

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

FORM 10-K

(Mark One)

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

FOR THE FISCAL YEAR ENDED OCTOBER 31, 1998

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 0-21969

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

DELAWARE
(State or other jurisdiction of
incorporation or organization)

23-2725311
(I.R.S. Employer
Identification No.)

1201 WINTERSON ROAD, LINTHICUM, MD
(Address of principal executive offices)

21090
(Zip Code)

(410) 865-8500
(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

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 registrant's knowledge, in definitive proxy or information statements
incorporated by reference in Part III of this Form 10-K or any amendment to this
Form 10-K.

The aggregate market value of the 103,239,704 shares of Common Stock of the
Registrant issued and outstanding as of October 31, 1998, excluding 4,979,049
shares of Common Stock held by affiliates of the Registrant was \$1,725,457,102.
This amount is based on the average bid and asked price of the Common Stock on
the Nasdaq Stock Market of \$17.56 per share on October 30, 1998.

DOCUMENTS INCORPORATED BY REFERENCE

Part III of the Form 10-K incorporates by reference certain portions of the
Registrant's proxy statement for its 1999 annual meeting of stockholders to be
filed with the Commission not later than 120 days after the end of the fiscal
year covered by this report.

PART I

The information in this Form 10-K contains certain forward-looking statements, including statements related to markets for the Company's products and trends in its business that involve risks and uncertainties. The Company's actual results may differ materially from the results discussed in the forward-looking statements. Factors that might cause such a difference include, but are not limited to, those discussed in "Management's Discussion and Analysis of Financial Condition and Results of Operations-Risk Factors" and "Business" as well as those discussed elsewhere in this Form 10-K.

ITEM 1. BUSINESS

COMPANY

CIENA Corporation was incorporated in Delaware in November 1992. The Company completed its initial public offering on February 7, 1997 and a secondary offering on July 2, 1997.

The Company's principal executive offices are located at 1201 Winterson Road, Linthicum, Maryland 21090. Its telephone number is (410) 865-8500.

GENERAL

OVERVIEW

CIENA Corporation (the "Company" or "CIENA") designs, manufactures and sells open architecture, dense wavelength division multiplexing ("DWDM") systems for fiberoptic communications networks, including long-distance and local exchange carriers. CIENA also provides a range of engineering, furnishing and installation services for telecommunications service providers.

CIENA's long-distance DWDM solutions, the MultiWave(R) 1600 system, the MultiWave Sentry(TM) 1600 and the MultiWave Sentry 4000 were designed to alleviate capacity, or bandwidth, constraints in high traffic, long distance fiber optic routes without requiring the installation of new fiber. The Company's long-distance MultiWave systems include optical transmission terminals, optical amplifiers, optical add/drop multiplexers and network management software. CIENA's short-distance DWDM solution, the MultiWave Firefly(TM), is designed for point-to-point short-haul applications (distances of 65km or less). The product contains no optical amplifiers, and allows simultaneous transmission of up to 24 optical channels per fiber at transmission speeds of up to 2.5 Gb/s per channel. CIENA's MultiWave systems are designed with an open architecture that allows them to interoperate with carriers' existing fiber optic transmission systems having a broad range of transmission speeds and signal formats.

The Company's research and development efforts are targeted to broadening the product applications of its DWDM technology as well as integrating the technology as part of a more comprehensive approach to optical communications solutions.

On February 19, 1998, the Company acquired ATI Telecom International Ltd., ("Alta"), a Canadian corporation headquartered near Atlanta, Georgia, in a transaction valued at approximately \$52.5 million. Alta provides a range of engineering, furnishing and installation services for telecommunications service providers in the areas of transport, switching and wireless communications. The historical consolidated financial results of CIENA for prior periods have been restated to include the financial position and results of operations of Alta.

The Company believes it is a worldwide market leader in field deployment of open architecture DWDM systems with more than two million optical channel kilometers installed. For the fiscal year ended October 31, 1998, the Company recorded revenue from sales of DWDM systems to a total of fourteen customers, a substantial increase over 1997's customer base of five. Over half of the Company's total revenue for the year was from sales to Sprint Corporation ("Sprint"). The majority of the Company's fiscal 1998 revenue was derived from sales of its 40-channel MultiWave Sentry 4000 system which began shipping in commercial volumes toward the end of the Company's fiscal second quarter. The Company is actively seeking additional customers among long distance, local and interoffice fiber optic network operators, as well as Internet service providers, in the worldwide telecommunications market.

Fiscal 1998 was a year of dramatic events affecting the Company. Soon after the close of the first fiscal quarter, MCI WorldCom Inc. ("MCIWorldCom" or "WorldCom"), the Company's largest customer of fiscal 1997, surprised the Company with an announcement of a major change in purchasing practices - a change that meant materially

reduced revenue for the Company. This adverse event was followed in the second quarter by the Company's successful, large scale commercial introduction of the Company's industry leading 40-channel MultiWave Sentry 4000. The third quarter included resolution of the Company's longstanding Pirelli SpA ("Pirelli") litigation, which was followed on June 3, 1998 with the announcement of a planned merger with Tellabs, Inc. In the fourth quarter, just prior to consummation of the merger, AT&T Corporation ("AT&T") advised the Company that it would no longer consider CIENA's long distance DWDM products for deployment in AT&T's network. The planned merger with Tellabs was later terminated on September 14, 1998.

The Company's final results for fiscal 1998, its second full year in the DWDM marketplace, show total revenues in excess of \$500 million. The Company believes this represents a considerable achievement, particularly given the substantial portion of revenues derived from the sale of its now third-generation DWDM product, the MultiWave Sentry 4000. Nevertheless, the termination of the Tellabs merger represented a setback for the Company.

The outlook for fiscal 1999 is challenging. The price discounting offered by competitors striving to catch up to the Company and acquire market share has placed pressure on gross margins and operating profitability. But market demand for high-bandwidth solutions still appears robust, and the Company believes that its product and service quality, manufacturing experience, and proven track record of delivery will enable it to endure the gross margin pressure while it concentrates on efforts to reduce product costs and maximize production efficiencies. The Company intends to continue this strategy in order to preserve and enhance market leadership and eventually build on its installed base with new and additional products. Pursuit of this strategy, in conjunction with increased investments in selling, marketing, and customer service activities, will likely limit the Company's operating profitability over at least the first half of fiscal 1999, and may result in near term operating losses. See Item 7. "Management's Discussion and Analysis of Financial Condition and Results of Operations-Risk Factors".

INDUSTRY BACKGROUND

THE TELECOMMUNICATIONS MARKET

Service providers both domestically and internationally have widely deployed fiber optic cable forming the backbone of their communication networks. During the last several years carriers have faced several challenges resulting from a combination of factors including:

- Unprecedented traffic growth
- Changing traffic demands
- Growing competition
- Increased demand for reliability

Unprecedented Traffic Growth

Recently, service providers have seen dramatic network traffic growth caused by factors such as:

- the escalating use of the Internet, as well as increased use of distributed computing, electronic mail, facsimile transmission, electronic transaction processing, video conferencing, remote access telecommuting and local and wide area networking;
- growing capacity and processing speed of data communications equipment such as Asynchronous Transfer Mode (ATM) switches and Internet Protocol (IP) routers;
- development of high-bandwidth network access technologies, such as cable modems, hybrid fiber coaxial architectures and digital subscriber lines, that permit commercial and consumer users to transmit and receive high volumes of information.

This increased network utilization creates transmission bottlenecks on heavily used routes that were originally designed for significantly less traffic. Although exact statistics are not available, the Company believes that this volume increase has caused some telecommunications carriers to handle traffic over certain long distance routes at or near the maximum capacity of the existing installed fiber and electronic-based transmission systems currently in use.

Changing Traffic Demands

In addition to more traffic, telecommunication carriers are seeing a shift in the kind of traffic they are handling. No longer purely telephone or voice traffic, networks today are carrying an ever increasing volume of data traffic - traffic generated by computers that process and send information far more quickly and in much larger quantities than voice-centric networks were designed for. Carriers and equipment suppliers both have sought more efficient ways to handle this traffic, adopting cell and packet based protocols such as Frame Relay, ATM and IP. These protocols more efficiently handle data traffic by organizing it either in packets, as is the case with Frame Relay and IP, or in cells for ATM. Each packet or cell contains a header with the destination information the network needs to efficiently route or switch the packet/cell.

Recently advances by data communications equipment suppliers have made it possible for ATM switches and IP routers to operate at port speeds of OC-48, or 2.4 gigabits per second. An industry analyst has estimated that the volume of data-centric traffic traveling in packets or cells will reach 99% of all network traffic by 2004. Whether or not the estimate is precisely accurate, the Company believes the trend of increasing cell and packet based traffic is unmistakable and, as a result, carriers will increasingly look for alternatives to the use of traditional voice-based or synchronous optical network/synchronous digital hierarchy (SONET/SDH) telecommunications equipment in their network architecture. The Company expects that carriers will begin to move toward a simpler, more cost effective network where data traffic from an ATM switch or an IP router is directly fed to a DWDM device. The Company believes its ability to connect directly to ATM switches and IP routers through its DirectConnect™ feature positions it to benefit from this shift.

Growing Competition

Widespread deregulation of the United States telecommunications industry has resulted in increased competition among service providers both in the long-distance and local markets. In addition to heightened price competition, carriers are increasingly looking for new ways to differentiate their services from those offered by their competitors. Several new carriers have attempted to leverage leading edge, high capacity technology as a market differentiator for their networks. The Company believes this competition is itself a driver for broader deployment of bandwidth throughout the network and, ultimately, to the end user.

Increased Demand for Reliability

End-users also are becoming more dependent on around-the-clock network availability, not only for voice, but also for data traffic. The Company believes these end-users are becoming less tolerant of service interruptions, which can be caused by factors such as equipment failure, fiber cuts or high traffic volume. Consequently, network service providers are faced with a multi-pronged challenge: more traffic, a different type traffic, and a growing demand for increased network reliability.

In many cases, this demand for greater reliability has led long distance carriers to adopt a "ring architecture" in which long distance routes are linked in a ring configuration so that in the event of a fiber optic cable cut or other equipment failure between two points of the ring, the signal can be immediately redirected through the reverse "protection path" of the ring. The service break associated with a fiber cut or other equipment failure in a network using ring architecture can be restored in approximately 50 milliseconds, which is essentially unnoticeable by the consumer. However, many ring architectures now being deployed demand twice as much fiber capacity (due to the need to maintain a redundant alternative path to serve as a protection path for each fiber in use) as non-ring based architectures. Most, if not all of the major carriers have either already implemented or announced an intention to implement ring architecture for their networks, which will place greater bandwidth demand on their existing fiber optic networks.

THE CIENA SOLUTION

CIENA's MultiWave DWDM systems enhance the transmission capacity of a single optical fiber, without requiring significant modification or upgrade to transmission equipment. All MultiWave systems are installed along segments of fiber optic routes, the beginning and end of which are defined by the presence of the customers' transmission equipment.

DESIGN PRINCIPLES

CIENA's MultiWave DWDM systems incorporate the following design principles:

- OPEN ARCHITECTURE. MultiWave systems are designed with an open architecture that allows the products to interoperate with carriers' existing fiber optic transmission systems having a broad range of transmission speeds and signal formats. This approach is distinguished from a closed architecture system design pursued by companies that manufacture other telecommunications equipment and may seek to preserve the market for their legacy network equipment. CIENA believes its customers and potential customers perceive value in the ability to purchase "best of breed" open architecture equipment as a means by which to preserve their existing network investment and to maintain an open network evolution path during this time of dramatic network change.
- SCALABILITY. The MultiWave system design is modular and allows capacity-specific configurations and the ability to add capacity through a modular upgrade without interrupting existing MultiWave traffic. This capability enables a customer to select the number of channels required on a particular fiber and preserves the customer's ability to respond quickly to increased demand for capacity without requiring significant additional equipment purchases and without costly interruptions to revenue generating services.
- FLEXIBILITY / EFFICIENCY. CIENA's DirectConnect technology allows for DWDM systems to play an integral role in new network architectures optimized for cell and packet-based traffic. CIENA's MultiWave systems can be also tactically implemented on a route-by-route basis in existing network architectures, providing relief on capacity-constrained routes without mandating a network-wide architectural or transmission equipment change. In the context of new network construction, the Company believes that its ability to permit increased capacity per fiber, together with the elimination of multiple regenerators, make deployment of the MultiWave systems a cost-efficient alternative to more conventional time-division multiplexing (TDM) approaches. MultiWave systems configured with the Company's optical add/drop multiplexer ("OADM") enable carriers to selectively direct portions of a route's traffic to various sites along the route without requiring extensive termination equipment or electronic add/drop multiplexers. The Company believes the resulting traffic route flexibility at the all optical layer of the fiber optic network is also potentially attractive and cost effective to network planners.
- FIBER COMPATIBILITY. CIENA's DWDM systems are compatible with the various kinds of fiber (dispersion shifted, reduced dispersion and non-dispersion shifted) deployed world-wide. The products currently perform optimally on non-dispersion shifted fiber, which comprises the majority of fiber installed in both North America and Europe.

