any, or interest on a Note on the due date, the failure is still a Default or Event of Default.

#### **Section 5.09. Subordination May Not Be Impaired by Company**

No right of any holder of Senior Indebtedness to enforce the subordination of the Indebtedness evidenced by the Notes shall be impaired by any act or failure to act by the Company or any Holder or by the failure of the Company or any Holder to comply with this Indenture.

#### **Section 5.10. Distribution or Notice to Representative**

Whenever a distribution is to be made or a notice given to holders of Senior Indebtedness, the distribution may be made and the notice given to their Representative.

Upon any payment or distribution of assets of the Company referred to in this Article 5, the Trustee and the Holders of Notes shall be entitled to rely upon any order or decree made by any court of competent jurisdiction or upon any certificate of such Representative or of the liquidating trustee or agent or other Person making any distribution to the Trustee or to the Holders of Notes for the purpose of ascertaining the Persons entitled to participate in such distribution, the holders of the Senior Indebtedness and other Indebtedness of the Company, the amount thereof or payable thereon, the amount or amounts paid or distributed thereon and all other facts pertinent thereto or to this Article 5.

#### **Section 5.11. Rights of Trustee and Paying Agent**

Notwithstanding the provisions of this Article 5 or any other provision of this Indenture, the Trustee shall not at any time be charged with knowledge of the existence of any facts that would prohibit the making of any payment or distribution by the Trustee, and the Trustee and the Paying Agent may continue to make payments on the Notes, unless the Trustee shall have received at its Corporate Trust Office at least five Business Days prior to the date of such payment written notice of facts that would cause the payment of any Obligations with respect to the Notes to violate this Article 5. Only the Company or a Representative may give the notice. Nothing in this Article 5 shall impair the claims of, or payments to, the Trustee under or pursuant to Section 9.07 hereof.

The Trustee in its individual or any other capacity may hold Senior Indebtedness with the same rights it would have if it were not Trustee. Any Agent may do the same with like rights.

#### **Section 5.12. Authorization to Effect Subordination**

Each Holder of Notes, by the Holder's acceptance thereof, authorizes and directs the Trustee on such Holder's behalf to take such action as may be necessary or appropriate to effectuate the subordination as provided in this Article 5, and appoints the Trustee to act as such Holder's attorney-in-fact for any and all such purposes. If the Trustee does not file a proper proof of claim or proof of debt in the form required in any proceeding referred to in Section 8.09 hereof at least 30 days before the expiration of the time to file such claim, the holders of any Designated Senior Indebtedness are hereby authorized to file an appropriate claim for and on behalf of the Holders of the Notes.

#### **Section 5.13. Amendments**

The provisions of this Article 5 shall not be amended or modified without the written consent of the holders of all Senior Indebtedness.

#### **Section 5.14. Agreement to Subordinate Unaffected**

The provisions of this Article 5 shall remain in full force and effect irrespective of (a) any amendment, modification, or supplement of, or any waiver or consent to, any of the terms of the Senior Indebtedness or the agreement or instrument governing the Senior Indebtedness, (b) the release or non-perfection of any collateral securing the Senior Indebtedness or (c) the manner of sale or other disposition of the collateral securing the Senior Indebtedness or the application of the proceeds upon such sale.

#### **Section 5.15. Certain Conversions Deemed Payment**

For the purposes of this Article 5 only, (1) the issuance and delivery of Permitted Junior Securities upon conversion of Notes in accordance with Article 4 shall not be deemed to constitute a payment or distribution on account of the principal of, or premium, if any, or interest on the Notes or on account of the purchase or other acquisition of Notes, and (2) the payment, issuance or delivery of cash (except in satisfaction of fractional shares pursuant to Section 4.03), property or securities (other than Permitted Junior Securities) upon conversion of a Note shall be deemed to constitute payment on account of the principal of such Note. Nothing contained in this Article 5 or elsewhere in this Indenture or in the Notes is intended to or shall impair, as among the Company, its creditors other than holders of Senior Indebtedness and the Holders, the right, which is absolute and unconditional, of the Holder of any Note to convert such Note in accordance with Article 4.

## **ARTICLE 6.**

## COVENANTS

### **Section 6.01.** *Payment of Notes*

The Company shall pay or cause to be paid the principal of, premium, if any, and interest on the Notes on the dates and in the manner provided in the Notes. Principal, premium, if any, and interest shall be considered paid on the date due if the Paying Agent, if other than the Company or a Subsidiary thereof, holds as of 10:00 a.m. Eastern Time on the due date money deposited by the Company in immediately available funds and designated for and sufficient to pay all principal, premium, if any, and interest then due.

The Company shall pay interest (including post-petition interest in any proceeding under any Bankruptcy Law) on overdue principal at the rate borne by the Notes to the extent lawful; it shall pay interest (including post-petition interest in any proceeding under any Bankruptcy Law) on overdue installments of interest (without regard to any applicable grace period) at the same rate to the extent lawful.

### **Section 6.02.** *Maintenance of Office or Agency*

The Company shall maintain in the Borough of Manhattan, the City of New York, a Paying Agent, Conversion Agent, Registrar and an office or agency (which may be an office of the Trustee or an affiliate of the Trustee, Registrar or co-registrar) where Notes may be surrendered for registration of transfer or for exchange and where notices and demands to or upon the Company in respect of the Notes and this Indenture may be served. The Company shall give prompt written notice to the Trustee of the location, and any change in the location, of such office or agency. If at any time the Company shall fail to maintain any such required office or agency or shall fail to furnish the Trustee with the address thereof, such presentations, surrenders, notices and demands may be made or served at the Corporate Trust Office of the Trustee.

The Company may also from time to time designate one or more other offices or agencies where the Notes may be presented or surrendered for any or all such purposes and may from time to time rescind such designations; *provided, however*, that no such designation or rescission shall in any manner relieve the Company of its obligation to maintain an office or agency in the Borough of Manhattan, the City of New York for such purposes. The Company shall give prompt written notice to the Trustee of any such designation or rescission and of any change in the location of any such other office or agency.

The Company hereby designates the Corporate Trust Office of the Trustee as one such office or agency of the Company in accordance with Section 2.03.

### **Section 6.03.** *Reports*

The Company shall furnish to the Holders of Notes copies of the annual reports and of the information, documents and other reports (or copies of such portions of any of the foregoing as the SEC may from time to time by rules and regulations prescribe) which the Company may be required to file with the SEC pursuant to Section 13 or Section 15(d) of the Securities Exchange Act of 1934; or, if the Company is not required to file information, documents or reports pursuant to either of said Sections, then it shall file with the Trustee and the SEC, in accordance with rules and regulations prescribed from time to time by the SEC, such of the supplementary and periodic information, documents and reports which may be required pursuant to Section 13 of the Securities Exchange Act of 1934 in respect of a security listed and registered on a national securities exchange as may be prescribed from time to time in such rules and regulations; *provided*, that if the Company files the reports required by this Section 6.03 with the SEC and such reports are publicly available, it shall be deemed to have satisfied its obligation to furnish such reports to the Holders pursuant to this Section 6.03. The Company shall at all times comply with TIA § 314(a).

### **Section 6.04.** *Compliance Certificate*

(a) The Company shall deliver to the Trustee, within 90 days after the end of each fiscal year, an Officers' Certificate stating that a review of the activities of the Company and its Subsidiaries during the preceding fiscal year has been made under the supervision of the signing Officers with a view to determining whether the Company has kept, observed, performed and fulfilled its obligations under this Indenture, and further stating, as to each such Officer signing such certificate, that to the best of his or her knowledge the Company has kept, observed, performed and fulfilled each and every covenant contained in this Indenture and is not in default in the performance or observance of any of the terms, provisions and conditions of this Indenture (or, if a Default or Event of Default shall have occurred, describing all such Defaults or Events of Default of which he or she may have knowledge and what action the Company is taking or proposes to take with respect thereto) and that to the best of his or her knowledge no event has occurred and remains in existence by reason of which payments on account of the principal of or interest, if any, on the Notes is prohibited or if such event has occurred, a description of the event and what action the Company is taking or proposes to take with respect thereto.

(b) The Company shall, so long as any of the Notes are outstanding, deliver to the Trustee, forthwith upon any Officer becoming aware of any Default or Event of Default, an Officers' Certificate specifying such Default or Event of Default and what action the Company is taking or proposes to take with respect thereto.

### **Section 6.05.** *Taxes*

The Company shall pay, and shall cause each of its Subsidiaries to pay, prior to delinquency, all material taxes, assessments, and governmental levies except such as are contested in good faith and by appropriate proceedings or where the failure to effect such payment is not adverse in any material respect to the Holders of the Notes.

### **Section 6.06.** *Stay, Extension and Usury Laws*

The Company covenants (to the extent that it may lawfully do so) that it shall not at any time insist upon, plead, or in any manner whatsoever claim or take the benefit or advantage of, any stay, extension or usury law wherever enacted, now or at any time hereafter in force, that may affect the covenants or the performance of this Indenture; and the Company (to the extent that it may lawfully do so) hereby expressly waives all benefit or advantage of any such law, and covenants that it shall not, by resort to any such law, hinder, delay or impede the execution of any power herein granted to the Trustee, but shall suffer and permit the execution of every such power as though no such law has been enacted.

### **Section 6.07.** *Corporate Existence*

Subject to Article 7 hereof, the Company shall do or cause to be done all things necessary to preserve and keep in full force and effect (i) its corporate existence, and the corporate, partnership or other existence of each of its Subsidiaries, in accordance with the respective organizational documents (as the same may be amended from time to time) of the Company or any such Subsidiary and (ii) the rights (charter and statutory), licenses and franchises of the Company and its Subsidiaries; *provided, however*, that the Company shall not be required to preserve any such right, license or franchise, or the corporate, partnership or other existence of any of its Subsidiaries, if the Board of Directors shall determine that the preservation thereof is no longer desirable in the conduct of the business of the Company and its Subsidiaries, taken as a whole, and that the loss thereof is not adverse in any material respect to the Holders of the Notes.

### **Section 6.08.** *Offer to Repurchase Upon Change of Control*

(a) Upon the occurrence of a Change of Control, the Company shall make an offer (a "*Change of Control Offer*") to each Holder to repurchase all or any part (equal to \$1,000 or an integral multiple thereof) of each Holder's Notes at a purchase price equal to 100% of the aggregate principal amount thereof plus accrued and unpaid interest thereon, if any, to, but excluding, the date of purchase (the "*Change of Control Payment*"). Within 10 business days following any Change of Control, the Company shall mail a notice to each Holder stating: (1) that the Change of Control Offer is being made pursuant to this Section 6.08 and that all Notes tendered will be accepted for payment; (2) the purchase price and the purchase date, which shall be 30 business days after the occurrence of a Change of Control (the "*Change of Control Payment Date*"); (3) that any Note not tendered will continue to accrue interest; (4) the name and address of each Paying Agent and Conversion Agent, (5) the Conversion Price and any adjustments thereto, (6) that

Notes as to which a Change of Control Payment Notice has been given may be converted into Common Stock pursuant to Article 4 of this Indenture only to the extent that the Change of Control Payment Notice has been withdrawn in accordance with the terms of this Indenture, (7) that, unless the Company defaults in the payment of the Change of Control Payment, all Notes accepted for payment pursuant to the Change of Control Offer shall cease to accrue interest after the Change of Control Payment Date; (8) that Holders electing to have any Notes purchased pursuant to a Change of Control Offer will be required to surrender the Notes, with the form entitled “Option of Holder to Elect Purchase” on the reverse of the Notes completed, to the Paying Agent at the address specified in the notice prior to the close of business on the Business Day preceding the Change of Control Payment Date; (9) that Holders will be entitled to withdraw their election if the Paying Agent receives, not later than the close of business on the Business Day preceding the Change of Control Payment Date, a telegram, telex, facsimile transmission, letter or any other written form setting forth the name of the Holder, the principal amount of Notes delivered for purchase, and a statement that such Holder is withdrawing his election to have the Notes purchased; and (10) that Holders whose Notes are being purchased only in part will be issued new Notes equal in principal amount to the unpurchased portion of the Notes surrendered, which unpurchased portion must be equal to \$1,000 in principal amount or an integral multiple thereof. The Company shall comply with the requirements of Rule 13e-4 and Rule 14e-1 under the Exchange Act and any other securities laws and regulations thereunder to the extent such laws and regulations are applicable in connection with the repurchase of Notes in connection with a Change of Control.

A “Change of Control” shall be deemed to have occurred if any of the following occurs after the date hereof:

(i) any “person” or “group” (as such terms are defined below) is or becomes the “beneficial owner” (as defined below), directly or indirectly (other than as a direct result of repurchases of stock by the Company), of shares of Voting Stock of the Company representing 50% or more of the total voting power of all outstanding classes of Voting Stock of the Company or such person or group (other than the “management group”) has the power, directly or indirectly, to elect a majority of the members of the Board of Directors of the Company; provided, that Voting Stock acquired in an exempt transaction shall not constitute a Change of Control;

(ii) the Company consolidates with, or merges with or into, another Person or the Company sells, assigns, conveys, transfers, leases or otherwise disposes of all or substantially all of the assets of the Company, or any Person consolidates with, or merges with or into, the Company, in any such event other than (a) pursuant to a transaction in which the Persons that “beneficially owned” (as defined below), directly or indirectly, shares of Voting Stock of the Company immediately prior to such transaction “beneficially own” (as defined below), directly or indirectly, shares of Voting Stock of the Company representing at least a majority of the total voting power of all outstanding classes of Voting Stock of the surviving or transferee Person or (b) an exempt transaction; or

(iii) there shall occur the liquidation or dissolution of the Company.