ENABLING TECHNOLOGIES

CIENA developed its MultiWave DWDM systems based upon the use of several core enabling technologies that assist in overcoming many of the constraints that previously limited commercial introduction of DWDM technology:

- ERBUM-DOPED FIBER AMPLIFIERS ("EDFAS") enable the direct amplification of optical signals without the use of electronic regenerators;
- IN-FIBER BRAGG GRATINGS produced by the Company, enable precise filtering of multiple optical signals in a single fiber;
- WAVEWATCHERS NETWORK MANAGEMENT SOFTWARE developed by the Company makes it possible for a network operator to manage effectively the status and functions of CIENA MultiWave systems in conjunction with the network operator's management of other parts of its network. The Company provides standards compliant network management systems based upon Simple Network Management Protocol (SNMP), Transmission Control Protocol/Internet Protocol (TCP/IP) and International Telecommunications Union (ITU) Telecommunications Management Network (TMN) standards.
- DIRECTCONNECT provides flexible connectivity directly from CIENA's DWDM equipment to ATM, IP SONET/SDH equipment enabling customers to build simpler, more cost-effective data-centric networks.

"TURNKEY" ASSISTANCE

CIENA has built a portfolio of service capabilities, essentially offering full turnkey system deployment and maintenance for carriers and emerging carriers. These services may extend beyond products supplied by CIENA, as today's carriers often require assistance with facilities build-out, switch provisioning and integration of the DWDM terminals with existing TDM or tributary equipment.

CIENA offers its services in formats ranging from "a la carte" to bundled turnkey deployment and maintenance packages. The Company's goal is to combine these broad service capabilities with superior products in a way which facilitates its customers' needs for rapid and smooth development of essential new capacity.

CIENA'S STRATEGY

The Company's strategy is to maintain and build upon its market leadership in the deployment of DWDM systems and to leverage the Company's highbandwidth technologies in order to provide solutions to both voice and data communications based network architectures. Important elements of the Company's strategy include:

- MAINTAIN LEADERSHIP IN DEPLOYMENT OF DWDM IN FIBER OPTIC NETWORKS. The Company believes that the technological, operational and cost benefits of the Company's DWDM systems, including the MultiWave 1600, MultiWave Sentry 1600 and MultiWave Sentry 4000, and MultiWave Firefly, create competitive advantages for telecommunications carriers worldwide, which are being pressed by their customers to deliver more bandwidth to address the dramatic growth in Internet and other data communications traffic. The Company also believes that achieving early widespread operational deployment of its systems in a particular carrier's network will provide CIENA significant competitive advantages with respect to additional DWDM deployments and channel upgrades within that network and will enhance its marketing to other carriers as a field proven supplier. The Company therefore intends to continue aggressively serving its existing customers while actively pursuing additional DWDM deployment opportunities among fiber optic carriers in domestic and foreign long distance, interoffice and local exchange markets. Additionally, the results of a blind survey conducted on the Company's behalf by a third party, suggest that among its primary competitors, it is perceived to be by far the most responsive and easiest with which to work. The Company intends to emphasize this service and support excellence as a differentiating factor in its efforts to maintain and enhance its market position.
- LEVERAGE THE COMPANY'S HIGH BANDWIDTH TECHNOLOGIES AND KNOW-HOW. The Company believes the overall growth in demand for bandwidth in telecommunications networks will lead to transmission bottlenecks in other segments of the networks where the application of DWDM and other high bandwidth enabling technologies may provide solutions, either within existing network architectures, or as part of the design and development of alternative data communications based network architectures. The Company expects to leverage the core competencies it has developed in the design, development and manufacturing of the MultiWave product lines by pursuing new product development efforts, and strategic alliances or acquisitions, to address these expected opportunities. The Company intends to move aggressively to maintain leadership in the design and development of communications equipment and software which will both respond to customer needs and help the customers move toward newer, higher capacity, more cost-efficient network designs for the future.
- CONTINUE TO EMPHASIZE TECHNICAL SUPPORT AND CUSTOMER SERVICE. The Company markets technically advanced systems to sophisticated customers. The nature of the Company's systems and market require a high level of technical support and customer service, including installation assistance. The Company's efforts to develop substantial customer service and installation support organization were significantly enhanced with the acquisition of Alta in February of 1998. Through the combination of its existing technical support and customer service operations and Alta, CIENA offers complete engineering, furnishing and installation services in addition to full-time customer support from offices in Kansas City, Kansas; Tulsa, Oklahoma; Atlanta, Georgia; London, United Kingdom; and Tokyo, Japan and other selected locations where it develops significant customer relationships.
- CONTINUE TO ENHANCE WORLD CLASS MANUFACTURING CAPABILITY. The Company's MultiWave systems serve a mission critical role in its customers' networks. Quality assurance and manufacturing excellence are necessary for the Company to achieve success. CIENA believes it has developed a world class manufacturing capability and that this capability provides the Company with a significant competitive advantage. The Company achieved ISO 9001 certification in July 1997 in further support of this element of its strategy. The Company expects to continue to invest in both the capital and the human resources necessary to maintain and leverage this

advantage. During 1998, the Company expanded its manufacturing portfolio from a single product to a total of four products.

- EXPAND SALES AND MARKETING EFFORTS. The nature of the target customer base for all MultiWave product lines requires a focused sales effort on a customer-by-customer basis. The Company will continue to increase its sales and marketing efforts by focusing on the worldwide market of fiber optic carriers. The Company increased the number of optical transport customers from five in 1997 to fourteen during 1998. In addition, CIENA significantly increased its international presence, particularly in Europe, growing the number of international customers from three to seven and the percentage of revenues from international customers from less than 5% of total revenue in 1997 to approximately 23% of revenue in 1998. In September of 1998, CIENA announced a realignment of its sales and marketing organization whereby it established separate sales and marketing organizations. The Company believes this realignment will enable it focus more specifically on the independent disciplines of sales and marketing, thereby strengthening its relationships with current and potential customers and its competitive positioning. The Company will continue to strengthen its marketing programs and to increase its international presence through both direct sales and international distributor relationships.

CIENA'S OPTICAL TRANSPORT PRODUCTS

LONG-DISTANCE APPLICATIONS

MULTIWAVE 1600 AND MULTIWAVE SENTRY SYSTEMS

The Company's first DWDM system, the MultiWave 1600, was designed to help long distance service providers alleviate the bandwidth constraints affecting their networks. The MultiWave 1600 system is a combination of equipment and software installed on long distance route segments of up to 600 kilometers (372 miles). For routes in excess of 600 kilometers, a conventional fiber optic regenerator can be used to reconstruct the optical signals between successive MultiWave 1600 systems.

The MultiWave 1600 system enables simultaneous transmission of up to 16 optical channels on a single fiber at rates of up to 2.5 Gb/s per channel without opto-electronic regeneration. A MultiWave 1600 system consists of one MultiWave terminal on each end of a route segment, one or more MultiWave optical amplifiers along the route (depending on route length) and CIENA's WaveWatcher network management software. The CIENA MultiWave optical amplifier is a modular Erbium-doped fiber amplifier that provides direct composite optical amplification of the 16 optical channels carried by the MultiWave 1600 and MultiWave Sentry systems. Within a single MultiWave system, CIENA's MultiWave optical amplifiers take the place of the service provider's existing regenerators on routes of up to 600 kilometers (372 miles), and can be spaced as much as 120 kilometers (74 miles) apart. Unlike a TDM upgrade solution which involves replacement of all transmission equipment along a fiber route, a channel upgrade of a CIENA MultiWave system involves no replacement of existing transmission equipment until all 16 channels are in service. Similarly, increases in transmission rates up to a maximum of 2.5 Gb/s do not require replacement of or modification to the optical amplifiers.

CIENA's MultiWave Sentry 1600 and Sentry 4000, the second and third generation versions of the original MultiWave 1600 system, include enhancements which significantly expand the ability of the system to interface with data communications equipment in addition to other types of transmission equipment and increase the distance which can be spanned between transmission terminals. In addition, enhancements to the filtering technology used in the MultiWave Sentry 4000 enable simultaneous transmission of up to 40 optical channels on a single fiber. Up to eight MultiWave Sentry systems can be concatenated (deployed end-to-end) together allowing transport of up to 100 Gb/s over total route lengths of up to 4,800 kilometers (2,900 miles) without the need for conventional regenerators. The MultiWave Sentry system incorporates DWDM optimized long-reach receivers and uses standard low-cost short-reach input and output interfaces to connect to a customer's equipment. MultiWave Sentry also incorporates built-in performance monitoring capabilities which enable network operators to identify and measure specified channels and their characteristics. These added capabilities eliminate the need for conventional long-reach fiber optic transmission terminals or traditional SONET multiplexers in data-centric networks, thereby simplifying the construction of cell- and packet-based (IP, ATM and Frame Relay) networks.

MULTIWAVE OPTICAL ADD/DROP MULTIPLEXER.

When deployed as a component of a MultiWave 1600 or MultiWave Sentry system, the CIENA optical add/drop multiplexer ("OADM") enables carriers selectively to direct portions of a route's traffic to various sites along the route without requiring extensive termination equipment or electronic add/drop multiplexers. A network operator may optically remove (drop) and/or insert (add) up to four channels from or to the composite 16 channel

signal at a point along a fiber route where the optical add/drop multiplexer is installed. The installation of an additional optical add/drop multiplexer at a different point along that route enables the network operator to reuse those channels. The optical add/drop multiplexer also provides optical amplification for up to 16 channels and when used in the MultiWave Sentry systems provides standard short-reach interfaces to either data communications equipment or conventional fiber optic transmission terminals. The Company believes the resulting traffic routing flexibility at the all-optical layer of the fiber optic network is potentially attractive and cost effective to network planners.

SHORT-DISTANCE APPLICATIONS

MULTIWAVE FIREFLY

CIENA's MultiWave Firefly is targeted toward point-to-point short haul applications of 65 kilometers (40 miles) or less, which do not require signal amplification via EDFAs or channel add/drop capability. The product is designed to handle up to 24 channels at rates of 622 Mb/s and 2.5 Gb/s and is compatible with the Company's WaveWatcher network management software. As may be required, MultiWave Firefly systems initially configured for less than the maximum number of channels can be upgraded to carry up to the maximum at additional cost. CIENA believes the product is well-suited to applications at RBOCs and CLECs as well as for certain international applications where route lengths tend to be shorter.

RING-BASED APPLICATIONS

MULTIWAVE METRO

During 1998 the Company invested considerable engineering and related resources in developing its MultiWave Metro system. This system targets campus and interoffice rings and high bandwidth local loop services, using DWDM technology with as many as 24 different wavelengths. Already in customer trials, MultiWave Metro is designed to provide high aggregate bandwidth capacity for multiple applications and data rates. The product also introduces a new level of service provisioning flexibility for the local loop. MultiWave Metro simultaneously aggregates multiple traffic types, including SONET/SDH (at both the SONET levels of 622 Mb/s and 2.5 Gb/s), ATM, gigabit Ethernet, and fast IP in a ring environment, providing network survivability and the ability to add or drop traffic at various locations around the ring.

WAVEWATCHER NETWORK MANAGEMENT SYSTEM

WaveWatcher is the MultiWave system's integrated network management software package. The Company's commitment to providing standards compliant network management interfaces at all levels, from individual network elements to the element management system, affords rapid integration into existing telecommunication management operations.

WaveWatcher operates on a UNIX platform and has been designed to adhere to both existing and evolving open system network management standards such as SNMP, TCP/IP and the ITU TMN standards.

WaveWatcher's network element manager uses a separate out-of-band optical service channel to communicate network management information and provides a single view of multiple CIENA systems through graphical user interfaces and supported operating system interfaces. It provides customers with early warnings of network problems and allows them to manage and monitor network performance. WaveWatcher provides fault, performance, security and configuration management of optical networking systems. When used with MultiWave Sentry systems, WaveWatcher provides additional monitoring capabilities for channel identification and transmission quality throughout a customer's MultiWave network.

The Company believes its software development effort is substantially ahead of competitors' offerings, and provides an important differentiator for its DWDM systems. The Company expects to begin to market different functionality levels of its software beginning in 1999.

CIENA'S SERVICES

On February 19, 1998, the Company acquired Alta, a Canadian corporation headquartered near Atlanta, Georgia. In addition to providing installation, test and turn-up services and additional field support for MultiWave products, Alta provides a range of engineering, furnishing and installation services for telecommunications service

providers in the areas of transport, switching and wireless communications. During 1998, the Company provided services to a total of 52 customers.

PRODUCT DEVELOPMENT

The Company believes the overall growth in utilization of fiber optic telecommunications networks will lead to transmission bottlenecks in other segments of the networks where the application of DWDM technologies may provide solutions. The Company also believes there may be opportunities for it to develop products and technologies complementary to DWDM technologies which may broaden the Company's ability to provide, facilitate and/or interconnect with high bandwidth solutions offered throughout fiber optic networks. The Company intends to focus its product development efforts and possibly pursue strategic alliances or acquisitions to address expected opportunities in these areas. Summarized below are certain actions taken by the Company during fiscal 1998 in pursuit of its product development strategy.

ASTRACOM

During December 1997 the Company acquired Astracom, Inc. ("Astracom"), an early stage telecommunications company located in Atlanta, Georgia. The Company has used the resources received in the Astracom acquisition to assist in the development of its MultiWave Metro product.

TERABIT

During April 1998 CIENA acquired Terabit Technology, Inc. ("Terabit"), a developer of optical components known as photodetectors or optical receivers, located in Santa Barbara, California. The Company believes the development work underway at Terabit remains unique and, upon commercial availability, could give the Company a significant advantage over its competitors. The Company expects to begin to deploy components using Terabit's technology in its product development efforts during 1999.

OC-192 CAPABILITY

In September of 1998, CIENA announced and demonstrated an OC-192/STM 64 (10 Gb/s) interface transmission rate capability for its MultiWave Sentry systems. The enhancement to Sentry's capabilities will enable service providers to increase the capacity of a single strand of fiber carrying 100 gigabits per second (Gb/s) today to 480 Gb/s by early 1999 and approaching one terabit by the year 2000.

While the Company believes the short-term market potential for this capability is limited, the feature provides carriers with additional flexibility and assurance that CIENA's products will scale as their networks begin to migrate to higher transmission speeds. The new capability makes it possible for a service provider to simultaneously mix or match up to forty-eight 10 Gb/s (OC-192/OC-192c/STM-64) SONET or SDH channels with 2.5 Gb/s (OC-48/OC-48c/STM-16) channels, thereby protecting current network investments while providing increased options for bandwidth and network scalability. The OC-192 capability is expected to be integrated and commercially available in MultiWave Sentry systems by the second half of 1999.

BANDWIDTH MANAGEMENT

As service provider networks migrate to higher transmission speeds and DWDM technology enables carriers to process ever increasing amounts of bandwidth, the Company believes the next critical evolution in the network will occur in the devices that allow carriers to efficiently manage this new-found bandwidth. The Company invested during fiscal 1998 and intends in fiscal 1999 to continue to invest in the resources and development efforts necessary to develop a product with bandwidth management capabilities.

CUSTOMERS

SPRINT RELATIONSHIP

In December 1995, the Company entered into a three-year supply agreement with Sprint, with the option for Sprint to extend the term of the agreement for an additional year. The original agreement has been amended and now extends to December 31, 2001. Prices for all equipment purchased by Sprint under the terms of the supply agreement are fixed but may not at any time be higher than the Company's final net price to any "similarly situated customer." The agreement requires that the Company set up and maintain, at the Company's expense, certain test facilities for a period of 10 years.

The Company warrants each deliverable provided by the Company for 60 months from the date of delivery, with Sprint having right to purchase an unlimited number of one-year extensions of any or all warranties. Certain upgrades are provided at no cost to Sprint during the warranty or extended warranty periods. The supply agreement contains penalties for failure to respond to various types of system failures in a timely manner. The supply agreement with Sprint also provides Sprint with a perpetual, non-exclusive license to certain software and a license to use, modify and enhance the Company's source code under certain conditions. The Company must maintain two years of backwards compatibility for any enhancements or upgrades to the software. In fiscal 1998 approximately 53% of the Company's revenues were derived from Sprint.

OTHER RELATIONSHIPS

In addition to the Sprint relationship, the Company also has announced relationships with the following customers:

DOMESTICALLY:

Bell Atlantic ("Bell Atlantic"), Digital Teleport, Inc. ("DTI"), Enron Communications, Inc. ("Enron"), GST Telecommunications, Inc. ("GST"), MCI WorldCom, Inc. ("MCIWorldCom" or "WorldCom")

INTERNATIONALLY:

Cable and Wireless Communications Group ("Cable and Wireless"), UK; Daini Deuden Inc. ("DDI"), Japan; Hermes Europe Railtel ("Hermes"), UK; Japan Telecom Co., Ltd. ("Japan Telecom"), Japan; Racal Telecom, ("Racal") UK; Telecom Development ("TD"), France; Teleway Japan Corporation ("Teleway"), Japan; Telia AB ("Telia") , Sweden

PROSPECTIVE CUSTOMERS BY CATEGORY

REGIONAL BELL OPERATING COMPANIES (RBOCS)

The RBOCs are very active in interoffice and local exchange markets and, under the Telecommunications Act of 1996, RBOCs are newly eligible to enter the long distance market once they have met certain requirements for opening their local markets to competition. The Company anticipates that one or more of the RBOCs will move aggressively to offer long distance services, although the timing of that move is uncertain, and the question of how such a move will be implemented is unclear -- e.g., through the establishment of owned network facilities, through the purchase of long distance capacity from other long distance carriers, or through some combination of the two.

Regardless of the timing of any such move, the Company believes there may be limited opportunities for in-region deployment of the Company's long distance MultiWave 1600 or Sentry systems in certain RBOCs. Additionally, RBOC mergers currently under consideration could greatly expand the geographic reach of the combined companies, such that opportunities for in-region deployment of the Company's products could be enhanced. The Company announced an agreement with Bell Atlantic in March of 1998 under which Bell Atlantic is expected to purchase MultiWave 1600 and MultiWave Firefly systems. During 1998 the Company expanded its direct and indirect sales efforts to include the interoffice and local exchange markets traditionally served by the RBOCs and will continue to pursue opportunities in those markets. In addition to Bell Atlantic, the Company has signed trial evaluation agreements with certain RBOCs for testing of the MultiWave 1600, MultiWave Sentry 1600, and MultiWave Firefly systems.

COMPETITIVE LOCAL EXCHANGE CARRIERS (CLECS)

Deregulation also has fueled the growth of competitive local exchange carriers or CLECs. The Company believes that in the short-term, CLECs could benefit from the RBOCs hesitancy to open their local markets to competitors and are likely to move aggressively to capitalize on opportunities in the local area. CIENA recognized revenue from a sale to its first CLEC customer in 1998 and expects that tactical CLEC applications for its long-haul products, as well as the MultiWave Firefly and MultiWave Metro short-distance products, will be well-suited to CLEC network applications.

INTERNATIONAL COMPETITIVE CARRIERS

New competitive carriers are emerging as a result of deregulation in the international telecommunications markets as well. CIENA has concentrated its sales efforts on these emerging carriers as opposed to the traditional carriers or PTTs. During 1998, CIENA increased its international customer base from two to seven customers. In many cases, these new competitive carriers do not have the installed fiber base of the larger carriers and therefore are in need of the scalable bandwidth CIENA's systems offer. In addition, because of the economies and flexibility afforded by DWDM, CIENA's equipment is being used on several new builds where the service provider is physically constructing the network. The Company expects that in the near-term, the majority of its international revenue will come from these smaller, more aggressive competitive carriers, and will continue to concentrate its sales efforts accordingly.

NON-TRADITIONAL TELECOMMUNICATION SERVICE PROVIDERS

The growth of the Internet has produced traffic growth substantial enough to attract new, non-traditional telecommunication service providers to compete in this market as well. Both domestically and internationally, companies with rights-of-way, such as utility companies or railroads are capitalizing on their "network" (whether a pipeline, a railroad, or a highway), and in some cases, are laying optical fiber and constructing telecommunications networks along those rights-of-way. The bandwidth capabilities of CIENA's equipment enables these new carriers to provide competitive services while purchasing and laying a minimal amount of fiber optic cable.

MARKETING AND DISTRIBUTION

The Company's systems require a relatively large investment, and the Company's target customers in the fiber optic telecommunications market -- where network capacity and reliability are critical -- are highly demanding and technically sophisticated. There are only a small number of such customers in any country or geographic market. Also, every network operator has unique configuration requirements which impact the integration of DWDM systems with existing transmission equipment. The convergence of these factors leads to a very long sales cycle for MultiWave systems, often more than a year between initial introduction to the Company and commitment to purchase, and has further led CIENA to pursue sales efforts on a focused, customer-by-customer basis.

The Company has organized its resources for the separate but coordinated approach to United States and international customers. In the United States market, a sales team, comprised of an account manager, systems engineers and technical support and training personnel, is assigned responsibility for each customer account, and for the coordination and pursuit of sales contacts. In the international market, the Company currently pursues prospective customers through direct sales efforts, as well as through distributors, independent marketing representatives and independent sales consultants. The Company has established CIENA Communications, Inc. as a wholly-owned subsidiary in the U.S. to coordinate sales and marketing and customer service and installation support functions. CIENA Communications has a branch office, CIENA Japan, to coordinate sales and marketing efforts in Japan, the Pacific Rim and other Asian areas. The Company has established CIENA Limited as a wholly-owned subsidiary in the U.K. to facilitate U.K. and European sales. The Company has distributor or marketing representative arrangements covering Austria, Germany, Italy and Switzerland in Europe, and the Republic of Korea and Japan. The Company has established a direct sales presence in Belgium and has representative support in Brazil.

In support of its worldwide selling efforts, the Company conducts marketing communications programs intended to position and promote its products within the telecommunications industry. Marketing personnel also coordinate the Company's participation in trade shows and conduct media relations activities with trade and general business publications.

CISCO RELATIONSHIP

In April of 1998, the Company announced it had formed a working alliance with Cisco Systems, Inc. ("Cisco"). Under the relationship, the two companies are currently working together to overlay switching and routing technologies directly onto optical networks, enabling service providers to build more scalable and cost-effective architectures for the handling of data services.

Cisco and CIENA have specifically worked to enable service providers to build high-capacity IP backbones by interfacing the Cisco 12000 Gigabit Switch Router (GSR) directly to CIENA's long-haul DWDM systems. The Cisco 12000 will interface with CIENA's DWDM systems via SONET/SDH OC-48c/STM-16 interfaces at 2.5 Gbps, without the need for additional intermediate network elements, such as SONET terminal multiplexers. Enron

was the first service provider to announce plans to build a nationwide network based on an all "IP-over-glass" architecture utilizing Cisco and CIENA equipment. Future activities between Cisco and CIENA are expected to include integration of additional platforms and interfaces, including support for ATM, and the definition of new interfaces between data and optical layers to improve network flexibility and reduce equipment costs.

Cisco and CIENA also jointly founded the Optical Internetworking Forum (OIF) to provide a venue in which vendors and users can agree on key specifications that will complement international standards activities while accelerating the deployment of optical internetworks.

MANUFACTURING

The Company conducts all optical assembly, final assembly and final component, module and system test functions, at its manufacturing facilities in Maryland. It also manufactures the in-fiber Bragg gratings and Erbium-doped fiber amplifiers used in all MultiWave product lines. The Company believes its manufacturing technologies and processes represent a key competitive advantage and has accordingly invested significantly in automated production capabilities and manufacturing process improvements and expects to further enhance its manufacturing process with additional production process control systems. Certain critical functions, including aspects of fiber splicing, require a highly skilled work force, and the Company puts significant efforts into training and maintaining the quality of its manufacturing personnel.

The Company's MultiWave product lines utilize in excess of 1,400 parts, many of which are customized for the Company. Component suppliers in the specialized, high technology end of the optical communications industry are generally not as plentiful or, in some cases, as reliable, as component suppliers in more mature industries. Some of the component suppliers for the MultiWave Sentry and MultiWave Firefly systems are new and have not yet had an opportunity to demonstrate the ability to increase their production to keep pace with the Company's needs. Certain key optical and electronic components used in the Company's MultiWave systems are currently available only from sole sources. The Company has from time to time experienced minor delays in the receipt of these components, variations in the quality of the components, and a lengthening of the lead times for some components. Any future difficulty in obtaining sufficient and timely delivery of components could result in delays or reductions in product shipments which, in turn, could have a material adverse effect on the Company's business, financial condition and results of operations. While alternative suppliers have been identified for certain other key optical and electronic components, those alternative sources have not been qualified. The time and expense involved in qualifying each additional source are significant. Accordingly, the Company will for the near term continue to be dependent on sole and single source suppliers of certain key components. See Item 7. "Management's Discussion and Analysis of Financial Condition and Results of Operations-Risk Factors."

COMPETITION

Competition in the telecommunications equipment industry generally is intense, particularly in that portion of the industry devoted to delivering higher and more cost effective bandwidth throughout the telecommunications network. The Company believes that its position as a leading supplier of open architecture DWDM systems and the field-tested design and performance of its products give it a current competitive advantage; however, intensifying competition is a material risk factor facing the Company in fiscal 1999. See Item 7. "Management's Discussion and Analysis of Financial Conditions and Results of Operations-Risk Factors."