For the purpose of the definition of “Change of Control”, (i) “person” and “group” have the meanings given such terms under Section 13(d) and 14(d) of the Exchange Act or any successor provision to either of the foregoing, and the term “group” includes any group acting for the purpose of acquiring, holding or disposing of securities within the meaning of Rule 13d-5(b)(1) under the Exchange Act (or any successor provision thereto), (ii) a “beneficial owner” shall be determined in accordance with Rule 13d-3 under the Exchange Act, as in effect on the date of this Indenture, except that the number of shares of Voting Stock of the Company shall be deemed to include, in addition to all outstanding shares of Voting Stock of the Company and Unissued Shares deemed to be held by the “person” or “group” (as such terms are defined above) or other Person with respect to which the Change of Control determination is being made, all Unissued Shares deemed to be held by all other Persons, and (iii) the terms “beneficially owned” and “beneficially own” shall have meanings correlative to that of “beneficial owner”. The term “Unissued Shares” means shares of Voting Stock not outstanding that are subject to options, warrants, rights to purchase or conversion privileges exercisable within 60 days of the date of determination of a Change of Control. The term “exempt transaction” means any purchase from the Company of equity interests in the Company by the management group; provided that the management group does not collectively beneficially own more than 65% of the total Voting Stock of all outstanding classes of Voting Stock of the Company following such purchase. The term “management group” means any of Thomas Russell, The AER 1997 Trust, Robert Louis - Dreyfus, Gallium Enterprises, Inc. and Reuben Richards.

Notwithstanding anything to the contrary set forth in this Section 6.08, a Change of Control will not be deemed to have occurred if either:

(i) the Closing Sale Price of the Common Stock for any five Trading Days during the period of the ten Trading Days immediately preceding the Change of Control is at least equal to 105% of the Conversion Price in effect on such day; or

(ii) in the case of a merger or consolidation, all of the consideration (excluding cash payments for fractional shares in the merger or consolidation constituting the Change of Control) consists of common stock traded on a United States national securities exchange or quoted on The Nasdaq National Market (or which will be so traded or quoted when issued or exchanged in connection with such Change of Control) and as a result of such transaction or transactions the Notes become convertible solely into such common stock.

(b) A Holder may exercise its rights pursuant to this Section 6.08 upon delivery of a written notice (which shall be in substantially the form entitled “Option of Holder to Elect Purchase” on the reverse of the Notes and which may be delivered by letter, overnight courier, hand delivery, facsimile transmission or in any other written form and, in the case of Global Notes, may be delivered electronically or by other means in accordance with the Depositary’s customary procedures) of the exercise of such rights (a “Change of Control Payment Notice”) to any Paying Agent at any time prior to the close of business on the Business Day next preceding the Change of Control Purchase Date.

Notwithstanding anything herein to the contrary, any Holder delivering to a Paying Agent the Change of Control Payment Notice contemplated by this Section 6.08(b) shall have the right to withdraw such Change of Control Payment Notice in whole or in a portion thereof that is a principal amount of \$1,000 or in an integral multiple thereof at any time prior to the close of business on the Business Day next preceding the Change of Control Payment Date by delivery of a written notice of withdrawal to the Paying Agent in accordance with Section 6.08(a) hereof.

Upon receipt by any Paying Agent of the Change of Control Payment Notice specified in this Section 6.08(b), the Holder of the Security in respect of which such Change of Control Payment Notice was given shall (unless such Change of Control Payment Notice is withdrawn as specified below) thereafter be entitled to receive the Change of Control Payment Price with respect to such Note. Such Change of Control Payment Price shall be paid to such Holder promptly following the later of (i) the Change of Control Payment Date with respect to such Note (provided the conditions in this Section 6.08(b) have been satisfied) and (ii) the time of delivery of such Note to a Paying Agent by the Holder thereof in the manner required by this Section 6.08(b). Notes in respect of which a Change of Control Payment Notice has been given by the Holder thereof may not be converted into shares of Common Stock on or after the date of the delivery of such Change of Control Payment Notice unless such Change of Control Payment Notice has first been validly withdrawn.

(c) On the Change of Control Payment Date, the Company shall, to the extent lawful, (1) accept for payment all Notes or portions thereof properly tendered pursuant to the Change of Control Offer, (2) deposit with the Paying Agent an amount equal to the Change of Control Payment in respect of all Notes or portions thereof so tendered and (3) deliver or cause to be delivered to the Trustee the Notes so accepted together with an Officers’ Certificate stating the aggregate principal amount of Notes or portions thereof being purchased by the Company. The Paying Agent shall promptly mail to each Holder of Notes so tendered payment in an amount equal to the purchase price for the Notes, and the Trustee shall promptly authenticate and mail (or cause to be transferred by book entry) to each Holder a new Note equal in principal amount to any unpurchased portion of the Notes surrendered by such Holder, if any; *provided*, that each such new Note shall be in a principal amount of \$1,000 or an integral multiple thereof. The Company shall publicly announce the results of the Change of Control Offer on or as soon as practicable after the Change of Control Payment Date.

If a Paying Agent holds, in accordance with the terms hereof, money sufficient to pay the Change of Control Payment Price of any Note for which a Change of Control Payment Notice has been tendered and not withdrawn in accordance with this Indenture then, on the Change of Control Payment Date, such Note will cease to be outstanding and the rights of the Holder in respect thereof shall terminate (other than the right to receive the Change of Control Payment Price as aforesaid).

(d) Notwithstanding anything to the contrary in this Section 6.08, the Company shall not be required to make a Change of Control Offer upon a Change of Control if a third party makes the Change of Control Offer in the manner, at the times and otherwise in compliance with the requirements set forth in this Section 6.08 hereof and all other provisions of this Indenture applicable to a Change of Control Offer made by the Company and purchases all Notes validly tendered and not withdrawn under such Change of Control Offer.

## ARTICLE 7.

### SUCCESSORS

#### *Section 7.01. Merger, Consolidation, or Sale of Assets*

The Company shall not, directly or indirectly, consolidate or merge with or into (whether or not the Company is the surviving corporation), or sell, assign, transfer, convey or otherwise dispose of all or substantially all of its properties or assets in one or more related transactions to, another Person unless (i) the Company is the surviving corporation or the Person formed by or surviving any such consolidation or merger (if other than the Company) or to which such sale, assignment, transfer, conveyance or other disposition shall have been made is a corporation organized or existing under the laws of the United States, any state thereof or the District of Columbia, (ii) the Person formed by or surviving any such consolidation or merger (if other than the Company) or the Person to which such sale, assignment, transfer, conveyance or other disposition shall have been made assumes all the obligations of the Company under the Registration Rights Agreement, the Notes and this Indenture pursuant to a supplemental indenture in a form reasonably satisfactory to the Trustee, (iii) immediately after such transaction, no Default or Event of Default exists and (iv) the Company or the surviving corporation, as the case may be, shall have delivered to the Trustee and Officers' Certificate and an Opinion of Counsel, each stating that such merger, consolidation, conveyance, transfer or lease comply with this Article Seven and that all conditions precedent herein provided for relating to such transaction have been satisfied.

#### *Section 7.02. Successor Corporation Substituted*

Upon any consolidation or merger, or any sale, assignment, transfer, lease, conveyance or other disposition of all or substantially all of the assets of the Company in accordance with Section 7.01 hereof, the successor corporation formed by such consolidation or into or with which the Company is merged or to which such sale, assignment, transfer, lease, conveyance or other disposition is made shall succeed to, and be substituted for (so that from and after the date of such consolidation, merger, sale, lease, conveyance or other disposition, the provisions of this Indenture referring to the "Company" shall refer instead to the successor corporation and not to the Company), and may exercise every right and power of the Company under this Indenture with the same effect as if such successor Person had been named as the Company herein; *provided, however*, that the predecessor Company shall not be relieved from the obligation to pay the principal of and interest on the Notes except in the case of a sale, assignment, transfer, conveyance or other disposition of all of the Company's assets that meets the requirements of Section 7.01 hereof.

## ARTICLE 8.

### DEFAULTS AND REMEDIES

#### *Section 8.01. Events of Default*

An "Event of Default" occurs if:

- (a) the Company defaults in the payment when due of interest on the Notes and such default continues for a period of 30 days;
- (b) the Company defaults in the payment when due of principal of or premium, if any, on the Notes when the same becomes due and payable at maturity, upon redemption (including in connection with an offer to purchase) or otherwise;
- (c) the Company fails to comply with any of the provisions of Section 6.08 hereof;
- (d) the Company fails to observe or perform any other covenant, representation, warranty or other agreement in this Indenture or the Notes for 60 days after notice to the Company by the Trustee or the Holders of at least 25% in aggregate principal amount of the Notes then outstanding voting as a single class;
- (e) the Company fails to provide timely notice of a Change of Control;
- (f) the Company:
  - (i) commences a voluntary case,
  - (ii) consents to the entry of an order for relief against it in an involuntary case,
  - (iii) consents to the appointment of a custodian of it or for all or substantially all of its property,
  - (iv) makes a general assignment for the benefit of its creditors, or
  - (v) generally is not paying its debts as they become due; or
- (g) a court of competent jurisdiction enters an order or decree under any Bankruptcy Law that:
  - (i) is for relief against the Company in an involuntary case;
  - (ii) appoints a custodian of the Company or for all or substantially all of the property of the Company; or
  - (iii) orders the liquidation of the Company;

and the order or decree remains unstayed and in effect for 60 consecutive days.

#### *Section 8.02. Acceleration*

If any Event of Default (other than an Event of Default specified in clause (f) or (g) of Section 8.01 hereof with respect to the Company) occurs and is continuing, the Trustee or the Holders of at least 25% in principal amount of the then outstanding Notes may declare all the Notes to be due and payable immediately. Upon any such declaration, the Notes shall become due and payable immediately. Notwithstanding the foregoing, if an Event of Default specified in clause (f) or (g) of Section 8.01 hereof occurs with respect to the Company, all outstanding Notes shall be due and payable immediately without further action or notice. The Holders of a majority in aggregate principal amount of the then outstanding Notes by written notice to the Trustee may on behalf of all of the Holders rescind an acceleration and its consequences if the rescission would not conflict with any judgment or decree and if all existing Events of Default (except nonpayment of principal, interest or premium that has become due solely because of the acceleration) have been cured or waived.

#### *Section 8.03. Other Remedies*

If an Event of Default occurs and is continuing, the Trustee may pursue any available remedy to collect the payment of principal, premium, if any, and interest on the Notes or to enforce the performance of any provision of the Notes or this Indenture.

The Trustee may maintain a proceeding even if it does not possess any of the Notes or does not produce any of them in the proceeding. A delay or omission by the Trustee or any Holder of a Note in exercising any right or remedy accruing upon an Event of Default shall not impair the right or remedy or constitute a waiver of or acquiescence in the Event of Default. All remedies are cumulative to the extent permitted by law.

#### **Section 8.04.** *Waiver of Past Defaults*

Subject to Section 8.02, Holders of not less than a majority in aggregate principal amount of the then outstanding Notes by notice to the Trustee may on behalf of the Holders of all of the Notes waive an existing Default or Event of Default and its consequences hereunder, except a continuing Default or Event of Default in the payment of the principal of, premium, if any, or interest on, the Notes (including in connection with an offer to purchase) or a failure by the Company to convert any Notes into Common Stock (*provided, however*, that the Holders of a majority in aggregate principal amount of the then outstanding Notes may rescind an acceleration and its consequences, including any related payment default that resulted from such acceleration). Upon any such waiver, such Default shall cease to exist, and any Event of Default arising therefrom shall be deemed to have been cured for every purpose of this Indenture; but no such waiver shall extend to any subsequent or other Default or impair any right consequent thereon.

#### **Section 8.05.** *Control by Majority*

Holders of a majority in principal amount of the then outstanding Notes may direct the time, method and place of conducting any proceeding for exercising any remedy available to the Trustee or exercising any trust or power conferred on it. However, the Trustee may refuse to follow any direction that conflicts with law or this Indenture that the Trustee determines may be unduly prejudicial to the rights of other Holders of Notes or that may involve the Trustee in personal liability.

#### **Section 8.06.** *Limitation on Suits*

A Holder of a Note may pursue a remedy with respect to this Indenture or the Notes only if:

- (a) the Holder of a Note gives to the Trustee written notice of a continuing Event of Default;
- (b) the Holders of at least 25% in principal amount of the then outstanding Notes make a written request to the Trustee to pursue the remedy;
- (c) such Holder of a Note or Holders of Notes offer and, if requested, provide to the Trustee indemnity satisfactory to the Trustee against any loss, liability or expense;
- (d) the Trustee does not comply with the request within 60 days after receipt of the request and the offer and, if requested, the provision of indemnity; and
- (e) during such 60-day period the Holders of a majority in principal amount of the then outstanding Notes do not give the Trustee a direction inconsistent with the request.

A Holder of a Note may not use this Indenture to prejudice the rights of another Holder of a Note or to obtain a preference or priority over another Holder of a Note.

#### **Section 8.07.** *Rights of Holders of Notes to Receive Payment*

Notwithstanding any other provision of this Indenture, the right of any Holder of a Note to receive payment of principal, premium and interest on the Note, on or after the respective due dates expressed in the Note (including in connection with an offer to purchase), to convert such Note in accordance with Article 4 or to bring suit for the enforcement of any such payment on or after such respective dates, shall not be impaired or affected without the consent of such Holder.

#### **Section 8.08.** *Collection Suit by Trustee*

If an Event of Default specified in Section 8.01(a) or (b) occurs and is continuing, the Trustee is authorized to recover judgment in its own name and as trustee of an express trust against the Company for the whole amount of principal of, premium and interest remaining unpaid on the Notes and interest on overdue principal and, to the extent lawful, interest and such further amount as shall be sufficient to cover the costs and expenses of collection, including the reasonable compensation, expenses, disbursements and advances of the Trustee, its agents and counsel.

#### **Section 8.09.** *Trustee May File Proofs of Claim*

The Trustee is authorized to file such proofs of claim and other papers or documents as may be necessary or advisable in order to have the claims of the Trustee (including any claim for the reasonable compensation, expenses, disbursements and advances of the Trustee, its agents and counsel) and the Holders of the Notes allowed in any judicial proceedings relative to the Company (or any other obligor upon the Notes), its creditors or its property and shall be entitled and empowered to collect, receive and distribute any money or other property payable or deliverable on any such claims and any custodian in any such judicial proceeding is hereby authorized by each Holder to make such payments to the Trustee, and in the event that the Trustee shall consent to the making of such payments directly to the Holders, to pay to the Trustee any amount due to it for the reasonable compensation, expenses, disbursements and advances of the Trustee, its agents and counsel, and any other amounts due the Trustee under Section 9.07 hereof. To the extent that the payment of any such compensation, expenses, disbursements and advances of the Trustee, its agents and counsel, and any other amounts due the Trustee under Section 9.07 hereof out of the estate in any such proceeding, shall be denied for any reason, payment of the same shall be secured by a Lien on, and shall be paid out of, any and all distributions, dividends, money, securities and other properties that the Holders may be entitled to receive in such proceeding whether in liquidation or under any plan of reorganization or arrangement or otherwise. Nothing herein contained shall be deemed to authorize the Trustee to authorize or consent to or accept or adopt on behalf of any Holder any plan of reorganization, arrangement, adjustment or composition affecting the Notes or the rights of any Holder, or to authorize the Trustee to vote in respect of the claim of any Holder in any such proceeding.

#### **Section 8.10.** *Priorities*

If the Trustee collects any money pursuant to this Article, it shall pay out the money in the following order:

*First:* to the Trustee, its agents and attorneys for amounts due under Section 9.07 hereof, including payment of all compensation, expense and liabilities incurred, and all advances made, by the Trustee and the costs and expenses of collection;

*Second:* to Holders of Notes for amounts due and unpaid on the Notes for principal, premium and interest, ratably, without preference or priority of any kind, according to the amounts due and payable on the Notes for principal, premium and interest, respectively; and

*Third:* to the Company or to such party as a court of competent jurisdiction shall direct.

The Trustee may fix a record date and payment date for any payment to Holders of Notes pursuant to this Section 8.10.

#### **Section 8.11.** *Undertaking for Costs*



In any suit for the enforcement of any right or remedy under this Indenture or in any suit against the Trustee for any action taken or omitted by it as a Trustee, a court in its discretion may require the filing by any party litigant in the suit of an undertaking to pay the costs of the suit, and the court in its discretion may assess reasonable costs, including reasonable attorneys' fees, against any party litigant in the suit, having due regard to the merits and good faith of the claims or defenses made by the party litigant. This Section does not apply to a suit by the Trustee, a suit by a Holder of a Note pursuant to Section 8.07 hereof, or a suit by Holders of more than 10% in principal amount of the then outstanding Notes.

## ARTICLE 9.

### TRUSTEE

#### *Section 9.01. Duties of Trustee*

(a) If an Event of Default has occurred and is continuing, the Trustee shall exercise such of the rights and powers vested in it by this Indenture, and use the same degree of care and skill in its exercise, as a prudent person would exercise or use under the circumstances in the conduct of such person's own affairs.

(b) Except during the continuance of an Event of Default:

(i) the duties of the Trustee shall be determined solely by the express provisions of this Indenture and the Trustee need perform only those duties that are specifically set forth in this Indenture and no others, and no implied covenants or obligations shall be read into this Indenture against the Trustee; and

(ii) in the absence of bad faith on its part, the Trustee may conclusively rely, as to the truth of the statements and the correctness of the opinions expressed therein, upon certificates or opinions furnished to the Trustee and conforming to the requirements of this Indenture. However, the Trustee shall examine the certificates and opinions to determine whether or not they conform to the requirements of this Indenture.

(c) The Trustee may not be relieved from liabilities for its own negligent action, its own negligent failure to act, or its own willful misconduct, except that:

(i) this paragraph does not limit the effect of paragraph (b) of this Section;

(ii) the Trustee shall not be liable for any error of judgment made in good faith by a Responsible Officer, unless it is proved that the Trustee was negligent in ascertaining the pertinent facts; and

(iii) the Trustee shall not be liable with respect to any action it takes or omits to take in good faith in accordance with a direction received by it pursuant to Section 7.05 hereof.

(d) Whether or not therein expressly so provided, every provision of this Indenture that in any way relates to the Trustee is subject to paragraphs (a), (b), and (c) of this Section.

(e) No provision of this Indenture shall require the Trustee to expend or risk its own funds or incur any liability. The Trustee shall be under no obligation to exercise any of its rights and powers under this Indenture at the request of any Holders, unless such Holder shall have offered to the Trustee security and indemnity satisfactory to it against any loss, liability or expense.

(f) The Trustee shall not be liable for interest on any money received by it except as the Trustee may agree in writing with the Company. Money held in trust by the Trustee need not be segregated from other funds except to the extent required by law.

#### *Section 9.02. Rights of Trustee*

(a) The Trustee may conclusively rely upon any document believed by it to be genuine and to have been signed or presented by the proper Person. The Trustee need not investigate any fact or matter stated in the document.

(b) Before the Trustee acts or refrains from acting, it may require an Officers' Certificate or an Opinion of Counsel or both. The Trustee shall not be liable for any action it takes or omits to take in good faith in reliance on such Officers' Certificate or Opinion of Counsel. The Trustee may consult with counsel and the written advice of such counsel or any Opinion of Counsel shall be full and complete authorization and protection from liability in respect of any action taken, suffered or omitted by it hereunder in good faith and in reliance thereon.

(c) The Trustee may act through its attorneys and agents and shall not be responsible for the misconduct or negligence of any agent appointed with due care.

(d) The Trustee shall not be liable for any action it takes or omits to take in good faith that it believes to be authorized or within the rights or powers conferred upon it by this Indenture.

(e) Unless otherwise specifically provided in this Indenture, any demand, request, direction or notice from the Company shall be sufficient if signed by an Officer of the Company.

(f) The Trustee shall be under no obligation to exercise any of the rights or powers vested in it by this Indenture at the request or direction of any of the Holders unless such Holders shall have offered to the Trustee reasonable security or indemnity against the costs, expenses and liabilities that might be incurred by it in compliance with such request or direction.

(g) The Trustee shall not be charged with knowledge of any Default or Event of Default with respect to the Notes unless either (1) a Responsible Officer shall have actual knowledge of such Default or Event of Default or (2) written notice of such Default or Event of Default shall have been given to the Trustee by the Company or by any Holder of the Notes.

#### *Section 9.03. Individual Rights of Trustee*

The Trustee in its individual or any other capacity may become the owner or pledgee of Notes and may otherwise deal with the Company or any Affiliate of the Company with the same rights it would have if it were not Trustee. However, in the event that the Trustee acquires any conflicting interest it must eliminate such conflict within 90 days, apply to the SEC for permission to continue as trustee or resign. Any Agent may do the same with like rights and duties. The Trustee is also subject to Sections 9.10 and 9.11 hereof.

#### *Section 9.04. Trustee's Disclaimer*

The Trustee shall not be responsible for and makes no representation as to the validity or adequacy of this Indenture or the Notes, it shall not be accountable for the Company's use of the proceeds from the Notes or any money paid to the Company or upon the Company's direction under any provision of this Indenture, it shall not be



responsible for the use or application of any money received by any Paying Agent other than the Trustee, and it shall not be responsible for any statement or recital herein or any statement in the Notes or any other document in connection with the sale of the Notes or pursuant to this Indenture other than its certificate of authentication.

#### **Section 9.05. Notice of Defaults**

If a Default or Event of Default occurs and is continuing and if it is known to the Trustee, the Trustee shall mail to Holders of Notes a notice of the Default or Event of Default within 90 days after it occurs. Except in the case of a Default or Event of Default in payment of principal of, premium, if any, or interest on any Note, the Trustee may withhold the notice if and so long as a committee of its Responsible Officers in good faith determines that withholding the notice is in the interests of the Holders of the Notes.

#### **Section 9.06. Reports by Trustee to Holders of the Notes**

Within 60 days after each May 15 beginning with the May 15 following the date of this Indenture, and for so long as Notes remain outstanding, the Trustee shall mail to the Holders of the Notes a brief report dated as of such reporting date that complies with TIA § 313(a) (but if no event described in TIA § 313(a) has occurred within the twelve months preceding the reporting date, no report need be transmitted). The Trustee also shall comply with TIA § 313(b)(2). The Trustee shall also transmit by mail all reports as required by TIA § 313(c).

A copy of each report at the time of its mailing to the Holders of Notes shall be mailed to the Company and filed with the SEC and each stock exchange on which the Notes are listed in accordance with TIA § 313(d). The Company shall promptly notify the Trustee when the Notes are listed on any stock exchange.

#### **Section 9.07. Compensation and Indemnity**

The Company shall pay to the Trustee from time to time reasonable compensation for its acceptance of this Indenture and services hereunder. The Trustee's compensation shall not be limited by any law on compensation of a trustee of an express trust. The Company shall reimburse the Trustee promptly upon request for all reasonable disbursements, advances and expenses incurred or made by it in addition to the compensation for its services. Such expenses shall include the reasonable compensation, disbursements and expenses of the Trustee's agents and counsel.

The Company shall indemnify the Trustee and its officers, directors, employees, representations and agents against any and all losses, liabilities or expenses incurred by it, including in any Agent capacity in which it acts, arising out of or in connection with the acceptance or administration of its duties under this Indenture, including the costs and expenses of enforcing this Indenture against the Company (including this Section 9.07) and defending itself against any claim (whether asserted by the Company or any Holder or any other person) or liability in connection with the exercise or performance of any of its powers or duties hereunder, except to the extent any such loss, liability or expense may be attributable to its negligence or bad faith. The Trustee shall notify the Company promptly of any claim for which it may seek indemnity. Failure by the Trustee to so notify the Company shall not relieve the Company of its obligations hereunder. The Company shall defend the claim and the Trustee shall cooperate in the defense. The Trustee may have separate counsel and the Company shall pay the reasonable fees and expenses of such counsel. The Company need not pay for any settlement made without its consent, which consent shall not be unreasonably withheld.

The obligations of the Company under this Section 9.07 shall survive the resignation or removal of the Trustee and the satisfaction and discharge of this Indenture.

To secure the Company's payment obligations in this Section, the Trustee shall have a Lien prior to the Notes on all money or property held or collected by the Trustee, except that held in trust to pay principal and interest on particular Notes. Such Lien shall survive the satisfaction and discharge of this Indenture.

When the Trustee incurs expenses or renders services after an Event of Default specified in Section 8.01(g) or (h) hereof occurs, the expenses and the compensation for the services (including the fees and expenses of its agents and counsel) are intended to constitute expenses of administration under any Bankruptcy Law.

The Trustee shall comply with the provisions of TIA § 313(b)(2) to the extent applicable.

#### **Section 9.08. Replacement of Trustee**

A resignation or removal of the Trustee and appointment of a successor Trustee shall become effective only upon the successor Trustee's acceptance of appointment as provided in this Section.

The Trustee may resign in writing at any time and be discharged from the trust hereby created by so notifying the Company. The Holders of a majority in principal amount of the then outstanding Notes may remove the Trustee by so notifying the Trustee and the Company in writing. The Company may remove the Trustee if:

- (a) the Trustee fails to comply with Section 9.10 hereof;
- (b) the Trustee is adjudged a bankrupt or an insolvent or an order for relief is entered with respect to the Trustee under any Bankruptcy Law;
- (c) a custodian or public officer takes charge of the Trustee or its property; or
- (d) the Trustee becomes incapable of acting.

If the Trustee resigns or is removed or if a vacancy exists in the office of Trustee for any reason, the Company shall promptly appoint a successor Trustee. Within one year after the successor Trustee takes office, the Holders of a majority in principal amount of the then outstanding Notes may appoint a successor Trustee to replace the successor Trustee appointed by the Company.