The competition faced by the Company is dominated by a small number of very large, usually multinational, vertically integrated companies, each of which has substantially greater financial, technical and marketing resources, and greater manufacturing capacity as well as more established customer relationships with long distance carriers than the Company. Included among the Company's competitors are Lucent Technologies Inc., formerly part of AT&T ("Lucent"), Northern Telecom Inc. ("Nortel"), Alcatel Alsthom Group ("Alcatel"), NEC Corporation ("NEC"), Pirelli SpA ("Pirelli"), Siemens AG ("Siemens"), Fujitsu Group ("Fujitsu"), Hitachi Ltd. ("Hitachi") and Telefon AB LM Ericsson ("Ericsson"). Each of the Company's major competitors is believed to be in various stages of development, introduction or deployment of DWDM products directly competitive with the Company's MultiWave systems. Pirelli, in particular, is known to have deployed open architecture WDM equipment. Lucent has an especially prominent role in the market because of its historical affiliation with AT&T. Lucent has announced it is supplying closed architecture DWDM system equipment to AT&T, and has announced an intention to deliver in the future an 80-channel open architecture DWDM system. Although Lucent's prior affiliation with AT&T may have inhibited its relationships as a supplier to other carriers, the spin-off of Lucent into a separate company may make it more attractive to potential customers as a supplier.

In addition to DWDM suppliers, traditional TDM-based transmission equipment suppliers compete with the Company in the market for transmission capacity. Lucent, Alcatel, Nortel, Fujitsu, Hitachi and NEC are already providers of a full complement of such equipment. These and other competitors have introduced or are expected to introduce equipment which will offer 10 Gb/s transmission capability, and MCIWorldCom has deployed such equipment. The Company believes the desirability of widescale deployment of 10 Gb/s (OC-192) TDM based equipment has yet to be demonstrated. Because of the transmission rate employed, the 10 Gb/s TDM equipment requires digital multiplexing circuits operating at microwave frequencies, which can lead to instability. This can complicate reproducibility, which may in turn result in delays in introduction and higher manufacturing costs. More significantly, at the 10 Gb/s transmission rate, dispersion distortion effects in the fiber can result in significant impairments and limitations, particularly in transmission over non-dispersion shifted fiber, which comprises most of the installed fiber in current long distance networks in the United States. However, at lower rates, such as 2.5 Gb/s, TDM-based equipment is technically viable and widely available commercially, and, as an upgrade to existing lower transmission rate telecommunications links, can represent an alternative incremental approach to the enhancement of transmission capacity.

While competition in general is broadly based on varying combinations of price, manufacturing capacity, timely delivery, system reliability, service commitment and installed customer base, as well as on the comprehensiveness of the system solution in meeting immediate network needs and foreseeable scalability requirements, the Company's customers are themselves under increasing competitive pressure to deliver their services at the lowest possible cost. This pressure may result in pricing for DWDM systems becoming a more important factor in customer decisions, which may favor larger competitors which can spread the effect of price discounts in their DWDM product lines across an array of products and services, and a customer base, which are larger than the Company's.

The Company also believes that several new companies, some with alternative technologies to DWDM, will attempt to break into the market, particularly the market for applications of the Company's MultiWave Metro product.

PATENTS AND OTHER INTELLECTUAL PROPERTY RIGHTS

The Company has licensed certain key enabling technologies with respect to the production of in-fiber Bragg gratings, utilized publicly available technology associated with Erbium-doped fiber amplifiers, and applied its design, engineering and manufacturing skills to develop its MultiWave 1600, MultiWave Sentry 1600, MultiWave Sentry 4000 and MultiWave Firefly systems. These licenses expire when the last of the licensed patents expires or is abandoned. The Company also licenses from third parties certain software components for its network management software. These software licenses are perpetual but will generally terminate after an uncured breach of the agreement by the Company. The Company has applied for trademark registration for MultiWave Sentry, MultiWave Metro, SMART SPAN, FAIL-SOFT, MODULE SCOPE and has registered trademarks for WaveWatcher and CIENA OPTICAL COMMUNICATIONS. The Company also relies on contractual rights, trade secrets and copyrights to establish and protect its proprietary rights in its products.

The Company intends to enforce vigorously its intellectual property rights if infringement or misappropriation occurs.

The Company's practice is to require its employees and consultants to execute non-disclosure and proprietary rights agreements upon commencement of employment or consulting arrangements with the Company. These agreements acknowledge the Company's exclusive ownership of all intellectual property developed by the individual during the course of his work with the Company and require that all proprietary information disclosed to the individual will remain confidential. The Company's employees also sign agreements not to compete with the Company for a period of twelve months following any termination of employment.

As of October 1998, the Company had received twenty-two United States patents, and had seventy pending U.S. patent applications. Of the United States patents that have been issued to the Company, the earliest any will expire is 2012. Pursuant to an agreement between the Company and General Instrument Corporation dated March 10, 1997, the Company is a co-owner with General Instrument Corporation of a portfolio of 27 United States and foreign patents relating to optical communications, primarily for video-on-demand applications. See Item 7. "Management's Discussion and Analysis of Financial Condition and Results of Operations-Risk Factors." The Company has also acquired from Tyco Submarine Systems, Ltd. (TSSL), U.S. Patent No. 5,173,957 and eight corresponding foreign patents based thereon as well as a license to a portfolio of seven U.S. patents owned by TSSL.

EMPLOYEES

As of October 31, 1998, the Company and its subsidiaries employed 1,382 persons, of whom 252 were primarily engaged in research and development activities, 648 in manufacturing, 185 in installation services, 170 in sales, marketing, customer support and related activities and 127 in administration. None of the Company's employees are currently represented by a labor union. The Company considers its relations with its employees to be good.

DIRECTORS AND EXECUTIVE OFFICERS

The table below sets forth certain information concerning each of the directors and executive officers of the Company:

Name	Age	Position
Patrick H. Nettles, Ph.D.(1)	55	President, Chief Executive Officer and Director
Steve W. Chaddick	47	Senior Vice President, Strategy and Corporate Development
Joseph R. Chinnici	44	Senior Vice President, Finance and Chief Financial Officer
Mark Cummings	47	Senior Vice President, Operations
G. Eric Georgatos	43	Senior Vice President, General Counsel and Secretary
Lawrence P. Huang	47	Senior Vice President, Strategic Account Sales
Jesus Leon	54	Senior Vice President, Products and Technology
Gary B. Smith	38	Senior Vice President, Worldwide Sales
Stephen B. Alexander	39	Vice President, Chief Technology Officer
Rebecca K. Seidman	52	Vice President, Human Resources Development
Andrew C. Petrik	35	Vice President, Controller and Treasurer
Jon W. Bayless, Ph.D.(1)(2)(3)	58	Chairman of the Board of Directors
Harvey B. Cash(1)	60	Director
Clifford H. Higgerson(1)(3)	59	Director
Billy B. Oliver(1)(2)	73	Director
Michael J. Zak(1)(2)	45	Director
Stephen P. Bradley, Ph.D.(1)(3)	57	Director

- (1) The Company's Directors hold staggered terms of office, expiring as follows: Messrs Cash and Zak in 1999; Messrs Higgerson, Bradley and Oliver in 2000; and Messrs Bayless and Nettles in 2001.
- (2) Member of the Compensation Committee
- (3) Member of the Audit Committee

PATRICK H. NETTLES, PH.D., has served as Chief Executive Officer of the Company since February 1994, as President and Chief Executive Officer since April 1994 and as Director since February 1994. From 1992 until 1994, Dr. Nettles served as Executive Vice President and Chief Operating Officer of Blyth Holdings Inc., a publicly-held supplier of client/server software. From late 1990 through 1992, Dr. Nettles was President and Chief Executive Officer of Protocol Engines Inc., a development stage enterprise, formed as an outgrowth of Silicon Graphics Inc., and targeted toward very large scale integration based solutions for high-performance computer networking. From 1989 to 1990, Dr. Nettles was Chief Financial Officer of Optilink, a venture start-up which was acquired by DSC Communications. Dr. Nettles received his B.S. degree from the Georgia Institute of Technology and his Ph.D. from the California Institute of Technology.

STEVE W. CHADDICK has served as Senior Vice President, Strategy and Corporate Development since September 1998, and from September 1996 to August 1998, served as Senior Vice President, Products and Technologies, and was previously Vice President of Product Development for the Company since joining it in 1994. Prior to joining the Company, Mr. Chaddick was Vice President of Engineering at AT&T Tridom, a company he co-founded in 1983 and which was acquired by AT&T in 1988. AT&T Tridom focused on the development of very small aperture satellite terminal systems. Mr. Chaddick was responsible for all product development at AT&T Tridom, including hardware, embedded systems software and network management software. Mr. Chaddick received both his B.S. and M.S. degrees in electrical engineering from the Georgia Institute of Technology.

JOSEPH R. CHINNICI joined the Company in September 1994 as Controller, and became Vice President, Finance and Chief Financial Officer in May 1995 and was promoted to Senior Vice President Finance and Chief Financial Officer in August 1997. From 1993 through 1994, Mr. Chinnici served as a financial consultant for Halston Borghese Inc. From 1977 to 1993, Mr. Chinnici held a variety of accounting and finance assignments for Playtex Apparel Inc. (now a division of Sara Lee Corporation), ending this period as Director of Operations Accounting and Financial Analysis. Mr. Chinnici currently serves on the board of directors for Optical Technology

Group, Inc. Mr. Chinnici holds a B.S. in accounting from Villanova University and an M.B.A. from Southern Illinois University.

MARK CUMMINGS joined the Company in May 1996 as Vice President, Manufacturing and was promoted to Senior Vice President, Operations in August 1997. From 1985 to 1996, Mr. Cummings was Vice President, Operations for Cray Communications, Inc., an international manufacturer of communications equipment. From 1975 to 1985, Mr. Cummings was Manager of Manufacturing Engineering at Taylor Instruments, and from 1973 to 1975, an Industrial Engineer at Siemens Stromberg Carlson Inc. Mr. Cummings holds a B.S. in electronic technology from the State University of New York at Buffalo, and is currently in the Masters program in advanced manufacturing systems at the University of Maryland.

G. ERIC GEORGATOS has served as the Company's Senior Vice President, General Counsel and Secretary since February 1997 and previously served as Vice President, General Counsel and Secretary since joining it in February 1996. From 1980 to 1995, Mr. Georgatos was an attorney and member of Gray Cary Ware & Friedenrich, a Professional Corporation, a law firm based in California, where he served as outside general corporate counsel for a variety of emerging companies. Mr. Georgatos holds a B.S. degree in business administration from the University of Southern California and a J.D. from the University of California Los Angeles.

LAWRENCE P. HUANG has served as Senior Vice President Strategic Account Sales since September 1998 and Senior Vice President, Sales and Marketing of the Company from November 1996 to August 1998 and previously served as Vice President, Sales and Marketing of the Company since joining it in April 1994. Prior to joining CIENA, Mr. Huang was Vice President/General Manager and Vice President of Sales and Marketing of AT&T Tridom, which he co-founded with Mr. Chaddick in 1983. Mr. Huang holds a B.S. in industrial management from the Georgia Institute of Technology and an M.B.A. from Georgia State University.

JESUS LEON has served as Senior Vice President Products and Technology since September 1998 and Vice President, Access Products since joining the Company in November 1996. From December 1995 to October 1996, Mr. Leon served as Vice President, Engineering, for the Access Systems Division of Alcatel Standard Electrica, S.A. ("Alcatel Electrica"), a division of Alcatel Alsthom Group. Alcatel Electrica is a leading global supplier of telecommunications equipment. Mr. Leon led Alcatel Electrica's product development for all access products with responsibility for over 1,200 engineers in Europe, Australia and South Africa. Mr. Leon served in various positions with Alcatel Electrica from 1990-1991. Mr. Leon holds a B.S.E.E. and M.E. from the University of Florida, an A.B.D. (all but doctoral dissertation) from the Georgia Institute of Technology and an M.B.A. from Georgia State University.

GARY B. SMITH has served as Senior Vice President Worldwide Sales since September 1998 and Vice President of International Sales since joining the Company in November 1997. From June 1995 to October 1997, Mr. Smith served as Vice President, Sales and Marketing for Intelsat and from August 1991 to May 1995, Mr. Smith served as Vice President of Sales and Marketing for Cray Communications, Inc. Mr. Smith received an M.B.A. from Ashridge Management College, U.K.

STEPHEN B. ALEXANDER has served as Vice President, Chief Technology Officer since September 1998, and Vice President, Transport Products from September 1996 to August 1998, and was previously Director of Lightwave Systems at the Company since joining it in 1994. From 1982 until joining the Company, he was employed at MIT Lincoln Laboratory, where he last held the position of Assistant Leader of the Optical Communications Technology Group. Mr. Alexander is an Associate Editor for the Journal of Lightwave Technology and a General Chair of the conference on Optical Fiber Communication (OFC) for 1997. He is author of the tutorial text Optical Communication Receiver Design. Mr. Alexander received both his B.S. and M.S. degrees in electrical engineering from the Georgia Institute of Technology.

REBECCA K. SEIDMAN joined the Company in April 1996 as Director of Human Resources Development, and was promoted to Vice President, Human Resources Development in June 1996. From 1984 until joining the Company, Ms. Seidman served consecutively as Director of Marketing, Vice President, Administration, and Principal of Walpert, Smullian & Blumenthal, P.A., a regional accounting and consulting firm. Ms. Seidman is a Phi Beta Kappa graduate of Goucher College and co-author of Total Quality Distribution, a book discussing practical applications of Total Quality in the wholesale distribution industry.

ANDREW C. PETRIK joined the Company in July 1996 as Controllor, and became Treasurer in December 1996 and was promoted to Vice President in August 1997. From 1989 to 1996, Mr. Petrik was employed by Microdyne Corporation where he was the Assistant Controllor from 1989 to 1994 and Assistant Vice President of Marketing

and Product Planning from 1994 to 1996. Mr. Petrik holds a B.S. in Accounting from the University of Maryland and is a Certified Public Accountant.

JON W. BAYLESS, PH.D. has been a Director of the Company since April 1994 and has served as Chairman of the Board of Directors since November 1996. Dr. Bayless is a general partner of various venture capital funds associated with Sevin Rosen Funds where, since 1981, he has focused on developing business opportunities in the fields of telecommunications and computers. Dr. Bayless is also the controlling stockholder and sole director of Jon W. Bayless, Inc., the general partner of Atlantic Partners L.P., which is the general partner of Citi Growth Fund L.P., a venture capital investment firm. Dr. Bayless currently serves as a director of 3DX Technologies Inc. and of several private companies. Dr. Bayless is also Chairman of the Board of Directors of Shared Resource Exchange, Inc. Shared Resource Exchange, Inc. filed for reorganization under Chapter 11 of the Federal Bankruptcy Code in August 1996. A plan under Chapter 11 has been approved. Dr. Bayless has held faculty positions at Southern Methodist University, Virginia Polytechnic Institute, and the Catholic University of America. He holds patents in the field of digital telecommunications, and is a senior member of the Institute of Electronic Engineers. Dr. Bayless earned his B.S. degree in electrical engineering at the University of Oklahoma. He earned his M.S. degree in electrical engineering at the University of Alabama, and his Ph.D. in electrical engineering at Arizona State University.

HARVEY B. CASH has been a Director of the Company since April 1994. Mr. Cash is a general partner of InterWest Partners, a venture capital firm in Menlo Park, California which he joined in 1985. Mr. Cash serves on the board of directors of Benchmarq Microelectronics, Liberte, Inc., AMX Corporation, i2 Technologies Inc. and Aurora Electronics, Inc. He is also an advisor to Austin Ventures. Mr. Cash received a B.S. in electrical engineering from Texas A&M University and an M.B.A. from Western Michigan University.

CLIFFORD H. HIGGERSON has been a Director of the Company since April 1994. Mr. Higgerson has since 1991 been a general partner of Vanguard Venture Partners, a venture capital firm specializing in high technology start-ups, located in Palo Alto, California. Mr. Higgerson is also the managing partner of Communications Ventures, Inc. Mr. Higgerson is a director of Advanced Fibre Communications and Digital Microwave Corp. Mr. Higgerson earned his B.S. in electrical engineering from the University of Illinois and an M.B.A. in finance from the University of California at Berkeley.

BILLY B. OLIVER has been a Director of the Company since June 1996. Since his retirement in 1985 after nearly 40 years of services at AT&T, Mr. Oliver has worked as a self-employed communications consultant. During his last 15 years with AT&T, he held the position of Vice President, Engineering Planning and Design, where he was directly involved in and had significant responsibility for the evolution of AT&T's long distance network during that period. He was a co-recipient of the Alexander Graham Bell Medal for the conception and implementation of Nonhierarchical Routing in AT&T's network. Mr. Oliver is also a director of Digital Microwave Corp., Communications Network Enhancement Inc. and Enterprise Network Services Inc. Mr. Oliver earned his B.S.E.E. degree from North Carolina State University.

MICHAEL J. ZAK has been a Director of the Company since December 1994. He has been employed by Charles River Ventures of Waltham, Massachusetts since 1991 and has been a general partner of the general partner of Charles River Partnership VII and its related entities since 1993. From 1986 through 1991, he was a founder and corporate officer of Concord Communications, Inc., a developer of network management software. He is a director of three other private companies. Mr. Zak has a B.S. degree in engineering from Cornell University and an M.B.A. from Harvard Business School.

STEPHEN P. BRADLEY, PH.D. became a Director of the Company in April 1998. Professor Bradley is a William Ziegler Professor of Business Administration and the Chairman of the Program for Management Development at the Harvard Business School. A member of the Harvard faculty since 1968, Professor Bradley is also Chairman of Harvard's Executive Program in Competition and Strategy and teaches in Harvard's Delivering Information Services program. Professor Bradley has written extensively on the telecommunications industry and the impact of technology on competitive strategy. Professor Bradley received his B.E. in Electrical Engineering from Yale University in 1963 and his M.S. and Ph.D. in Operations Research from the University of California, Berkeley, in 1965 and 1968 respectively.

ITEM 2. PROPERTIES

All of the Company's properties are leased. The Company's principal executive offices, sales and marketing functions are located in Linthicum, Maryland in a 68,000 square foot facility. The Company's product development functions are located in a 96,000 square foot facility in Linthicum, Maryland, a 27,500 square foot facility in the Atlanta, Georgia area and a 8,700 square foot facility in Santa Barbara, California. Manufacturing facilities are located in both Savage and Linthicum, Maryland and consist of four facilities with a total of approximately 210,000 square feet that are used for such functions as manufacturing production, systems integration and test, pilot production and customer service and support. The Company's primary engineering, furnishment and installation facility is located in a 26,000 square foot facility located in the Atlanta, Georgia area. The Company has sales, marketing and customer support offices in located in Overland Park, Kansas; Richardson, Texas; Tulsa, Oklahoma; Chicago, Illinois; Middletown, New Jersey; Denver, Colorado; Birmingham, Alabama; Edmonton, Canada; London, England; Tokyo, Japan; Beijing, China; Paris, France; Brussels, Belgium and Manila, Philippines.

ITEM 3. LEGAL PROCEEDINGS

KIMBERLIN LITIGATION

On September 9, 1998 the U.S. District Court for the Southern District of New York granted summary judgment with respect to federal securities law claims brought against the Company and certain of its individual directors by investor Kevin Kimberlin and related parties, finding "no violations" of federal securities laws in the Company's or directors' conduct. The Court also dismissed all related state law claims without prejudice, declining to exercise jurisdiction over these claims. The remaining state law claims, as well as the Company's counterclaim against the Kimberlin-related parties, were fully and finally resolved in October 1998 by agreement of the parties.

CLASS ACTION LITIGATION

A class action complaint was filed on August 26, 1998 in U.S. District Court for the District of Maryland entitled Witkin et.al v. CIENA Corporation et. al (Case No. Y-98-2946). Several other complaints, substantially similar in content, have been filed. These cases were consolidated by court order on November 30, 1998. The complaints allege that CIENA and certain officers and directors violated certain provisions of the federal securities laws, including Section 10(b) and Rule 10b-5 under the Securities Exchange Act of 1934, by making false statements, failing to disclose material information and taking other actions intending to artificially inflate and maintain the market price of CIENA's common stock during the Class Period of May 21, 1998 to September 14, 1998, inclusive. The plaintiffs seek designation of the suit as a class action on behalf of all persons who purchased shares of CIENA's common stock during the Class Period and the awarding of compensatory damages in an amount to be determined at trial and attorneys' fees. The proceedings are at an early stage. No discovery has been taken, and no prediction can be made as to its outcome. The Company believes the suit is without merit and intends to defend itself vigorously.

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 1998.

PART II

ITEM 5. MARKET FOR REGISTRANT'S COMMON STOCK AND RELATED STOCKHOLDER MATTERS

The Company's Common Stock has been traded on the Nasdaq National Market since the Company's initial public offering on February 7, 1997 under the Nasdaq symbol CIEN. The following table sets forth for the fiscal periods indicated the high and low sales prices of the Common Stock, as reported on the Nasdaq National Market.

	Price Range of Common Stock	
	High	Low
Fiscal Year 1997		
Period of February 7, 1997 to April 30, 1997.....	\$44.00	\$22.25
Third Quarter ended July 31, 1997.....	\$57.25	\$28.50
Fourth Quarter ended October 31, 1997.....	\$63.62	\$43.00
Fiscal Year 1998		
First Quarter ended January 31, 1998	\$63.56	\$47.44
Second Quarter ended April 30, 1998	\$58.25	\$37.25
Third Quarter ended July 31, 1998	\$92.38	\$46.88
Fourth Quarter ended October 31, 1998.....	\$75.88	\$ 8.13

The closing sale price for the Common Stock on October 30, 1998 was \$17.56.

The market price of the Company's Common Stock has fluctuated significantly and may be subject to significant fluctuations in the future. Much of the fluctuations during the third and fourth quarters of fiscal 1998 was related to the Company's planned and then terminated merger with Tellabs, Inc. See Item 7. "Management's Discussion and Analysis of Financial Condition and Results of Operations-Overview and Risk Factors."

As of October 31, 1998, there were approximately 784 holders of record of the Company's Common Stock and 103,239,704 shares of Common Stock outstanding.

The Company has never paid cash dividends on its capital stock. The Company currently intends to retain earnings for use in its business and does not anticipate paying any cash dividends in the foreseeable future.

ITEM 6. SELECTED CONSOLIDATED FINANCIAL DATA

The following selected consolidated financial data should be read in conjunction with Item 7. "Management's Discussion and Analysis of Financial Condition and Results of Operations" and the consolidated financial statements and the notes thereto included in Item 8. "Financial Statements and Supplementary Data".

	YEAR ENDED OCTOBER 31, (1)				
	1994	1995	1996	1997	1998
(in thousands except share and per share data)					
STATEMENT OF OPERATIONS DATA:					
Revenue	\$ 20,890	\$ 21,691	\$ 88,463	\$ 413,215	\$ 508,087
Cost of goods sold.....	15,638	16,185	47,315	166,472	256,014
Gross profit	5,252	5,506	41,148	246,743	252,073
Operating expenses:					
Research and development.....	1,287	6,361	8,922	23,308	64,536
Selling and marketing.....	1,339	1,907	5,641	22,627	45,945
General and administrative.....	2,352	3,034	6,422	11,823	17,825
Purchased research and development...	-	-	-	-	9,503
Pirelli litigation.....	-	-	-	7,500	30,579
Costs of proposed merger.....	-	-	-	-	2,548
Total operating expenses.....	4,978	11,302	20,985	65,258	170,936
Income (loss) from operations.....	274	(5,796)	20,163	181,485	81,137
Other income (expense), net.....	(180)	172	653	7,185	12,292
Income (loss) before income taxes.....	94	(5,624)	20,816	188,670	93,429
Provision for income taxes.....	942	824	3,553	72,703	40,235
Net income (loss).....	\$ (848)	\$ (6,448)	\$ 17,263	\$ 115,967	\$ 53,194
Basic net income (loss) per common share	\$ (0.12)	\$ (0.51)	\$ 1.25	\$ 1.53	\$ 0.52
Diluted net income (loss) per common and dilutive potential common share...	\$ (0.12)	\$ (0.51)	\$ 0.19	\$ 1.11	\$ 0.49
Weighted average basic common shares outstanding.....	7,317	12,717	13,817	75,802	101,751
Weighted average basic common and dilutive potential common shares Outstanding.....	7,317	12,717	92,407	104,664	107,895

	OCTOBER 31, (1)				
	1994	1995	1996	1997	1998
(in thousands)					
BALANCE SHEET DATA:					
Cash and cash equivalents.....	\$ 4,440	\$ 8,261	\$ 24,040	\$ 268,588	\$ 227,397
Working capital.....	5,485	7,221	42,240	333,452	366,108
Total assets.....	12,076	17,706	79,676	463,279	572,424
Long-term obligations, excluding current portion.....	1,901	2,074	3,465	1,885	1,414
Mandatorily redeemable preferred stock	3,492	14,454	40,404	-	-
Stockholders' equity (deficit).....	(300)	(6,662)	10,783	372,414	474,949

(1) The Company has a 52 or 53 week fiscal year which ends on the Saturday nearest to the last day of October in each year. For purposes of financial statement presentation, each fiscal year is described as having ended on October 31. Fiscal 1994, 1995, 1997, and 1998 comprised 52 weeks and fiscal 1996 comprised 53 weeks.

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

The following discussion and analysis should be read in conjunction with "Selected Consolidated Financial Data" and the Company's consolidated financial statements and notes thereto included elsewhere in this report on Form 10-K.

OVERVIEW

CIENA Corporation designs, manufactures and sells open architecture, DWDM systems for fiberoptic communications networks, including long-distance and local exchange carriers. CIENA also provides a range of engineering, furnishing and installation services for telecommunications service providers.