If a successor Trustee does not take office within 60 days after the retiring Trustee resigns or is removed, the retiring Trustee, the Company, or the Holders of at least 10% in principal amount of the then outstanding Notes may petition any court of competent jurisdiction for the appointment of a successor Trustee.

If the Trustee, after written request by any Holder who has been a Holder for at least six months, fails to comply with Section 9.10, such Holder may petition any court of competent jurisdiction for the removal of the Trustee and the appointment of a successor Trustee.

A successor Trustee shall deliver a written acceptance of its appointment to the retiring Trustee and to the Company. Thereupon, the resignation or removal of the retiring Trustee shall become effective, and the successor Trustee shall have all the rights, powers and duties of the Trustee under this Indenture. The successor Trustee shall mail a notice of its succession to Holders. The retiring Trustee shall promptly transfer all property held by it as Trustee to the successor Trustee, *provided* all sums owing to the Trustee hereunder have been paid and subject to the Lien provided for in Section 9.07 hereof. Notwithstanding replacement of the Trustee pursuant to this Section 9.08, the Company's obligations under Section 9.07 hereof shall continue for the benefit of the retiring Trustee.

#### **Section 9.09. Successor Trustee by Merger, etc**

If the Trustee consolidates, merges or converts into, or transfers all or substantially all of its corporate trust business or assets to, another corporation or banking association, the successor corporation or banking association without any further act shall be the successor Trustee; provided, however, that such corporation or banking association shall be otherwise eligible under Section 9.10 of the Indenture.

#### *Eligibility; Disqualification*

### **Section 9.10.**

There shall at all times be a Trustee hereunder that is a corporation organized and doing business under the laws of the United States of America or of any state thereof that is authorized under such laws to exercise corporate trustee power, that is subject to supervision or examination by federal or state authorities and that has a combined capital and surplus of at least \$100 million as set forth in its most recent published annual report of condition.

This Indenture shall always have a Trustee who satisfies the requirements of TIA § 310(a)(1), (2) and (5). The Trustee is subject to TIA § 310(b).

### **Section 9.11. Preferential Collection of Claims Against Company**

The Trustee is subject to TIA § 311(a), excluding any creditor relationship listed in TIA § 311(b). A Trustee who has resigned or been removed shall be subject to TIA § 311(a) to the extent indicated therein.

## **ARTICLE 10.**

### **SATISFACTION AND DISCHARGE**

#### **Section 10.01. Satisfaction and Discharge**

This Indenture will be discharged and will cease to be of further effect as to all Notes issued hereunder, when:

- (1) either:
  - (a) all Notes that have been authenticated (except lost, stolen or destroyed Notes that have been replaced or paid and Notes for whose payment money has theretofore been deposited in trust and thereafter repaid to the Company) have been delivered to the Trustee for cancellation; or
  - (b) all Notes that have not been delivered to the Trustee for cancellation have become due and payable by reason of the making of a notice of redemption or otherwise or will become due and payable within one year and the Company has irrevocably deposited or caused to be deposited with the Trustee as trust funds in trust solely for the benefit of the Holders, cash in U.S. dollars, non-callable Government Securities, or a combination thereof, in such amounts as will be sufficient without consideration of any reinvestment of interest, to pay and discharge the entire indebtedness on the Notes not delivered to the Trustee for cancellation for principal, premium and accrued interest to the date of maturity or redemption;
- (2) no Default or Event of Default shall have occurred and be continuing on the date of such deposit or shall occur as a result of such deposit and such deposit will not result in a breach or violation of, or constitute a default under, any other instrument to which the Company is a party or by which the Company is bound;
- (3) the Company has paid or caused to be paid all sums payable by it under this Indenture; and
- (4) the Company has delivered irrevocable instructions to the Trustee under this Indenture to apply the deposited money toward the payment of the Notes at maturity or the redemption date, as the case may be.

In addition, the Company must deliver an Officers' Certificate and an Opinion of Counsel to the Trustee stating that all conditions precedent to satisfaction and discharge have been satisfied.

Notwithstanding the satisfaction and discharge of this Indenture, if money shall have been deposited with the Trustee pursuant to subclause (b) of clause (1) of this Section, the provisions of Section 10.02 shall survive.

#### **Section 10.02. Application of Trust Money**

All money deposited with the Trustee pursuant to Section 10.01 shall be held in trust and applied by it, in accordance with the provisions of the Notes and this Indenture, to the payment, either directly or through any Paying Agent (including the Company acting as its own Paying Agent) as the Trustee may determine, to the Persons entitled thereto, of the principal (and premium, if any) and interest for whose payment such money has been deposited with the Trustee; but such money need not be segregated from other funds except to the extent required by law.

If the Trustee or Paying Agent is unable to apply any money or Government Securities in accordance with Section 10.01 by reason of any legal proceeding or by reason of any order or judgment of any court or governmental authority enjoining, restraining or otherwise prohibiting such application, the Company's obligations under this Indenture and the Notes shall be revived and reinstated as though no deposit had occurred pursuant to Section 10.01; *provided* that if the Company has made any payment of principal of, premium, if any, or interest on any Notes because of the reinstatement of its obligations, the Company shall be subrogated to the rights of the Holders of such Notes to receive such payment from the money or Government Securities held by the Trustee or Paying Agent.

#### **Section 10.03. Repayment to Company**

The Trustee and each Paying Agent shall promptly pay to the Company upon request any excess money (i) deposited with them pursuant to Section 10.1 and (ii) held by them at any time.

The Trustee and each Paying Agent shall pay to the Company upon request any money held by them for the payment of principal or interest that remains unclaimed for two years after a right to such money has matured; provided, however, that the Trustee or such Paying Agent, before being required to make any such payment, may at the expense of the Company cause to be mailed to each Holder entitled to such money notice that such money remains unclaimed and that after a date specified therein, which shall be at least 30 days from the date of such mailing, any unclaimed balance of such money then remaining will be repaid to the Company. After payment to the Company, Holders entitled to money must look to the Company for payment as general unsecured creditors.

#### **Section 10.04. Reinstatement**

If the Trustee or any Paying Agent is unable to apply any money in accordance with Section 10.2 by reason of any legal proceeding or by reason of any order or judgment of any court or governmental authority enjoining, restraining or otherwise prohibiting such application, then the Company's obligations under this Indenture and the Notes shall be revived and reinstated as though no deposit had occurred pursuant to Section 10.1 until such time as the Trustee or such Paying Agent is permitted to apply all such money in accordance with Section 10.2; provided, however, that if the Company has made any payment of the principal of or interest on any Notes because of the reinstatement of its obligations, the Company shall be subrogated to the rights of the Holders of such Notes to receive any such payment from the money held by the Trustee or such Paying Agent.

## **ARTICLE 11.**

### **AMENDMENT, SUPPLEMENT AND WAIVER**

### **Section 11.01.** *Without Consent of Holders of Notes*

Notwithstanding Section 11.02 of this Indenture, the Company and the Trustee may amend or supplement this Indenture or the Notes without the consent of any Holder of a Note:

- (a) to cure any ambiguity, defect or inconsistency;
- (b) to provide for uncertificated Notes in addition to or in place of certificated Notes or to alter the provisions of Article 2 hereof (including the related definitions) in a manner that does not materially adversely affect any Holder;
- (c) to provide for the assumption of the Company's obligations to the Holders of the Notes by a successor to the Company pursuant to Article 7 hereof;
- (d) to make any change that would provide any additional rights or benefits to the Holders of the Notes or that does not adversely affect the legal rights hereunder of any Holder of the Note;
- (e) to comply with requirements of the SEC in order to effect or maintain the qualification of this Indenture under the TIA; or
- (f) to provide for the issuance of additional Notes pursuant to the purchasers option set forth in the Purchase Agreement.

Upon the request of the Company accompanied by a resolution of its Board of Directors authorizing the execution of any such amended or supplemental Indenture, and upon receipt by the Trustee of the documents described in Section 9.02 hereof, the Trustee shall join with the Company in the execution of any amended or supplemental Indenture authorized or permitted by the terms of this Indenture and to make any further appropriate agreements and stipulations that may be therein contained, but the Trustee shall not be obligated to enter into such amended or supplemental Indenture that affects its own rights, duties or immunities under this Indenture or otherwise.

### **Section 11.02.** *With Consent of Holders of Notes*

Except as provided below in this Section 11.02, the Company and the Trustee may amend or supplement this Indenture (including Section 6.08 hereof) and the Notes with the consent of the Holders of at least a majority in principal amount of the Notes then outstanding voting as a single class (including consents obtained in connection with a tender offer or exchange offer for, or purchase of, the Notes), and, subject to Sections 8.04 and 8.07 hereof, any existing Default or Event of Default (other than a Default or Event of Default in the payment of the principal of, premium, if any, or interest on the Notes, except a payment default resulting from an acceleration that has been rescinded) or compliance with any provision of this Indenture or the Notes may be waived with the consent of the Holders of a majority in principal amount of the then outstanding Notes voting as a single class (including consents obtained in connection with a tender offer or exchange offer for, or purchase of, the Notes). Section 2.08 hereof shall determine which Notes are considered to be "outstanding" for purposes of this Section 11.02.

Upon the request of the Company accompanied by a resolution of its Board of Directors authorizing the execution of any such amended or supplemental Indenture, and upon the filing with the Trustee of evidence satisfactory to the Trustee of the consent of the Holders of Notes as aforesaid, and upon receipt by the Trustee of the documents described in Section 9.02 hereof, the Trustee shall join with the Company in the execution of such amended or supplemental Indenture unless such amended or supplemental Indenture directly affects the Trustee's own rights, duties or immunities under this Indenture or otherwise, in which case the Trustee may in its discretion, but shall not be obligated to, enter into such amended or supplemental Indenture.

It shall not be necessary for the consent of the Holders of Notes under this Section 11.02 to approve the particular form of any proposed amendment or waiver, but it shall be sufficient if such consent approves the substance thereof.

After an amendment, supplement or waiver under this Section becomes effective, the Company shall mail to the Holders of Notes affected thereby a notice briefly describing the amendment, supplement or waiver. Any failure of the Company to mail such notice, or any defect therein, shall not, however, in any way impair or affect the validity of any such amended or supplemental Indenture or waiver. Subject to Sections 8.04 and 8.07 hereof, the Holders of a majority in aggregate principal amount of the Notes then outstanding voting as a single class may waive compliance in a particular instance by the Company with any provision of this Indenture or the Notes. However, without the consent of each Holder affected, an amendment or waiver under this Section 11.02 may not (with respect to any Notes held by a non-consenting Holder):

- (a) reduce the principal amount of Notes whose Holders must consent to an amendment, supplement or waiver;
- (b) reduce the principal of or change the fixed maturity of any Note or alter or waive any of the provisions with respect to the redemption of the Notes except as provided above with respect to Section 6.08 hereof;
- (c) reduce the rate of or change the time for payment of interest, including default interest, on any Note;
- (d) waive a Default or Event of Default in the payment of principal of or premium, if any, or interest on the Notes (except a rescission of acceleration of the Notes by the Holders of at least a majority in aggregate principal amount of the then outstanding Notes and a waiver of the payment default that resulted from such acceleration);
- (e) make any Note payable in money other than that stated in the Notes;
- (f) make any change in the provisions of this Indenture relating to waivers of past Defaults or the rights of Holders of Notes to receive payments of principal of or interest on the Notes; or
- (g) make any change in Section 8.04 or 8.07 hereof or in the foregoing amendment and waiver provisions.

### **Section 11.03.** *Compliance with Trust Indenture Act*

Every amendment or supplement to this Indenture or the Notes shall be set forth in an amended or supplemental Indenture that complies with the TIA as then in effect.

### **Section 11.04.** *Revocation and Effect of Consents*

Until an amendment, supplement or waiver becomes effective, a consent to it by a Holder of a Note is a continuing consent by the Holder of a Note and every subsequent Holder of a Note or portion of a Note that evidences the same debt as the consenting Holder's Note, even if notation of the consent is not made on any Note. However, any such Holder of a Note or subsequent Holder of a Note may revoke the consent as to its Note if the Trustee receives written notice of revocation before the date the waiver, supplement or amendment becomes effective. An amendment, supplement or waiver becomes effective in accordance with its terms and thereafter binds every Holder.

### **Section 11.05.** *Notation on or Exchange of Notes*

The Trustee may place an appropriate notation about an amendment, supplement or waiver on any Note thereafter authenticated. The Company in exchange for all Notes may issue and the Trustee shall, upon receipt of an Authentication Order, authenticate new Notes that reflect the amendment, supplement or waiver.

Failure to make the appropriate notation or issue a new Note shall not affect the validity and effect of such amendment, supplement or waiver.

*Section 11.06. Trustee to Sign Amendments, etc.*

The Trustee shall sign any amended or supplemental Indenture authorized pursuant to this Article Nine if the amendment or supplement does not adversely affect the rights, duties, liabilities or immunities of the Trustee. The Company may not sign an amendment or supplemental Indenture until the Board of Directors approves it. In executing any amended or supplemental indenture, the Trustee shall be entitled to receive and (subject to Section 9.01 hereof) shall be fully protected in relying upon, in addition to the documents required by Section 12.04 hereof, an Officer's Certificate and an Opinion of Counsel stating that the execution of such amended or supplemental indenture is authorized or permitted by this Indenture.