Fiscal 1998 was a year of dramatic events affecting the Company. Soon after the close of the first fiscal quarter, MCIWorldCom, the Company's largest customer of fiscal 1997, surprised the Company with an announcement of a major change in purchasing practices - a change that meant materially reduced revenue for the Company. This adverse event was followed in the second quarter by the Company's successful, large scale commercial introduction of the Company's industry leading 40-channel MultiWave Sentry 4000. The third quarter included resolution of the Company's longstanding Pirelli SpA ("Pirelli") litigation, which was followed on June 3, 1998 with the announcement of a planned merger with Tellabs, Inc. In the fourth quarter, just prior to consummation of the merger, AT&T advised the Company that it would no longer consider CIENA's long distance DWDM products for deployment in AT&T's network. The planned merger with Tellabs was later terminated on September 14, 1998.

The Company's final results for fiscal 1998, its second full year in the DWDM marketplace, show total revenues in excess of \$500 million. The Company believes this represents a considerable achievement, particularly given the substantial portion of revenues derived from the sale of its now third-generation DWDM product, the MultiWave Sentry 4000. Nevertheless, the termination of the Tellabs merger represented a setback for the Company.

The outlook for fiscal 1999 is challenging. The price discounting offered by competitors striving to catch up to the Company and acquire market share has placed pressure on gross margins and operating profitability. But market demand for high-bandwidth solutions still appears robust, and the Company believes that its product and service quality, manufacturing experience, and proven track record of delivery will enable it to endure the gross margin pressure while it concentrates on efforts to reduce product costs and maximize production efficiencies. The Company intends to continue this strategy in order to preserve and enhance market leadership and eventually build on its installed base with new and additional products. Pursuit of this strategy, in conjunction with increased investments in selling, marketing, and customer service activities, will likely limit the Company's operating profitability over at least the first half of fiscal 1999, and may result in near term operating losses.

HIGHLIGHTS OF THE FISCAL YEAR 1998

The Company recognizes product revenue in accordance with the shipping terms specified. For transactions where the Company has yet to obtain customer acceptance, revenue is deferred until the terms of acceptance are satisfied. Revenue for installation services is recognized as the services are performed unless the terms of the supply contract combine product acceptance with installation, in which case revenues for installation services are recognized when the terms of acceptance are satisfied and installation is completed. Revenues from installation service fixed price contracts are recognized on the percentage of costs incurred to date compared to estimated total costs for each contract. Amounts received in excess of revenue recognized are recorded as deferred revenue. For distributor sales where risks of ownership have not transferred, the Company recognizes revenue when the product is shipped to the end user.

For the fiscal year ended October 31, 1998, the Company recorded \$508.1 million in revenue of which \$266.9 million was from sales to Sprint. The Company increased the total number of customers for DWDM systems from five customers in fiscal 1997 to fourteen customers in fiscal 1998. Revenue from sales to WorldCom declined from approximately \$184.5 million in fiscal 1997 to an amount less than 10% of the Company's total fiscal 1998 revenue. Substantially all of the revenue recognized from the sales to WorldCom occurred in the Company's first quarter ended January 31, 1998. In addition to Sprint and WorldCom, during the fiscal year ended October 31, 1998 the Company recognized revenue from Cable and Wireless; Hermes; Enron; Racal; Telia of Sweden; TD of France; DTI; GST; and, through the Company's distributor, NISSHO Electronics Corporation ("NISSHO"), sales to Telaway, Japan Telecom and to DDI. The Company also recognized an immaterial amount of revenue from one undisclosed customer.

During December 1997 the Company acquired Astracom, an early stage telecommunications company located in Atlanta, Georgia. The employees of Astracom were immediately deployed to assist with the Company's development efforts from its MultiWave Metro product. The purchase price was approximately \$13.1 million and consisted of the issuance of 169,754 shares of CIENA common stock, the payment of \$2.4 million in cash, and the assumption of certain stock options. The transaction was recorded using the purchase accounting method with the purchase price representing approximately \$11.4 million in goodwill and other intangibles, and approximately \$1.7 million in net assets assumed. The amortization period for the intangibles, based on management's estimate of the useful life of the acquired technology, is five years.

In February 1998 the Company acquired Alta, a Canadian corporation headquartered near Atlanta, Georgia, in a transaction valued at approximately \$52.5 million. Alta provides a range of engineering, furnishing and installation services for telecommunications service providers in the areas of transport, switching and wireless communications. Under the terms of the agreement, the Company acquired all of the outstanding shares of Alta in exchange for 1,000,000 shares of CIENA common stock. The transaction constituted a tax-free reorganization and has been accounted for as a pooling of interest under Accounting Principles Board Opinion No. 16. Accordingly, all prior period consolidated financial statements presented have been restated to include the combined results of operations, financial position and cash flows of Alta as though it had always been a part of CIENA.

In March 1998 the Company announced an agreement to supply Bell Atlantic with DWDM optical transmission systems. The supply agreement has no minimum purchase commitments and includes the Company's MultiWave 1600, Sentry and Firefly systems. Deployment and revenue recognition is expected in the first half of calendar 1999, subject to successful completion of ongoing testing. The Bell Atlantic DWDM deployment is expected to mark the first time a RBOC has committed to deployment of DWDM equipment.

During April 1998 the Company acquired Terabit, a developer of optical components known as photodetectors or optical receivers. The Company believes the technology currently under development at Terabit may give it a strategic advantage over its competitors. Terabit is located in Santa Barbara, California. The purchase price was approximately \$11.5 million and consisted of the issuance of 134,390 shares of CIENA common stock, the payment of \$1.1 million in cash, and the assumption of certain stock options. The transaction was recorded using the purchase accounting method with the purchase price representing approximately \$9.5 million in purchased research and development, \$1.8 million in goodwill and other intangibles, and approximately \$0.2 million in net assets assumed. The amortization period for the intangibles, based on management's estimate of the useful life of the acquired technology, is five years.

From December 1996 until June 1998, the Company was involved in litigation with Pirelli. On June 1, 1998, the Company announced the resolution of all pending litigation with Pirelli. The terms of the settlement involved the dismissal of Pirelli's three lawsuits against the Company that were pending in Delaware, dismissal of the Company's legal proceedings against Pirelli in the United States International Trade Commission, payment to Pirelli of \$30.0 million and certain running royalties, a worldwide, non-exclusive cross-license to each party's patent portfolios, and a 5-year moratorium on future litigation between the parties. The Company recorded a charge of approximately \$30.6 million for the year ended October 31, 1998, relating to legal fees and the ultimate settlement to Pirelli. The payment of future royalties due to Pirelli is based upon future revenues derived from the licensed technology. The Company does not expect the future royalty payments to have a material impact on the Company's business, financial condition or results of operations.

On June 3, 1998 the Company announced an agreement to merge with Tellabs, Inc. ("Tellabs"), a Delaware corporation headquartered in Lisle, Illinois. Tellabs designs, manufactures, markets and services voice and data transport network access systems. Under the terms of the original agreement, all outstanding shares of CIENA stock were to have been exchanged at the ratio of one share of Tellabs common stock for each share of CIENA common stock. On August 21, 1998 the Company was informed by AT&T that AT&T had decided not to pursue further evaluation of CIENA's DWDM systems. Following the impact of the AT&T announcement on the market prices of the common stock of the respective companies, the Company and Tellabs management renegotiated the terms of the merger agreement, and on August 28, 1998 announced an amendment to the original merger agreement which was approved by the respective companies' boards of directors. Under the terms of the agreement as amended, all outstanding shares of CIENA stock were to have been exchanged at the ratio of 0.8 share of Tellabs common stock for each share of CIENA common stock. Subsequent to August 28, 1998, further adverse investor reaction raised serious questions about the ultimate ability to obtain shareholder approval for the merger. An agreement to terminate the merger was announced on September 14, 1998.

In June 1998 at the SUPERCOMM trade show in Atlanta, Georgia, the Company demonstrated its MultiWave Metro(TM) ("Metro") DWDM system for metropolitan and local access applications. Metro enables carriers to offer

multi-protocol high-bandwidth services economically using their existing network infrastructure. The Metro product is expected to be commercially available by the first quarter of calendar 1999. The Company also demonstrated at the SUPERCOM trade show a 96 channel DWDM system. The 96 channel DWDM system is expected to be commercially available during the first half of calendar 1999. See "Risk Factors".

The Company had previously announced that AT&T was evaluating a customized version of its MultiWave 1600 Sentry system. In July 1998 AT&T indicated to the Company that capacity requirements of its network had grown to such extent that the delays in final certification and approval for deployment of the Company's customized 16 channel system would make actual deployment of that system inadvisable, and that AT&T would accordingly shift to an accelerated evaluation of commercially available, higher channel count systems. The Company believed AT&T would evaluate the Company's MultiWave(R) 4000 system positively in this context, particularly because the Company believes it is the only manufacturer in the world with operational 40 channel systems ready for prompt delivery on an "off-the-shelf" basis in substantial manufacturing volumes. However, on August 21, 1998 the Company was informed by AT&T that AT&T had decided not to pursue further evaluation of CIENA's DWDM systems.

During the first quarter of 1998 the Company continued its effort to expand its manufacturing capabilities by leasing an additional facility of approximately 35,000 square feet located in the Linthicum, Maryland area. This facility is used for manufacturing and customer service activities. In April 1998 the Company leased an additional manufacturing facility in the Linthicum area of approximately 57,000 square feet. With the addition of this new facility the Company has a total of four facilities with approximately 210,000 square feet that can be used for manufacturing operations. In April 1998 the Company completed the transfer of its principal executive, sales, and marketing functions located in Linthicum in a portion of its 96,000 square foot facility to an approximately 68,000 square foot facility also located in Linthicum. During the third quarter of 1998, the Company completed the process of renovating the vacated portions of the 96,000 square foot facility for the purpose of accommodating expanding research and development functions.

As of October 31, 1998 the Company and its subsidiaries employed approximately 1,382 persons, which was an increase of 541 persons over the approximate 841 employed on October 31, 1997.

RESULTS OF OPERATIONS

FISCAL YEARS ENDED 1996, 1997 AND 1998

REVENUE. The Company recognized \$508.1 million, \$413.2 million and \$88.5 million in revenue for the years ended October 31, 1998, 1997 and 1996, respectively. Sales to Sprint accounted for \$266.9 million (52.5%), \$179.4 million (43.4%) and \$54.8 million (62.0%), of the Company's revenue during fiscal 1998, 1997 and 1996, respectively. While WorldCom accounted for \$184.5 million (44.7%) of the Company's revenue during fiscal 1997, it was not a significant contributor to fiscal 1998 revenues. There were no other customers who accounted for 10% or more of the Company's revenues during fiscal 1998, 1997 and 1996. Revenue derived from foreign sales accounted for approximately 23.0%, 2.8% and 4.0% of the Company's revenues during fiscal 1998, 1997 and 1996, respectively.

The Company expects Sprint's purchases in fiscal 1999 to be focused primarily on filling out installed systems with additional channel cards and therefore substantially below the purchasing volume in either of the last two years. The Company also expects the percentage of fiscal 1999 revenue derived from foreign sales to increase relative to fiscal 1998. Based on overall new bid activity as well as expected deployment plans of existing customers, the Company believes revenue growth in fiscal 1999 over fiscal 1998 is possible, but will be highly dependent on winning new bids for shipments from new and existing customers during the year. Competition of new bids is intense, and there is no assurance the Company will be successful in winning enough new bids and new customers to achieve year over year sequential growth. See "Risk Factors".

The Company began shipping MultiWave 1600 systems for field testing in May 1996 with customer acceptance by Sprint occurring in July 1996. For fiscal years 1996 and 1997 all of the Company's DWDM system revenues were derived from the MultiWave 1600 product. During fiscal 1998 the Company began shipments of and recognized revenues from sales of MultiWave Sentry 1600, MultiWave Firefly, and MultiWave Sentry 4000 systems. The amount of revenue recognized from MultiWave 1600 sales declined in fiscal 1998 as compared to fiscal 1997. This decline in MultiWave 1600 sales in fiscal 1998 was offset by revenue recognized from sales of MultiWave Sentry 1600, MultiWave Firefly, and MultiWave Sentry 4000 systems.

GROSS PROFIT. Cost of goods sold consists of component costs, direct compensation costs, warranty and other contractual obligations, royalties, license fees, inventory obsolescence costs and overhead related to the Company's manufacturing and engineering, furnishing and installation operations. Gross profit was \$252.1 million, \$246.7 million and \$41.1 million for fiscal years 1998, 1997, and 1996, respectively. Gross margin was 49.6%, 59.7%, and 46.5% for fiscal 1998, 1997, and 1996, respectively. The increase in gross profit from fiscal 1997 to fiscal 1998 was attributable to increased revenues. The decrease in gross margin percentage from fiscal 1997 to fiscal 1998 was largely attributable to lower selling prices. The increase in gross margin percentage from fiscal 1996 to fiscal 1997 was primarily the result of a change in product mix from revenues largely derived from lower margin engineering, furnishing and installation sales to higher margin MultiWave product sales. This year to year increase was also attributable to fixed overhead costs being allocated over a larger revenue base, an improvement in manufacturing efficiencies, and reductions in component costs.