**ARTICLE 12.**

**MISCELLANEOUS**

*Section 12.01. Trust Indenture Act Controls*

If any provision of this Indenture limits, qualifies or conflicts with the duties imposed by TIA §318(c), the imposed duties shall control.

*Section 12.02. Notices*

Any notice or communication by the Company or the Trustee to the others is duly given if in writing and delivered in Person or mailed by first class mail (registered or certified, return receipt requested), telex, telecopier or overnight air courier guaranteeing next day delivery, to the others' address:

If to the Company:

EMCORE Corporation  
145 Belmont Drive  
Somerset, New Jersey 08873  
Telecopier No.: (732) 271-9686  
Attention: Chief Financial Officer

With a copy to:

Jenner & Block LLP  
601 Thirteenth Street, N.W.  
Washington, D.C. 20005  
Telecopier No.: (202) 637-6374  
Attention: John E. Welch, Esq.

If to the Trustee:

Deutsche Bank Trust Company Americas  
60 Wall Street  
27th Floor - MSNYC60-2710  
New York, NY 10005  
Telecopier No.: (212) 454-2223  
Attention: Corporate Trust & Services Agency

The Company or the Trustee, by notice to the others may designate additional or different addresses for subsequent notices or communications.

All notices and communications (other than those sent to Holders) shall be deemed to have been duly given: at the time delivered by hand, if personally delivered; five Business Days after being deposited in the mail, postage prepaid, if mailed; when answered back, if telexed; when receipt acknowledged, if telecopied; and the next Business Day after timely delivery to the courier, if sent by overnight air courier guaranteeing next day delivery.

Any notice or communication to a Holder shall be mailed by first class mail, certified or registered, return receipt requested, or by overnight air courier guaranteeing next day delivery to its address shown on the register kept by the Registrar. Any notice or communication shall also be so mailed to any Person described in TIA § 313(c), to the extent required by the TIA. Failure to mail a notice or communication to a Holder or any defect in it shall not affect its sufficiency with respect to other Holders.

If a notice or communication is mailed in the manner provided above within the time prescribed, it is duly given, whether or not the addressee receives it.

If the Company mails a notice or communication to Holders, it shall mail a copy to the Trustee and each Agent at the same time.

*Section 12.03. Communication by Holders of Notes with Other Holders of Notes*

Holders may communicate pursuant to TIA § 312(b) with other Holders with respect to their rights under this Indenture or the Notes. The Company, the Trustee, the Registrar and anyone else shall have the protection of TIA § 312(c).

*Section 12.04. Certificate and Opinion as to Conditions Precedent*

Upon any request or application by the Company to the Trustee to take any action under this Indenture, the Company shall furnish to the Trustee:

(a) an Officers' Certificate in form and substance reasonably satisfactory to the Trustee (which shall include the statements set forth in Section 12.05 hereof) stating that, in the opinion of the signers, all conditions precedent and covenants, if any, provided for in this Indenture relating to the proposed action have been satisfied; and

(b) an Opinion of Counsel in form and substance reasonably satisfactory to the Trustee (which shall include the statements set forth in Section 12.05 hereof) stating that, in the opinion of such counsel, all such conditions precedent and covenants have been satisfied.

*Section 12.05. Statements Required in Certificate or Opinion*

Each certificate or opinion with respect to compliance with a condition or covenant provided for in this Indenture (other than a certificate provided pursuant to TIA § 314(a)(4)) shall comply with the provisions of TIA § 314(e) and shall include:

(a) a statement that the Person making such certificate or opinion has read such covenant or condition;

(b) a brief statement as to the nature and scope of the examination or investigation upon which the statements or opinions contained in such certificate or opinion are based;

(c) a statement that, in the opinion of such Person, he or she has made such examination or investigation as is necessary to enable him to express an informed opinion as to whether or not such covenant or condition has been satisfied; and

(d) a statement as to whether or not, in the opinion of such Person, such condition or covenant has been satisfied.

**Section 12.06. Rules by Trustee and Agents**

The Trustee may make reasonable rules for action by or at a meeting of Holders. The Registrar or Paying Agent may make reasonable rules and set reasonable requirements for its functions.

**Section 12.07. No Personal Liability of Directors, Officers, Employees and Stockholders**

No past, present or future director, officer, employee, incorporator or stockholder of the Company, as such, shall have any liability for any obligations of the Company under the Notes, this Indenture or for any claim based on, in respect of, or by reason of, such obligations or their creation. Each Holder by accepting a Note waives and releases all such liability. The waiver and release are part of the consideration for issuance of the Notes.

**Section 12.08. Governing Law**

THE INTERNAL LAW OF THE STATE OF NEW YORK SHALL GOVERN AND BE USED TO CONSTRUE THIS INDENTURE THE NOTES WITHOUT GIVING EFFECT TO APPLICABLE PRINCIPLES OF CONFLICTS OF LAW TO THE EXTENT THAT THE APPLICATION OF THE LAWS OF ANOTHER JURISDICTION WOULD BE REQUIRED THEREBY.

**Section 12.09. No Adverse Interpretation of Other Agreements**

This Indenture may not be used to interpret any other indenture, loan or debt agreement of the Company or its Subsidiaries or of any other Person. Any such indenture, loan or debt agreement may not be used to interpret this Indenture.

**Section 12.10. Successors**

All agreements of the Company in this Indenture and the Notes shall bind its successors. All agreements of the Trustee in this Indenture shall bind its successors.

**Section 12.11. Severability**

In case any provision in this Indenture or in the Notes shall be invalid, illegal or unenforceable, the validity, legality and enforceability of the remaining provisions shall not in any way be affected or impaired thereby.

**Section 12.12. Counterpart Originals**

The parties may sign any number of copies of this Indenture. Each signed copy shall be an original, but all of them together represent the same agreement.

**Section 12.13. Table of Contents, Headings, etc**

The Table of Contents, Cross-Reference Table and Headings of the Articles and Sections of this Indenture have been inserted for convenience of reference only, are not to be considered a part of this Indenture and shall in no way modify or restrict any of the terms or provisions hereof.

[Signature page follows]

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**SIGNATURES**

Dated as of February 24, 2004

**EMCORE Corporation**

By: /s/ Howard S. Brodie

\_\_\_\_\_  
Howard W. Brodie  
Vice President, Secretary and General Counsel

**Deutsche Bank Trust Company Americas,  
as Trustee**

By: /s/ Wanda Camacho

\_\_\_\_\_  
Wanda Camacho  
Vice President

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**Exhibit A**

**Form of Note**

**[Legend to Appear on Global Note]**

UNLESS THIS CERTIFICATE IS PRESENTED BY AN AUTHORIZED REPRESENTATIVE OF THE DEPOSITORY TRUST COMPANY TO THE COMPANY OR ITS AGENT FOR REGISTRATION OF TRANSFER, EXCHANGE OR PAYMENT, AND ANY CERTIFICATE ISSUED IS REGISTERED IN THE NAME OF CEDE & CO. OR IN SUCH OTHER NAME AS IS REQUESTED BY AN AUTHORIZED REPRESENTATIVE OF THE DEPOSITORY TRUST COMPANY (AND ANY PAYMENT HEREON IS MADE TO CEDE & CO. OR TO SUCH OTHER ENTITY AS IS REQUESTED BY AN AUTHORIZED REPRESENTATIVE OF THE DEPOSITORY TRUST COMPANY), ANY TRANSFER, PLEDGE OR OTHER USE HEREOF FOR VALUE OR OTHERWISE BY OR TO ANY PERSON IS WRONGFUL SINCE THE REGISTERED OWNER HEREOF, CEDE & CO., HAS AN INTEREST HEREIN. THIS NOTE IS A GLOBAL NOTE WITHIN THE MEANING OF THE INDENTURE HEREINAFTER REFERRED TO AND IS REGISTERED IN THE NAME OF A DEPOSITARY OR A NOMI NEE THEREOF. THIS NOTE IS EXCHANGEABLE FOR SECURITIES REGISTERED IN THE NAME OF A PERSON OTHER THAN THE DEPOSITARY OR ITS NOMINEE ONLY IN THE LIMITED CIRCUMSTANCES DESCRIBED IN THE INDENTURE AND, UNLESS AND UNTIL IT IS EXCHANGED IN WHOLE OR IN PART FOR SECURITIES IN DEFINITIVE FORM, THIS NOTE MAY NOT BE TRANSFERRED EXCEPT AS A WHOLE BY THE DEPOSITARY TO A NOMINEE OF THE DEPOSITARY OR BY A NOMINEE OF THE DEPOSITARY TO THE DEPOSITARY OR ANOTHER NOMINEE OF THE DEPOSITARY OR BY THE DEPOSITARY OR ANY SUCH NOMINEE TO A SUCCESSOR DEPOSITARY OR A NOMINEE OF SUCH SUCCESSOR DEPOSITARY AND TRANSFERS OF PORTIONS OF THIS GLOBAL NOTE SHALL BE LIMITED TO TRANSFERS MADE IN ACCORDANCE WITH SECTION 2.12 OF THE INDENTURE.

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**EMCORE CORPORATION**

CUSIP: [ ] R-1

**5% CONVERTIBLE SENIOR SUBORDINATED NOTES DUE 2011**

EMCORE Corporation, a New Jersey corporation (the “Company”, which term shall include any successor corporation under the Indenture referred to on the reverse hereof), promises to pay to Cede & Co., or registered assigns, the principal sum of [ ] Dollars (\$[ ]) on [ ], 2011 or such greater or lesser amount as is indicated on the Schedule of Exchanges of Notes on the other side of this Note.

Interest Payment Dates: May 15 and November 15

Record Dates: May 1 and November 1

This Note is convertible as specified on the other side of this Note. Additional provisions of this Note are set forth on the other side of this Note.

IN WITNESS WHEREOF, the Company has caused this instrument to be duly executed.

EMCORE Corporation

By:

Name:

Title

Attest:

By:

Name:

Title:

Dated:

Trustee’s Certificate of Authentication: This is one of the Notes referred to in the within-mentioned Indenture.

DEUTSCHE BANK TRUST COMPANY AMERICAS,  
as Trustee

By:

Name:

Title: Authorized Signer

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[REVERSE SIDE OF SECURITY]

EMCORE CORPORATION  
5% CONVERTIBLE SENIOR SUBORDINATED NOTES DUE 2011

1. INTEREST

EMCORE Corporation, a New Jersey corporation (the “Company,” which term shall include any successor corporation under the Indenture hereinafter referred to), promises to pay interest on the principal amount of this Note at the rate of 5% per annum. The Company shall pay interest semiannually on May 15 and November 15 of each year, commencing May 15, 2004, unless such date is not a business day, in which case, we shall pay interest on the next succeeding business day and such payment shall be deemed to have been paid on such interest payment date and no interest shall accrue during the additional period of time. Interest on the Notes shall accrue from the most recent date to which interest has been paid or, if no interest has been paid, from [\_\_\_\_], 2004; provided, however, that if there is not an existing default in the payment of interest and if this Note is authenticated between a record date referred to on the face hereof and the next succeeding interest payment date, interest shall accrue from such interest payment date. Interest will be computed on the basis of a 360-day year of twelve 30-day months.

2. METHOD OF PAYMENT

The Company shall pay interest on this Note (except defaulted interest) to the person who is the Holder of this Note at the close of business on May 1 or November 1, as the case may be, next preceding the related interest payment date. The Holder must surrender this Note to a Paying Agent to collect payment of principal. The Company will pay principal and interest in money of the United States that at the time of payment is legal tender for payment of public and private debts. The Company may, however, pay principal and interest in respect of any Definitive Note by check or wire payable in such money; provided, however, that a Holder with an aggregate principal amount in excess of \$2,000,000 will be paid by wire transfer in immediately available funds at the election of such Holder. The Company may mail an interest check to the Holder’s registered address. Notwithstanding the foregoing, so long as this Note is registered in the name of a Depositary or its nominee, all payments hereon shall be made by wire transfer of immediately available funds to the account of the Depositary or its nominee.

3. PAYING AGENT, REGISTRAR AND CONVERSION AGENT

Initially, Deutsche Bank Trust Company Americas (the “Trustee,” which term shall include any successor trustee under the Indenture hereinafter referred to) will act as Paying Agent, Registrar and Conversion Agent. The Company may change any Paying Agent, Registrar or Conversion Agent without notice to the Holder. The Company or any of its Subsidiaries may, subject to certain limitations set forth in the Indenture, act as Paying Agent or Registrar.

4. INDENTURE, LIMITATIONS

This Note is one of a duly authorized issue of Notes of the Company designated as its 5% Convertible Senior Subordinated Notes due 2011 (the “Notes”), issued under an Indenture dated as of [\_\_\_\_], 2004 (together with any supplemental indentures thereto, the “Indenture”), between the Company and the Trustee. The terms of this Note include those stated in the Indenture and those required by or made part of the Indenture by reference to the Trust Indenture Act of 1939, as amended, as in effect on the date of the Indenture. This Note is subject to all such terms, and the Holder of this Note is referred to the Indenture and said Act for a statement of them. All capitalized terms used but not defined herein shall have the meaning ascribed to such term in the Indenture.

The Notes are subordinated unsecured obligations of the Company limited to \$[\_\_\_\_] aggregate principal amount, subject to Section 2.2 of the Indenture. The Indenture does not limit other debt of the Company, secured or unsecured, including Senior Indebtedness.

5. PROVISIONAL REDEMPTION

The Notes may be redeemed at the election of the Company, as a whole or in part from time to time, at any time (a “*Provisional Redemption*”), upon at least 20 and not more than 60 days’ notice by mail to the Holders of the Notes (a “*Provisional Redemption Notice*”) at a redemption price equal to \$1,000 per \$1,000 principal amount of the Notes redeemed plus accrued and unpaid interest, if any (such amount, together with the Early Call Premium described below, the “*Provisional Redemption Price*”), to but excluding the date of redemption (the “*Provisional Redemption Date*”) if the Closing Sale Price of the Common Stock has exceeded 150% of the Conversion Price for at least 20 Trading Days within a period of any 30 consecutive Trading Days ending on the Trading Day prior to the date of mailing of the notice of Provisional Redemption (the “*Provisional Redemption Notice Date*”).

Except as set forth above, the Company shall not have the option to redeem the Notes.

6. EARLY CALL PREMIUM

If the Company delivers a Provisional Redemption Notice on or prior to January [ ], 2007, the Company shall make an additional payment, at its option, in cash or Common Stock or a combination of cash and Common Stock (the “*Early Call Premium*”) with respect to the Notes called for redemption to holders on the Provisional Redemption Notice Date in an amount equal to \$150.00 per \$1,000 principal amount of the Notes, less the amount of any interest actually paid (including, if the Provisional Redemption Date occurs after a record date but before an interest payment date, any interest paid or to be paid in connection with such interest payment date) on such Notes prior to the Provisional Redemption Date. Payments made in Common Stock will be valued at 95% of the average closing sales prices of Common Stock for the five Trading Days ending on the third day prior to the Provisional Redemption Date. The Company shall pay the Early Call Premium on all Notes called for Provisional Redemption on or prior to January [ ], 2007, including those Notes converted into Common Stock between the Provisional Redemption Notice Date and the Provisional Redemption Date.

7. NOTICE OF REDEMPTION

Notice of redemption will be mailed by first-class mail at least 20 days but not more than 60 days before the Redemption Date to each Holder of Notes to be redeemed at its registered address. Notes in denominations larger than \$1,000 may be redeemed in part, but only in whole multiples of \$1,000. On and after the Redemption Date, subject to the deposit with the Paying Agent of funds sufficient to pay the Redemption Price plus accrued interest, if any, accrued to, but not including, the Redemption Date, interest shall cease to accrue on Notes or portions of them called for redemption.

8. PURCHASE OF NOTES AT OPTION OF HOLDER UPON A CHANGE OF CONTROL

At the option of the Holder and subject to the terms and conditions of the Indenture, the Company shall become obligated to purchase all or any part specified by the Holder (so long as the principal amount of such part is \$1,000 or an integral multiple of \$1,000 in excess thereof) of the Notes held by such Holder on the date that is 30 Business Days after the occurrence of a Change of Control, at a purchase price equal to 100% of the principal amount thereof together with accrued interest up to, but excluding, the Change of Control Purchase Date. The Holder shall have the right to withdraw any Change of Control Purchase Notice (in whole or in a portion thereof that is \$1,000 or an integral multiple thereof) at any time prior to the close of business on the Business Day next preceding the Change of Control Purchase Date by delivering a written notice of withdrawal to the Paying Agent in accordance with the terms of the Indenture.

9. CONVERSION

A Holder of a Note may convert the principal amount of such Note (or any portion thereof equal to \$1,000 or any integral multiple of \$1,000 in excess thereof) into shares of Common Stock at any time prior to the close of business on May 15, 2011; provided, however, that if the Note is called for redemption or subject to purchase upon a Change of Control, the conversion right will terminate at the close of business on the Business Day immediately preceding the redemption date or the Change of Control Purchase Date, as the case may be, for such Note or such earlier date as the Holder presents such Note for redemption or purchase (unless the Company shall default in making the redemption payment or Change of Control Purchase Price, as the case may be, when due, in which case the conversion right shall terminate at the close of business on the date such default is cured and such Note is redeemed or purchased).

The initial Conversion Price is \$[ ] per share, subject to adjustment under certain circumstances. The number of shares of Common Stock issuable upon conversion of a Note is determined by dividing the principal amount of the Note or portion thereof converted by the Conversion Price in effect on the Conversion Date. No fractional shares will be issued upon conversion; in lieu thereof, an amount will be paid in cash based upon the Closing Price (as defined in the Indenture) of the Common Stock on the Trading Day immediately prior to the Conversion Date.

To convert a Note, a Holder must (a) complete and manually sign the conversion notice set forth below and deliver such notice to a Conversion Agent, (b) surrender the Note to a Conversion Agent, (c) furnish appropriate endorsements and transfer documents if required by a Registrar or a Conversion Agent, and (d) pay any transfer or similar tax, if required. Notes so surrendered for conversion (in whole or in part) during the period from the close of business on any regular record date to the opening of business on the next succeeding interest payment date (excluding Notes or portions thereof called for redemption or subject to purchase upon a Change of Control on a Redemption Date or Change of Control Purchase Date, as the case may be, during the period beginning at the close of business on a regular record date and ending at the opening of business on the first Business Day after the next succeeding interest payment date, or if such interest payment date is not a Business Day, the second such Business Day) shall also be accompanied by payment in funds acceptable to the Company of an amount equal to the interest payable on such interest payment date on the principal amount of such Note then being converted, and such interest shall be payable to such registered Holder notwithstanding the conversion of such Note, subject to the provisions of this Indenture relating to the payment of defaulted interest by the Company. If the Company defaults in the payment of interest payable on such interest payment date, the Company shall promptly repay such funds to such Holder. A Holder may convert a portion of a Note equal to \$1,000 or any integral multiple thereof.

A Note in respect of which a Holder had delivered a Change of Control Purchase Notice exercising the option of such Holder to require the Company to purchase such Note may be converted only if the Change of Control Purchase Notice is withdrawn in accordance with the terms of the Indenture.

#### 10. SUBORDINATION

The indebtedness evidenced by the Notes is, to the extent and in the manner provided in the Indenture, subordinate and junior in right of payment to the prior payment in full in cash of all Senior Indebtedness. Any Holder by accepting this Note agrees to and shall be bound by such subordination provisions and authorizes the Trustee to give them effect. In addition to all other rights of Senior Indebtedness described in the Indenture, the Senior Indebtedness shall continue to be Senior Indebtedness and entitled to the benefits of the subordination provisions irrespective of any amendment, modification or waiver of any terms of any instrument relating to the Senior Indebtedness or any extension or renewal of the Senior Indebtedness.

#### 11. DENOMINATIONS, TRANSFER, EXCHANGE

The Notes are in registered form without coupons in denominations of \$1,000 and integral multiples thereof. A Holder may register the transfer of or exchange Notes in accordance with the Indenture. The Registrar may require a Holder, among other things, to furnish appropriate endorsements and transfer documents and to pay any taxes or other governmental charges that may be imposed in relation thereto by law or permitted by the Indenture.

#### 12. PERSONS DEEMED OWNERS

The Holder of a Note may be treated as the owner of it for all purposes.

#### 13. UNCLAIMED MONEY

If money for the payment of principal or interest remains unclaimed for two years, the Trustee or Paying Agent will pay the money back to the Company at its written request. After that, Holders entitled to money must look to the Company for payment.

#### 14. AMENDMENT, SUPPLEMENT AND WAIVER

Subject to certain exceptions, the Indenture or the Notes may be amended or supplemented with the consent of the Holders of at least a majority in principal amount of the Notes then outstanding, and an existing default or Event of Default and its consequence or compliance with any provision of the Indenture or the Notes may be waived in a particular instance with the consent of the Holders of a majority in principal amount of the Notes then outstanding. Without the consent of or notice to any Holder, the Company and the Trustee may amend or supplement the Indenture or the Notes to, among other things, cure any ambiguity, defect or inconsistency or make any other change that does not adversely affect the rights of any Holder.

#### 15. SUCCESSOR CORPORATION

When a successor corporation assumes all the obligations of its predecessor under the Notes and the Indenture in accordance with the terms and conditions of the Indenture, the predecessor corporation will (except in certain circumstances specified in the Indenture) be released from those obligations.

#### 16. DEFAULTS AND REMEDIES

Under the Indenture, an Event of Default includes: (i) default for 30 days in payment of any interest on any Notes; (ii) default in payment of any principal (including, without limitation, any premium, if any) on the Notes when due; (iii) failure by the Company for 60 days after notice, given in accordance with the terms of the indenture, to it to comply with any of its other agreements contained in the Indenture or the Notes; (iv) the Company fails to comply with any of the provisions of Section 6.08 of the Indenture; (v) the Company fails to provide timely notice of a change of control; and (vi) certain events of bankruptcy, insolvency or reorganization of the Company. If an Event of Default (other than as a result of certain events of bankruptcy, insolvency or reorganization of the Company) occurs and is continuing, the Trustee or the Holders of at least 25% in principal amount of the Notes then outstanding may declare all unpaid principal to the date of acceleration on the Notes then outstanding to be due and payable immediately, all as and to the extent provided in the Indenture. If an Event of Default occurs as a result of certain events of bankruptcy, insolvency or reorganization of the Company, unpaid principal of the Notes then outstanding shall become due and payable immediately without any declaration or other act on the part of the Trustee or any Holder, all as and to the extent provided in the Indenture. Holders may not enforce the Indenture or the Notes except as provided in the Indenture. The Trustee may require indemnity satisfactory to it before it enforces the Indenture or the Notes. Subject to certain limitations, Holders of a majority in principal amount of the Notes then outstanding may direct the Trustee in its exercise of any trust or power. The Trustee may withhold from Holders notice of any continuing default (except a default in payment of principal or interest) if it determines that withholding notice is in their interests. The Company is required to file periodic reports with the Trustee as to the absence of default.

#### 17. TRUSTEE DEALINGS WITH THE COMPANY

Deutsche Bank Trust Company Americas, the Trustee under the Indenture, in its individual or any other capacity, may make loans to, accept deposits from and perform services for the Company or an Affiliate of the Company, and may otherwise deal with the Company or an Affiliate of the Company, as if it were not the Trustee.

#### 18. NO RECOURSE AGAINST OTHERS

A director, officer, employee or shareholder, as such, of the Company shall not have any liability for any obligations of the Company under the Notes or the Indenture nor for any claim based on, in respect of or by reason of such obligations or their creation. The Holder of this Note by accepting this Note waives and releases all such liability. The waiver and release are part of the consideration for the issuance of this Note.

#### 19. AUTHENTICATION

This Note shall not be valid until the Trustee or an authenticating agent manually signs the certificate of authentication on the other side of this Note.

#### 20. ABBREVIATIONS AND DEFINITIONS

Customary abbreviations may be used in the name of the Holder or an assignee, such as: TEN COM (= tenants in common), TEN ENT (= tenants by the entireties), JT TEN (= joint tenants with right of survivorship and not as tenants in common), CUST (= Custodian) and UGMA (= Uniform Gifts to Minors Act).

All terms defined in the Indenture and used in this Note but not specifically defined herein are defined in the Indenture and are used herein as so defined.

#### 21. INDENTURE TO CONTROL; GOVERNING LAW

In the case of any conflict between the provisions of this Note and the Indenture, the provisions of the Indenture shall control. This Note shall be governed by, and construed in accordance with, the laws of the State of New York, without regard to principles of conflicts of law.

The Company will furnish to any Holder, upon written request and without charge, a copy of the Indenture. Requests may be made to: EMCORE Corporation, 145 Belmont Drive, Somerset, New Jersey 08873, Attention: Chief Financial Officer.

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ASSIGNMENT FORM

To assign this Note, fill in the form below:

I or we assign and transfer this Note to

(Insert assignee’s soc. sec. or tax I.D. no.)

(Print or type assignee’s name, address and zip code)

and irrevocably appoint

agent to transfer this Note on the books of the Company. The agent may substitute another to act for him or her.

Your Signature:

Date:

(Sign exactly as your name appears on the other side of this Note)

\*Signature guaranteed by:

By:

\* The signature must be guaranteed by an institution which is a member of one of the following recognized signature guaranty programs: (i) the Securities Transfer Agent Medallion Program (STAMP); (ii) the New York Stock Exchange Medallion Program (MSP); (iii) the Stock Exchange Medallion Program (SEMP); or (iv) such other guaranty program acceptable to the Trustee.

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## CONVERSION NOTICE

To convert this Note into Common Stock of the Company, check the box: ☐

To convert only part of this Note, state the principal amount to be converted (must be \$1,000 or an integral multiple thereof): \$\_\_\_\_\_.

If you want the stock certificate made out in another person's name, fill in the form below:

(Insert assignee's soc. sec. or tax I.D. no.)