The Company's gross margins may be affected by a number of factors, including continued competitive market pricing, lower manufacturing volumes and efficiencies and fluctuations in component costs. During fiscal 1999, the Company expects to face continued pressure on gross margins, primarily as a result of substantial price discounting by competitors seeking to acquire market share.

RESEARCH AND DEVELOPMENT EXPENSES. Research and development expenses were \$64.5 million, \$23.3 million, and \$8.9 million for fiscal 1998, 1997, and 1996, respectively. The approximate \$41.2 million or 177% increase from fiscal 1997 to 1998 and the approximate \$14.4 million or 161% increase from fiscal 1996 to fiscal 1997 in research and development expenses related to increased staffing levels, purchases of materials used in development of new or enhanced product prototypes, and outside consulting services in support of certain developments and design efforts. During fiscal 1998, 1997, and 1996 research and development expenses were 12.7%, 5.6%, and 10.1% of revenue, respectively. The Company expects that its research and development expenditures will continue to increase moderately in absolute dollars and perhaps as a percentage of revenue during fiscal 1999 to support the continued development of the various DWDM products, the exploration of new or complementary technologies, and the pursuit of various cost reduction strategies. The Company has expensed research and development costs as incurred.

SELLING AND MARKETING EXPENSES. Selling and marketing expenses were \$45.9 million, \$22.6 million, and \$5.6 million for fiscal 1998, 1997, and 1996, respectively. The approximate \$23.3 million or 103% increase from fiscal 1997 to 1998 and the approximate \$17.0 million or 301% increase from fiscal 1996 to fiscal 1997 in selling and marketing expenses was primarily the result of increased staffing levels in the areas of sales, technical assistance and field support, and increases in commissions earned, trade show participation and promotional costs. During fiscal 1998, 1997, and 1996 selling and marketing expenses were 9.0%, 5.5%, and 6.4% of revenue, respectively. The Company anticipates that its selling and marketing expenses may increase in absolute dollars and perhaps as a percentage of revenue during fiscal 1999 as additional personnel are hired and additional offices are opened to allow the Company to pursue new customers and market opportunities. The Company also expects the portion of selling and marketing expenses attributable to technical assistance and field support, specifically in Europe and Asia, will increase as the Company's installed base of operational MultiWave systems increases.

GENERAL AND ADMINISTRATIVE EXPENSES. General and administrative expenses were \$17.8 million, \$11.8 million, and \$6.4 million for fiscal 1998, 1997, and 1996, respectively. The approximate \$6.0 million or 50.8% increase from fiscal 1997 to 1998 and the approximate \$5.4 million or 84.1% increase from fiscal 1996 to fiscal 1997 in general and administrative expenses was primarily the result of increased staffing levels and outside consulting services. During fiscal 1998, 1997 and 1996, general and administrative expenses were 3.5%, 2.9%, and 7.3% of revenue, respectively. The Company believes that its general and administrative expenses will moderately increase in absolute dollars and perhaps as a percentage of revenue during fiscal 1999 as a result of the expansion of the Company's administrative staff required to support its expanding operations.

PURCHASED RESEARCH AND DEVELOPMENT. Purchased research and development costs were \$9.5 million for the fiscal year 1998. These costs were for the purchase of technology and related assets associated with the acquisition of Terabit during the second quarter of fiscal 1998.

PIRELLI LITIGATION. The Pirelli litigation costs of \$30.6 million in fiscal 1998 were attributable to a \$30.0 million payment made to Pirelli during the third quarter of 1998 and to additional other legal and related costs incurred in connection with the settlement of this litigation. The Pirelli litigation expense in fiscal 1997 was primarily the result of a \$7.5 million charge for actual and estimated legal and related costs associated with the litigation.

COSTS OF PROPOSED MERGER. The costs of the proposed merger for fiscal 1998 were costs related to the contemplated merger between the Company and Tellabs. These costs include approximately \$1.2 million in

Securities and Exchange Commission filing fees and approximately \$1.3 million in legal, accounting, and other related expenses.

OPERATING PROFIT. The Company's operating profit for fiscal 1998, 1997 and 1996 was \$81.1 million or 16.0% of revenue, \$181.5 million or 43.9% and \$20.2 million or 22.8%, respectively. Excluding charges for purchased research and development, Pirelli litigation and costs from the proposed Tellabs merger fiscal 1998 operating profit was \$123.8 million or 24.4% of revenue and excluding Pirelli litigation costs in fiscal 1997 operating profit was \$189.0 million or 45.7%. The decrease in operating profit and operating margin from fiscal 1997 to fiscal 1998 was due to increased competitive pricing pressures causing a reduction in gross profit margin and increased operating expenses from investments in operating infrastructure. The year to year increases in operating profits from fiscal 1996 to fiscal 1997 was primarily due to the comparable increases in revenues and gross profits derived from the Company's MultiWave systems. If the Company is unable to convert fiscal 1998 investments in operating infrastructure into significant revenue generating relationships, the Company's business, financial condition and results of operations could be materially and adversely affected. See "Risk Factors".

OTHER INCOME (EXPENSE), NET. Other income (expense), net, consists of interest income earned on the Company's cash, cash equivalents and marketable debt securities, net of interest expense associated with the Company's debt obligations. Other income (expense), net, was \$12.3 million, \$7.2 million, and \$0.7 million for fiscal 1998, 1997, and 1996, respectively. The year to year increase in other income (expense), net, was primarily the result of the investment of the net proceeds of the Company's stock offerings and net earnings.

PROVISION FOR INCOME TAXES. During fiscal 1996, the Company received product acceptance from its initial customer and commenced profitable operations, at which time the Company reversed its previously established deferred tax valuation allowance. The provision for income taxes for fiscal 1996 of \$3.6 million is net of a tax benefit of approximately \$4.6 million related to the reversal of the deferred tax valuation allowance. The Company's provision for income taxes was 38.5% of pre-tax earnings, or \$72.7 million for fiscal 1997 and was 43.1% of pre-tax earnings, or \$40.2 million for fiscal 1998. The increase in the tax rate from fiscal 1997 to fiscal 1998 was primarily the result of charges for purchased research and development expenses recorded in fiscal 1998 and an adjustment to the estimated prior year state income tax liability associated with Alta operations. Purchase research and development charges are not deductible for tax purposes. Exclusive of the effect of these charges, the Company's provision for income taxes was 38.4% of income before income taxes in fiscal 1998. The decrease in tax rate, exclusive of the above charges, for fiscal 1998 compared to fiscal 1997 was the result of a lower combined effective state income tax expense, a larger benefit from the Company's Foreign Sales Corporation and an increase in expected credits derived from research and development activities offset by an increase in non-deductible goodwill amortization expense.

QUARTERLY RESULTS OF OPERATIONS

The tables below set forth the operating results and percentage of revenue represented by certain items in the Company's statements of operations for each of the eight quarters in the period ended October 31, 1998. This information is unaudited, but in the opinion of the Company reflects all adjustments (consisting only of normal recurring adjustments) that the Company considers necessary for a fair presentation of such information in accordance with generally accepted accounting principles. The results for any quarter are not necessarily indicative of results for any future period.

	Jan. 31, 1997	April 30, 1997	Jul. 31, 1997	Oct. 31, 1997
Revenue.....	\$ 63,673	\$ 97,603	\$121,845	\$130,094
Cost of goods sold.....	28,253	40,400	47,569	50,250
Gross profit.....	35,420	57,203	74,276	79,844
Operating expenses:				
Research and development.....	3,050	4,699	7,245	8,314
Selling and marketing.....	3,070	4,946	6,722	7,889
General and administrative.....	2,003	2,797	3,241	3,782
Purchased research & development....	-	-	-	-
Pirelli litigation.....	5,000	-	-	2,500
Cost of proposed merger.....	-	-	-	-
Total operating expenses.....	13,123	12,442	17,208	22,485
Income (loss) from operations.....	22,297	44,761	57,068	57,359
Other income (expense), net.....	302	1,846	1,426	3,611
Income (loss) before income taxes.....	22,599	46,607	58,494	60,970
Provision (benefit) for income taxes....	8,744	18,127	22,770	23,062
Net income (loss).....	\$ 13,855	\$ 28,480	\$ 35,724	\$ 37,908
Basic net income (loss) per common share	\$ 0.97	\$ 0.31	\$ 0.36	\$ 0.38
Diluted net income (loss) per common share and dilutive potential common share.....	\$ 0.14	\$ 0.27	\$ 0.34	\$ 0.35
Weighted average basic common share (1)	14,216	92,644	98,021	99,786
Weighted average basic common and dilutive potential common share (1)...	100,425	105,456	106,296	107,308
	Jan. 31, 1998	April 30, 1998	Jul. 31, 1998	Oct. 31, 1998
Revenue.....	\$ 145,092	\$142,718	\$129,116	\$ 91,161
Cost of goods sold.....	58,980	63,915	70,431	62,688
Gross profit.....	86,112	78,803	58,685	28,473
Operating expenses:				
Research and development.....	10,203	16,648	18,805	18,880
Selling and marketing.....	9,968	11,044	12,526	12,407
General and administrative.....	3,792	4,448	3,908	5,677
Purchased research & development....	-	9,503	-	-
Pirelli litigation.....	-	10,000	20,579	-
Cost of proposed merger.....	-	-	2,017	531
Total operating expenses.....	23,963	51,643	57,835	37,495
Income (loss) from operations.....	62,149	27,160	850	(9,022)
Other income (expense), net.....	3,691	3,350	2,519	2,732
Income (loss) before income taxes.....	65,840	30,510	3,369	(6,290)
Provision (benefit) for income taxes....	26,142	15,205	1,280	(2,392)
Net income (loss).....	\$ 39,698	\$ 15,305	\$ 2,089	\$ (3,898)
Basic net income (loss) per common share	\$ 0.39	\$ 0.15	\$ 0.02	\$ (0.04)
Diluted net income (loss) per common share and dilutive potential common share.....	\$ 0.37	\$ 0.14	\$ 0.02	\$ (0.04)
Weighted average basic common share (1)	100,641	101,350	102,089	102,914
Weighted average basic common and dilutive potential common share (1)...	107,552	107,560	108,215	102,914

	Jan. 31, 1997	Apr. 30, 1997	Jul. 31, 1997	Oct. 31, 1997
Revenue.....	100.0 %	100.0 %	100.0 %	100.0 %
Cost of goods sold.....	44.4	41.4	39.0	38.6
Gross profit.....	55.6	58.6	61.0	61.4
Operating expenses:				
Research and development.....	4.8	4.8	5.9	6.4
Selling and marketing.....	4.8	5.1	5.5	6.1
General and administrative.....	3.1	2.9	2.7	2.9
Purchased research & development.	-	-	-	-
Pirelli litigation	7.9	-	-	1.9
Cost of proposed merger.....	-	-	-	-
Total operating expenses.....	20.6	12.8	14.1	17.3
Income (loss) from operations.....	35.0	45.8	46.9	44.1
Other income (expense), net.....	0.5	1.9	1.2	2.8
Income (loss) before income taxes.....	35.5	47.7	48.1	46.9
Provision (benefit) for income taxes....	13.7	18.6	18.7	17.7
Net income (loss).....	21.8 %	29.1 %	29.4 %	29.2 %

	Jan. 31, 1998	Apr. 30, 1998	Jul. 31, 1998	Oct. 31, 1998
Revenue.....	100.0 %	100.0 %	100.0 %	100.0 %
Cost of goods sold.....	40.7	44.8	54.5	68.8
Gross profit.....	59.3	55.2	45.5	31.2
Operating expenses:				
Research and development.....	7.0	11.7	14.6	20.7
Selling and marketing.....	6.9	7.7	9.7	13.6
General and administrative.....	2.6	3.1	3.0	6.2
Purchased research & development.	-	6.7	-	-
Pirelli litigation	-	7.0	15.9	-
Cost of proposed merger.....	-	-	1.6	0.6
Total operating expenses.....	16.5	36.2	44.8	41.1
Income (loss) from operations.....	42.8	19.0	0.7	(9.9)
Other income (expense), net.....	2.6	2.4	1.9	3.0
Income (loss) before income taxes.....	45.4	21.4	2.6	(6.9)
Provision (benefit) for income taxes....	18.0	10.7	1.0	(2.6)
Net income (loss).....	27.4 %	10.7 %	1.6 %	(4.3) %

(1) The sum of the quarterly earnings per share for fiscal 1997 does not equal the reported annual earnings per share for fiscal 1997 due to the effect of the Company's stock issuances during the year.