(Print or type assignee's name, address and zip code)

Your Signature:

Date:

(Sign exactly as your name appears on the other side of this Note)

\*Signature guaranteed by:

By:

\* The signature must be guaranteed by an institution which is a member of one of the following recognized signature guaranty programs: (i) the Securities Transfer Agent Medallion Program (STAMP); (ii) the New York Stock Exchange Medallion Program (MSP); (iii) the Stock Exchange Medallion Program (SEMP); or (iv) such other guaranty program acceptable to the Trustee.OPTION TO ELECT REPURCHASE UPON A CHANGE OF CONTROL

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To: EMCORE Corporation

The undersigned registered owner of this Note hereby irrevocably acknowledges receipt of a notice from EMCORE Corporation (the “Company”) as to the occurrence of a Change of Control with respect to the Company and requests and instructs the Company to redeem the entire principal amount of this Note, or the portion thereof (which is \$1,000 or an integral multiple thereof) below designated, in accordance with the terms of the Indenture referred to in this Note at the Change of Control Purchase Price, together with accrued interest to, but excluding, such date.

Dated:

Signature(s)

Signature(s) must be guaranteed by a qualified guarantor institution with membership in an approved signature guarantee program pursuant to Rule 17Ad-15 under the Securities Exchange Act of 1934.

Signature Guaranty

Principal amount to be redeemed  
(in an integral multiple of \$1,000, if less than all):

NOTICE: The signature to the foregoing Election must correspond to the Name as written upon the face of this Note in every particular, without alteration or any change whatsoever.

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## SCHEDULE OF EXCHANGES OF NOTES

The following exchanges, redemptions, repurchases or conversions of a part of this global Note have been made:

[illegible]

UNLESS THIS CERTIFICATE IS PRESENTED BY AN AUTHORIZED REPRESENTATIVE OF THE DEPOSITORY TRUST COMPANY TO THE COMPANY OR ITS AGENT FOR REGISTRATION OF TRANSFER, EXCHANGE OR PAYMENT, AND ANY CERTIFICATE ISSUED IS REGISTERED IN THE NAME OF CEDE & CO. OR IN SUCH OTHER NAME AS IS REQUESTED BY AN AUTHORIZED REPRESENTATIVE OF THE DEPOSITORY TRUST COMPANY (AND ANY PAYMENT HEREON IS MADE TO CEDE & CO. OR TO SUCH OTHER ENTITY AS IS REQUESTED BY AN AUTHORIZED REPRESENTATIVE OF THE DEPOSITORY TRUST COMPANY), ANY TRANSFER, PLEDGE OR OTHER USE HEREOF FOR VALUE OR OTHERWISE BY OR TO ANY PERSON IS WRONGFUL SINCE THE REGISTERED OWNER HEREOF, CEDE & CO., HAS AN INTEREST HEREIN. THIS NOTE IS A GLOBAL NOTE WITHIN THE MEANING OF THE INDENTURE HEREINAFTER REFERRED TO AND IS REGISTERED IN THE NAME OF A DEPOSITARY OR A NOMINEE THEREOF. THIS NOTE IS EXCHANGEABLE FOR SECURITIES REGISTERED IN THE NAME OF A PERSON OTHER THAN THE DEPOSITARY OR ITS NOMINEE ONLY IN THE LIMITED CIRCUMSTANCES DESCRIBED IN THE INDENTURE AND, UNLESS AND UNTIL IT IS EXCHANGED IN WHOLE OR IN PART FOR SECURITIES IN DEFINITIVE FORM, THIS NOTE MAY NOT BE TRANSFERRED EXCEPT AS A WHOLE BY THE DEPOSITARY TO A NOMINEE OF THE DEPOSITARY OR BY A NOMINEE OF THE DEPOSITARY TO THE DEPOSITARY OR ANOTHER NOMINEE OF THE DEPOSITARY OR BY THE DEPOSITARY OR ANY SUCH NOMINEE TO A SUCCESSOR DEPOSITARY OR A NOMINEE OF SUCH SUCCESSOR DEPOSITARY AND TRANSFERS OF PORTIONS OF THIS GLOBAL NOTE SHALL BE LIMITED TO TRANSFERS MADE IN ACCORDANCE WITH SECTION 2.12 OF THE INDENTURE.

## EMCORE CORPORATION

CUSIP 290846 AC 8

### 5% CONVERTIBLE SENIOR SUBORDINATED NOTES DUE 2011

EMCORE Corporation, a New Jersey corporation (the "Company", which term shall include any successor corporation under the Indenture referred to on the reverse hereof), promises to pay to Cede & Co., or registered assigns, the principal sum of eighty million two hundred seventy six thousand Dollars (\$80,276,000) on May 15, 2011 or such greater or lesser amount as is indicated on the Schedule of Exchanges of Notes on the other side of this Note.

Interest Payment Dates: May 15 and November 15

Record Dates: May 1 and November 1

This Note is convertible as specified on the other side of this Note. Additional provisions of this Note are set forth on the other side of this Note.

IN WITNESS WHEREOF, the Company has caused this instrument to be duly executed.

EMCORE Corporation

By: /s/ Howard W. Brodie

Howard W. Brodie  
Vice President, Secretary and General Counsel

Attest:

By: /s/ Michael O'Sullivan

Michael O'Sullivan  
Assistant Secretary

Dated: February 24, 2004

Trustee's Certificate of Authentication: This is one of the Notes referred to in the within-mentioned Indenture.

DEUTSCHE BANK TRUST COMPANY AMERICAS,  
as Trustee

By: /s/ Wanda Camacho

Wanda Camacho  
Vice President

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[REVERSE SIDE OF SECURITY]

EMCORE CORPORATION  
5% CONVERTIBLE SENIOR SUBORDINATED NOTES DUE 2011

1. INTEREST

EMCORE Corporation, a New Jersey corporation (the “Company,” which term shall include any successor corporation under the Indenture hereinafter referred to), promises to pay interest on the principal amount of this Note at the rate of 5% per annum. The Company shall pay interest semiannually on May 15 and November 15 of each year, commencing May 15, 2004, unless such date is not a business day, in which case, we shall pay interest on the next succeeding business day and such payment shall be deemed to have been paid on such interest payment date and no interest shall accrue during the additional period of time. Interest on the Notes shall accrue from the most recent date to which interest has been paid or, if no interest has been paid, from February 24, 2004; provided, however, that if there is not an existing default in the payment of interest and if this Note is authenticated between a record date referred to on the face hereof and the next succeeding interest payment date, interest shall accrue from such interest payment date. Interest will be computed on the basis of a 360-day year of twelve 30-day months.

2. METHOD OF PAYMENT

The Company shall pay interest on this Note (except defaulted interest) to the person who is the Holder of this Note at the close of business on May 1 or November 1, as the case may be, next preceding the related interest payment date. The Holder must surrender this Note to a Paying Agent to collect payment of principal. The Company will pay principal and interest in money of the United States that at the time of payment is legal tender for payment of public and private debts. The Company may, however, pay principal and interest in respect of any Definitive Note by check or wire payable in such money; provided, however, that a Holder with an aggregate principal amount in excess of \$2,000,000 will be paid by wire transfer in immediately available funds at the election of such Holder. The Company may mail an interest check to the Holder’s registered address. Notwithstanding the foregoing, so long as this Note is registered in the name of a Depositary or its nominee, all payments hereon shall be made by wire transfer of immediately available funds to the account of the Depositary or its nominee.

3. PAYING AGENT, REGISTRAR AND CONVERSION AGENT

Initially, Deutsche Bank Trust Company Americas (the “Trustee,” which term shall include any successor trustee under the Indenture hereinafter referred to) will act as Paying Agent, Registrar and Conversion Agent. The Company may change any Paying Agent, Registrar or Conversion Agent without notice to the Holder. The Company or any of its Subsidiaries may, subject to certain limitations set forth in the Indenture, act as Paying Agent or Registrar.

4. INDENTURE, LIMITATIONS

This Note is one of a duly authorized issue of Notes of the Company designated as its 5% Convertible Senior Subordinated Notes due 2011 (the “Notes”), issued under an Indenture dated as of February 24, 2004 (together with any supplemental indentures thereto, the “Indenture”), between the Company and the Trustee. The terms of this Note include those stated in the Indenture and those required by or made part of the Indenture by reference to the Trust Indenture Act of 1939, as amended, as in effect on the date of the Indenture. This Note is subject to all such terms, and the Holder of this Note is referred to the Indenture and said Act for a statement of them. All capitalized terms used but not defined herein shall have the meaning ascribed to such term in the Indenture.

The Notes are subordinated unsecured obligations of the Company limited to \$80,276,000 aggregate principal amount, subject to Section 2.2 of the Indenture. The Indenture does not limit other debt of the Company, secured or unsecured, including Senior Indebtedness.

5. PROVISIONAL REDEMPTION

The Notes may be redeemed at the election of the Company, as a whole or in part from time to time, at any time (a “*Provisional Redemption*”), upon at least 20 and not more than 60 days’ notice by mail to the Holders of the Notes (a “*Provisional Redemption Notice*”) at a redemption price equal to \$1,000 per \$1,000 principal amount of the Notes redeemed plus accrued and unpaid interest, if any (such amount, together with the Early Call Premium described below, the “*Provisional Redemption Price*”), to but excluding the date of redemption (the “*Provisional Redemption Date*”) if the Closing Sale Price of the Common Stock has exceeded 150% of the Conversion Price for at least 20 Trading Days within a period of any 30 consecutive Trading Days ending on the Trading Day prior to the date of mailing of the notice of Provisional Redemption (the “*Provisional Redemption Notice Date*”).

Except as set forth above, the Company shall not have the option to redeem the Notes.

6. EARLY CALL PREMIUM

If the Company delivers a Provisional Redemption Notice on or prior to May 15, 2007, the Company shall make an additional payment, at its option, in cash or Common Stock or a combination of cash and Common Stock (the “*Early Call Premium*”) with respect to the Notes called for redemption to holders on the Provisional Redemption Notice Date in an amount equal to \$150.00 per \$1,000 principal amount of the Notes, less the amount of any interest actually paid (including, if the Provisional Redemption Date occurs after a record date but before an interest payment date, any interest paid or to be paid in connection with such interest payment date) on such Notes prior to the Provisional Redemption Date. Payments made in Common Stock will be valued at 95% of the average closing sales prices of Common Stock for the five Trading Days ending on the third Trading day prior to the Provisional Redemption Date. The Company shall pay the Early Call Premium on all Notes called for Provisional Redemption on or prior to May 15, 2007, including those Notes converted into Common Stock between the Provisional Redemption Notice Date and the Provisional Redemption Date.

7. NOTICE OF REDEMPTION

Notice of redemption will be mailed by first-class mail at least 20 days but not more than 60 days before the Redemption Date to each Holder of Notes to be redeemed at its registered address. Notes in denominations larger than \$1,000 may be redeemed in part, but only in whole multiples of \$1,000. On and after the Redemption Date, subject to the deposit with the Paying Agent of funds sufficient to pay the Redemption Price plus accrued interest, if any, accrued to, but not including, the Redemption Date, interest shall cease to accrue on Notes or portions of them called for redemption.

8. PURCHASE OF NOTES AT OPTION OF HOLDER UPON A CHANGE OF CONTROL

At the option of the Holder and subject to the terms and conditions of the Indenture, the Company shall become obligated to purchase all or any part specified by the Holder (so long as the principal amount of such part is \$1,000 or an integral multiple of \$1,000 in excess thereof) of the Notes held by such Holder on the date that is 30 Business Days after the occurrence of a Change of Control, at a purchase price equal to 100% of the principal amount thereof together with accrued interest up to, but excluding, the Change of Control Purchase Date. The Holder shall have the right to withdraw any Change of Control Purchase Notice (in whole or in a portion thereof that is \$1,000 or an integral multiple thereof) at any time prior to the close of business on the Business Day next preceding the Change of Control Purchase Date by delivering a written notice of withdrawal to the Paying Agent in accordance with the terms of the Indenture.

9. CONVERSION

A Holder of a Note may convert the principal amount of such Note (or any portion thereof equal to \$1,000 or any integral multiple of \$1,000 in excess thereof) into shares of Common Stock at any time prior to the close of business on May 15, 2011; provided, however, that if the Note is called for redemption or subject to purchase upon a Change of Control, the conversion right will terminate at the close of business on the Business Day immediately preceding the redemption date or the Change of Control Purchase Date, as the case may be, for such Note or such earlier date as the Holder presents such Note for redemption or purchase (unless the Company shall default in making the redemption payment or Change of Control Purchase Price, as the case may be, when due, in which case the conversion right shall terminate at the close of business on the date such default is cured and such Note is redeemed or purchased).

The initial Conversion Price is \$8.06 per share, subject to adjustment under certain circumstances. The number of shares of Common Stock issuable upon conversion of a Note is determined by dividing the principal amount of the Note or portion thereof converted by the Conversion Price in effect on the Conversion Date. No fractional shares will be issued upon conversion; in lieu thereof, an amount will be paid in cash based upon the Closing Price (as defined in the Indenture) of the Common Stock on the Trading Day immediately prior to the Conversion Date.

To convert a Note, a Holder must (a) complete and manually sign the conversion notice set forth below and deliver such notice to a Conversion Agent, (b) surrender the Note to a Conversion Agent, (c) furnish appropriate endorsements and transfer documents if required by a Registrar or a Conversion Agent, and (d) pay any transfer or similar tax, if required. Notes so surrendered for conversion (in whole or in part) during the period from the close of business on any regular record date to the opening of business on the next succeeding interest payment date (excluding Notes or portions thereof called for redemption or subject to purchase upon a Change of Control on a Redemption Date or Change of Control Purchase Date, as the case may be, during the period beginning at the close of business on a regular record date and ending at the opening of business on the first Business Day after the next succeeding interest payment date, or if such interest payment date is not a Business Day, the second such Business Day) shall also be accompanied by payment in funds acceptable to the Company of an amount equal to the interest payable on such interest payment date on the principal amount of such Note then being converted, and such interest shall be payable to such registered Holder notwithstanding the conversion of such Note, subject to the provisions of this Indenture relating to the payment of defaulted interest by the Company. If the Company defaults in the payment of interest payable on such interest payment date, the Company shall promptly repay such funds to such Holder. A Holder may convert a portion of a Note equal to \$1,000 or any integral multiple thereof.

A Note in respect of which a Holder had delivered a Change of Control Purchase Notice exercising the option of such Holder to require the Company to purchase such Note may be converted only if the Change of Control Purchase Notice is withdrawn in accordance with the terms of the Indenture.

#### 10. SUBORDINATION

The indebtedness evidenced by the Notes is, to the extent and in the manner provided in the Indenture, subordinate and junior in right of payment to the prior payment in full in cash of all Senior Indebtedness. Any Holder by accepting this Note agrees to and shall be bound by such subordination provisions and authorizes the Trustee to give them effect. In addition to all other rights of Senior Indebtedness described in the Indenture, the Senior Indebtedness shall continue to be Senior Indebtedness and entitled to the benefits of the subordination provisions irrespective of any amendment, modification or waiver of any terms of any instrument relating to the Senior Indebtedness or any extension or renewal of the Senior Indebtedness.

#### 11. DENOMINATIONS, TRANSFER, EXCHANGE

The Notes are in registered form without coupons in denominations of \$1,000 and integral multiples thereof. A Holder may register the transfer of or exchange Notes in accordance with the Indenture. The Registrar may require a Holder, among other things, to furnish appropriate endorsements and transfer documents and to pay any taxes or other governmental charges that may be imposed in relation thereto by law or permitted by the Indenture.

#### 12. PERSONS DEEMED OWNERS

The Holder of a Note may be treated as the owner of it for all purposes.

#### 13. UNCLAIMED MONEY

If money for the payment of principal or interest remains unclaimed for two years, the Trustee or Paying Agent will pay the money back to the Company at its written request. After that, Holders entitled to money must look to the Company for payment.

#### 14. AMENDMENT, SUPPLEMENT AND WAIVER

Subject to certain exceptions, the Indenture or the Notes may be amended or supplemented with the consent of the Holders of at least a majority in principal amount of the Notes then outstanding, and an existing default or Event of Default and its consequence or compliance with any provision of the Indenture or the Notes may be waived in a particular instance with the consent of the Holders of a majority in principal amount of the Notes then outstanding. Without the consent of or notice to any Holder, the Company and the Trustee may amend or supplement the Indenture or the Notes to, among other things, cure any ambiguity, defect or inconsistency or make any other change that does not adversely affect the rights of any Holder.

#### 15. SUCCESSOR CORPORATION

When a successor corporation assumes all the obligations of its predecessor under the Notes and the Indenture in accordance with the terms and conditions of the Indenture, the predecessor corporation will (except in certain circumstances specified in the Indenture) be released from those obligations.

#### 16. DEFAULTS AND REMEDIES

Under the Indenture, an Event of Default includes: (i) default for 30 days in payment of any interest on any Notes; (ii) default in payment of any principal (including, without limitation, any premium, if any) on the Notes when due; (iii) failure by the Company for 60 days after notice to it, given in accordance with the terms of the Indenture, to comply with any of its other agreements contained in the Indenture or the Notes; (iv) the Company fails to comply with any of the provisions of Section 6.08 of the Indenture; (v) the Company fails to provide timely notice of a Change of Control; and (vi) certain events of bankruptcy, insolvency or reorganization of the Company. If an Event of Default (other than as a result of certain events of bankruptcy, insolvency or reorganization of the Company) occurs and is continuing, the Trustee or the Holders of at least 25% in principal amount of the Notes then outstanding may declare all unpaid principal to the date of acceleration on the Notes then outstanding to be due and payable immediately, all as and to the extent provided in the Indenture. If an Event of Default occurs as a result of certain events of bankruptcy, insolvency or reorganization of the Company, unpaid principal of the Notes then outstanding shall become due and payable immediately without any declaration or other act on the part of the Trustee or any Holder, all as and to the extent provided in the Indenture. Holders may not enforce the Indenture or the Notes except as provided in the Indenture. The Trustee may require indemnity satisfactory to it before it enforces the Indenture or the Notes. Subject to certain limitations, Holders of a majority in principal amount of the Notes then outstanding may direct the Trustee in its exercise of any trust or power. The Trustee may withhold from Holders notice of an y continuing default (except a default in payment of principal or interest) if it determines that withholding notice is in their interests. The Company is required to file periodic reports with the Trustee as to the absence of default.

#### 17. TRUSTEE DEALINGS WITH THE COMPANY

Deutsche Bank Trust Company Americas, the Trustee under the Indenture, in its individual or any other capacity, may make loans to, accept deposits from and perform services for the Company or an Affiliate of the Company, and may otherwise deal with the Company or an Affiliate of the Company, as if it were not the Trustee.

#### 18. NO RECOURSE AGAINST OTHERS

A director, officer, employee or shareholder, as such, of the Company shall not have any liability for any obligations of the Company under the Notes or the Indenture nor for any claim based on, in respect of or by reason of such obligations or their creation. The Holder of this Note by accepting this Note waives and releases all such liability. The waiver and release are part of the consideration for the issuance of this Note.

19. AUTHENTICATION

This Note shall not be valid until the Trustee or an authenticating agent manually signs the certificate of authentication on the other side of this Note.

20. ABBREVIATIONS AND DEFINITIONS

Customary abbreviations may be used in the name of the Holder or an assignee, such as: TEN COM (= tenants in common), TEN ENT (= tenants by the entireties), JT TEN (= joint tenants with right of survivorship and not as tenants in common), CUST (= Custodian) and UGMA (= Uniform Gifts to Minors Act).

All terms defined in the Indenture and used in this Note but not specifically defined herein are defined in the Indenture and are used herein as so defined.

21. INDENTURE TO CONTROL; GOVERNING LAW

In the case of any conflict between the provisions of this Note and the Indenture, the provisions of the Indenture shall control. This Note shall be governed by, and construed in accordance with, the laws of the State of New York, without regard to principles of conflicts of law.

The Company will furnish to any Holder, upon written request and without charge, a copy of the Indenture. Requests may be made to: EMCORE Corporation, 145 Belmont Drive, Somerset, New Jersey 08873, Attention: Chief Financial Officer.

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ASSIGNMENT FORM

To assign this Note, fill in the form below:

I or we assign and transfer this Note to

(Insert assignee’s soc. sec. or tax I.D. no.)

(Print or type assignee’s name, address and zip code)

and irrevocably appoint

agent to transfer this Note on the books of the Company. The agent may substitute another to act for him or her.

Your Signature:

Date:

(Sign exactly as your name appears on the other side of this Note)

\*Signature guaranteed by:

By:

\* The signature must be guaranteed by an institution which is a member of one of the following recognized signature guaranty programs: (i) the Securities Transfer Agent Medallion Program (STAMP); (ii) the New York Stock Exchange Medallion Program (MSP); (iii) the Stock Exchange Medallion Program (SEMP); or (iv) such other guaranty program acceptable to the Trustee.

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## CONVERSION NOTICE

To convert this Note into Common Stock of the Company, check the box: ☐

To convert only part of this Note, state the principal amount to be converted (must be \$1,000 or an integral multiple thereof): \$\_\_\_\_\_.

If you want the stock certificate made out in another person's name, fill in the form below:

(Insert assignee's soc. sec. or tax I.D. no.)

(Print or type assignee's name, address and zip code)

Your Signature:

Date:

(Sign exactly as your name appears on the other side of this Note)

\*Signature guaranteed by:

By:

\* The signature must be guaranteed by an institution which is a member of one of the following recognized signature guaranty programs: (i) the Securities Transfer Agent Medallion Program (STAMP); (ii) the New York Stock Exchange Medallion Program (MSP); (iii) the Stock Exchange Medallion Program (SEMP); or (iv) such other guaranty program acceptable to the Trustee.OPTION TO ELECT REPURCHASE UPON A CHANGE OF CONTROL

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To: EMCORE Corporation

The undersigned registered owner of this Note hereby irrevocably acknowledges receipt of a notice from EMCORE Corporation (the “Company”) as to the occurrence of a Change of Control with respect to the Company and requests and instructs the Company to redeem the entire principal amount of this Note, or the portion thereof (which is \$1,000 or an integral multiple thereof) below designated, in accordance with the terms of the Indenture referred to in this Note at the Change of Control Purchase Price, together with accrued interest to, but excluding, such date.

Dated:

Signature(s)

Signature(s) must be guaranteed by a qualified guarantor institution with membership in an approved signature guarantee program pursuant to Rule 17Ad-15 under the Securities Exchange Act of 1934.

Signature Guaranty

Principal amount to be redeemed  
(in an integral multiple of \$1,000, if less than all):

NOTICE: The signature to the foregoing Election must correspond to the Name as written upon the face of this Note in every particular, without alteration or any change whatsoever.

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## SCHEDULE OF EXCHANGES OF NOTES

The following exchanges, redemptions, repurchases or conversions of a part of this global Note have been made:

[illegible]



**SUBSIDIARIES OF THE REGISTRANT**

Corona Optical Systems, Inc., a Delaware corporation

EMCORE IRB Company, Inc., a New Mexico corporation

EMCORE Real Estate Holding Corporation, a Delaware corporation

MicroOptical Devices, Inc., a Delaware corporation

TPS Acquisition Corporation, a Delaware corporation

TPS Financing Corporation, a Delaware corporation

**CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM**

We consent to the incorporation by reference in Registration Statement Nos. 333-27507, 333-37306, 333-36445, 333-39547, 333-60816, 333-45827, 333-118074, and 333-118076 of EMCORE Corporation on Form S-8, Registration Statement No. 333-111585 of EMCORE Corporation on Form S-4, and Registration Statement Nos. 333-94911, 333-87753, 333-65526, 333-71791 and 333-42514 of EMCORE Corporation on Form S-3 of our report, dated December 14, 2004, appearing in this Annual Report on Form 10-K of EMCORE Corporation for the year ended September 30, 2004.

*DELOITTE & TOUCHE LLP*

Parsippany, New Jersey  
December 14, 2004

**CERTIFICATION**

I, Reuben F. Richards, Jr., certify that:

1. I have reviewed this annual report on Form 10-K of EMCORE Corporation;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officers and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) for the registrant and have:
  - a) designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
  - b) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
  - c) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
  - a) all significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
  - b) any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: December 14, 2004

By: /s/ Reuben F. Richards, Jr.

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 Reuben F. Richards, Jr.  
 President and CEO

**CERTIFICATION**

I, Thomas G. Werthan, certify that:

1. I have reviewed this annual report on Form 10-K of EMCORE Corporation;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officers and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) for the registrant and have:
  - a) designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
  - b) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
  - c) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
  - a) all significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
  - b) any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: December 14, 2004

By: /s/ Thomas G. Werthan

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Thomas G. Werthan  
Chief Financial Officer

**STATEMENT REQUIRED BY 18 U.S.C. SECTION 1350, AS ADOPTED PURSUANT TO  
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002**

In connection with the Annual Report on Form 10-K of EMCORE Corporation (the "Company") for the year ended September 30, 2004, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Reuben F. Richards, Jr., President and Chief Executive Officer of the Company, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that: 1) the Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and 2) the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: December 14, 2004

By: /s/ Reuben F. Richards, Jr.

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Reuben F. Richards, Jr.  
President & CEO

*A signed original of this written statement required by Section 906 has been provided to EMCORE Corporation and will be retained by EMCORE Corporation and furnished to the Securities and Exchange Commission or its staff upon request. This certification has not been, and shall not be deemed to be, filed with the Securities and Exchange Commission.*

**STATEMENT REQUIRED BY 18 U.S.C. SECTION 1350, AS ADOPTED PURSUANT TO  
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002**

In connection with the Annual Report on Form 10-K of EMCORE Corporation (the "Company") for the year ended September 30, 2004, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Thomas G. Werthan, Chief Financial Officer of the Company, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that: 1) the Report fully complies with the requirements of section 13(a) or 15(d) of the Securities Exchange Act of 1934; and 2) the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: December 14, 2004

By: /s/ Thomas G. Werthan

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Thomas G. Werthan  
Chief Financial Officer

*A signed original of this written statement required by Section 906 has been provided to EMCORE Corporation and will be retained by EMCORE Corporation and furnished to the Securities and Exchange Commission or its staff upon request. This certification has not been and shall not be deemed to be filed with the Securities and Exchange Commission.*