The Company's quarterly operating results have varied and are expected to vary significantly in the future. The Company's detailed discussion of risk factors addresses the many factors that have caused such variation in the past, and may cause similar variations in the future. See "Risk Factors". In addition to those factors, in fiscal 1998, the distraction attendant to the aborted Tellabs merger had a significant, though difficult to quantify impact on the Company's operations in the third and fourth quarter. But apart from the distraction factor, the Company believes the single most significant trend affecting the Company's financial performance is the material effect of very aggressive price discounting by competitors seeking to acquire market share in the increasingly important market for high-capacity solutions. The Company chose in the face of this pressure to continue to build market share in fiscal 1998 at the cost of declining margins. The Company intends to continue this strategy in order to preserve and enhance its market leadership and eventually build on its installed base with new and additional products. Pursuit of this strategy, in conjunction with increased investments in selling, marketing, and customer service activities, will likely limit the Company's operating profitability over at least the first half of fiscal 1999, and may result in near term operating losses.

LIQUIDITY AND CAPITAL RESOURCES

The Company financed its operations and capital expenditures from inception through fiscal 1996 principally through the sale of Convertible Preferred Stock for proceeds totaling \$40.6 million and capital lease financing totaling \$4.1 million. The Company completed its initial public offering of Common Stock in February 1997 and realized net proceeds of approximately \$121.8 million with an additional \$0.6 million received from the exercise of certain outstanding warrants. In July 1997, the Company completed a public offering of Common Stock and realized net proceeds of approximately \$52.2 million. During fiscal 1997 and fiscal 1998 the Company also realized approximately \$53.1 million and \$22.6 million in tax benefits from the exercise of stock options and certain stock warrants, respectively. As of October 31, 1998, the Company had \$227.4 million in cash and cash equivalents and \$16.0 million in corporate debt securities with contractual maturities of six months or less.

The Company's operating activities used cash of \$1.2 million in fiscal 1996, and provided cash of \$85.0 million and \$35.5 million for fiscal 1997 and 1998, respectively. The cash used in operations in fiscal 1996 was accounted for primarily by the Company's research and development activities relating to its early development of the MultiWave system. Cash provided by operations in fiscal 1997 and 1998 was principally attributable to net income adjusted for the non-cash charges of depreciation, amortization, provisions for inventory obsolescence and warranty, increases in accounts payable, accrued expenses and income tax payable; offset by increases in accounts receivable and inventories due to increased revenue and to the general increase in business activity.

Cash used in investing activities in fiscal 1996, 1997 and 1998 was \$11.6 million, \$66.8 million and \$104.5 million, respectively. Included in investment activities were capital equipment expenditures in fiscal 1996, 1997 and 1998 of \$9.9 million, \$51.9 million and \$75.4 million, respectively. These capital equipment expenditures were primarily for test, manufacturing and computer equipment. The Company expects additional capital equipment expenditures of approximately \$50.0 million to be made during fiscal 1999 to support selling and marketing, manufacturing and product development activities. In addition, since its inception the Company's investing activities have included the use of \$28.3 million for the construction of leasehold improvements and the Company expects to use an additional \$3.0 million of capital during fiscal 1999 in the construction of leasehold improvements for its facilities.

The Company believes that its existing cash balance and cash flows expected from future operations will be sufficient to meet the Company's capital requirements for at least the next 18 to 24 months.

EFFECTS OF RECENT ACCOUNTING PRONOUNCEMENTS

In June 1997, the Financial Accounting Standards Board issued Statement of Financial Accounting Standards No. 130 (SFAS No. 130), "Comprehensive Income". SFAS No. 130 becomes effective for the Company's fiscal year 1999 and requires reclassification of earlier financial statements for comparative purposes. SFAS No. 130 requires that changes in the amounts of certain items, including foreign currency translation adjustments and gains and losses on certain securities be shown in the financial statements. SFAS No. 130 does not require a specific format for the financial statement in which comprehensive income is reported, but does require that an amount representing total comprehensive income be reported in that statement. The Company believes the adoption of SFAS No. 130 will not have a material effect on the consolidated financial statements.

In June 1997, the Financial Accounting Standards Board issued Statement of Financial Accounting Standards No. 131 (SFAS No. 131), "Disclosures about Segments of an Enterprise and Related Information". This Statement will change the way public companies report information about segments of their business in annual financial

statements and requires them to report selected segment information in their quarterly reports issued to stockholders. It also requires entity-wide disclosures about the products and services an entity provides, the material countries in which it holds assets and reports revenues, and its major customers. The Statement is effective for the Company's fiscal year 1999. The Company believes the adoption of SFAS No. 131 will not have a material effect on the consolidated financial statements.

In June 1998, the Financial Accounting Standards Board issued Statement of Financial Accounting Standards No. 133 (SFAS No. 133), "Accounting for Derivative Instruments and Hedging Activities". This Statement requires companies to record derivatives on the balance sheet as assets or liabilities, measured at fair value. Gains or losses resulting from changes in the values of those derivatives would be accounted for depending on the use of the derivative and whether it qualifies for hedge accounting. SFAS No. 133 will be effective for the Company's fiscal year ending October 31, 2000. The Company believes the adoption of SFAS No. 133 will not have a material effect on the consolidated financial statements.

YEAR 2000 READINESS

Many computer systems were not designed to handle any dates beyond the year 1999; accordingly, affected hardware and software will need to be modified prior to the year 2000 in order to remain functional. The Company's operations make use of a variety of computer equipment and software. If the computer equipment and software used in the operation of the Company do not correctly recognize data information when the year changes to 2000, there could be an adverse impact on the Company's operations.

The Company has taken actions to understand the nature and extent of work required, if any, to make its systems, products and infrastructure Year 2000 compliant. Based on internal testing performed to date and completed by the Company, the Company currently believes and warrants to its customers that its products are Year 2000 compliant. However, since all customer situations cannot be anticipated, particularly those involving interaction of the Company's products with third party products, the Company may see an increase in warranty and other claims as a result of the Year 2000 transition. The impact of customer claims, if broader than anticipated, could have a material adverse impact on the Company's results of operations or financial condition.

The Company is currently in the process of conducting a comprehensive inventory and evaluation of both information technology ("IT") or software systems and non-IT systems used to run its systems. Non-IT systems typically include embedded technology such as microcontrollers. Examples of the Company's Non-IT systems include certain equipment used for production, research, testing and measurement processes and calibration. As of December 1998 the Company had assessed approximately 80% of the IT and non-IT systems used in its operations with an insignificant amount of those systems having been identified as Year 2000 non-compliant. The Company has begun the process of upgrading or replacing those identified non-compliant systems with completion expected during fiscal 1999. For the Year 2000 non-compliance systems identified to date, the cost of remediation is not considered to be material to the Company's financial condition or operating results. However, if implementation of replacement systems is delayed, or if significant new noncompliance issues are identified, the Company's results of operations or financial condition may be materially adversely affected.

The Company changed its main financial, manufacturing and information system to a company-wide Year 2000 compliant enterprise resource planning ("ERP") computer-based system during the fourth quarter of fiscal 1998. The Company estimates that it has spent approximately \$4.0 million on its ERP implementation and estimates that it will likely spend \$50,000 to \$100,000 to address identified Year 2000 issues. The Company expects that it will use cash from operations for Year 2000 remediation and replacement costs. Approximately less than 2% of the information technology budget is expected to be used for remediation. No other information technology projects have been deferred due to the Year 2000 efforts. To date, the Company has not yet employed an independent verification and validation process to assure the reliability of its risk and cost estimates.

The Company is also in the process of contacting its critical suppliers to determine that suppliers' operations and the products and services they provide are Year 2000 compliant. To date, the Company's optical suppliers have represented that they are year 2000 compliant or are in the process of becoming compliant by December 31, 1999. If these suppliers fail to adequately address the Year 2000 issue for the products they provide to the Company, this could have a material adverse impact on the Company's operations and financial results.

Contingency plans will be developed if it appears the Company or its key suppliers will not be Year 2000 compliant, and such noncompliance is expected to have a material adverse impact on the Company's operations.

RISK FACTORS

COMPETITION. The Company believes the rapid pace at which the need for higher and more cost-effective bandwidth has developed was not widely anticipated in the global telecommunications industry--a factor which enabled the Company to achieve early product and market leadership in the DWDM field. More than two years after its initial shipments in 1996, the Company continues to believe its MultiWave 1600 and MultiWave Sentry 1600 and 4000 systems are the only widely deployed and operational full 16-channel and 40-channel open architecture DWDM systems anywhere in the world, and further believes the demonstrated commercial manufacturability of its MultiWave Sentry 4000 system gives the Company's high-capacity product offerings a level of credibility not possessed by its competitors.

However, competition in the global telecommunications industry historically has been dominated by a small number of very large companies, each of which have greater financial, technical and marketing resources, greater manufacturing capacity, broader product lines and more extensive and established customer relationships with network operators than the Company. Lucent, Alcatel, Nortel, NEC, Pirelli, Siemens, Ericsson, Fujitsu, and Hitachi most of which provide a full complement of switches, fiberoptic transmission terminals and fiberoptic signal regenerators in addition to DWDM equipment, are examples of this type of company. Many of them have substantial economic interests in continuing sales of the legacy equipment which has dominated the historical network architecture designed for voice traffic; those interests are best served by containing the pace at which paradigm-shifting new technologies are adopted, such as DWDM over new voice/data architectures. At the same time, these companies must participate in new technology markets or face potentially significant loss of account control and market share in the overall telecommunications equipment marketplace. New market entrants like CIENA, which appear to be achieving rapid and widespread market acceptance of new equipment, can represent a specific threat to these established companies. As a result, the Company expects and has observed aggressive competitive moves from many of these industry participants, which have to date included early announcement of competing or alternative products, substantial and increasing price discounting, customer financing assistance, packaged, "one-stop-shopping" deals combining DWDM equipment with other network equipment and supplies, and other tactics. Early announcements of competing products can and does cause confusion and delay in customer purchasing decisions, particularly if the announcements are viewed as credible in terms of both the performance of the announced product, and the time within which it will be available. For example, Lucent announced in January 1998 a proposed high-capacity DWDM system which it claimed would handle 400 Gb/s of capacity per fiber, and which it further claimed would be commercially available worldwide in the fourth quarter of 1998. The Company believed at the time of the announcement that the Lucent system would not be commercially available worldwide in the fourth quarter of 1998 and continues to believe so; however, the Company did compete during 1998 against the promise of this product.

There can be no assurance that competitors will not make similar announcements of competing products in the future, with adverse impacts on customer purchasing decisions. Further, if new competing products are in fact developed, perform as advertised, and are manufacturable in volume quantities in the near future, the likelihood of significant orders for the Company's MultiWave systems may diminish. The timing of shipments by the Company and corresponding revenue, if delayed by reason of deferred deployment of MultiWave systems pending evaluation of a competitor's product, could and likely would cause substantial swings, and potentially material and adverse effects, on the Company's quarterly financial condition and results of operations.

While competition in general is broadly based on varying combinations of price, manufacturing capacity, timely delivery, system reliability, service commitment and installed customer base, as well as on the comprehensiveness of the system solution in meeting immediate network needs and foreseeable scaleability requirements, the Company's customers are themselves under increasing competitive pressure to deliver bandwidth to their customers at the lowest possible cost. This pressure may result in pricing for DWDM systems becoming a more important factor in customer decisions, which may favor larger competitors which can spread the effect of price discounts in their DWDM product lines across an array of products and services, and a customer base, which are larger than the Company's.

The Company's customers generally prefer to have at least two sources for key network equipment such as DWDM systems, but the Company believes it has until recently been the only supplier of 16 channel, or greater than 16 channel, open architecture DWDM systems. As competitors catch up with manufacturable DWDM systems which are realistic alternatives to those supplied by the Company, the Company's customers may reduce the portion of their DWDM purchases allocated to the Company. Sprint has for several quarters indicated it intends to establish a second vendor for DWDM equipment. Although the Company recently negotiated a contract with Sprint which conferred "preferred vendor" status on the Company through 1999, the timing of Sprint's selection of a second vendor, and the impact a selection might have on relative purchasing from the Company and the second vendor, are

decisions which are not under the control of the Company. There can be no assurance that these decisions will not result in a reduction in future purchasing from the Company, which could in turn have a material adverse effect on the Company's financial condition and results of operations.

Intellectual property disputes may also be asserted as part of a competitive effort to reduce the Company's leadership position and limit its ability to achieve greater market share, even if the merits of specific disputes are doubtful. Some of the Company's competitors are also key suppliers of components for the Company's systems, and could harm the Company through delay, interruption or other failures to supply the Company with appropriate quality items. See "Competitors as Suppliers".

While the Company will consider all appropriate means to position itself to compete successfully, including taking legal action where the tactics of competitors are believed to be unlawful, there can be no assurance that the Company will be able to compete successfully with its larger competitors or that aggressive competitive moves faced by the Company will not result in lost sales, significantly lower prices for the Company's products, additional decreases in gross profit margins, and otherwise have a material adverse effect on its business, financial condition and results of operations.

The Company has also observed an increase in the funding of new companies intending to develop new products for the rapidly evolving telecom industry. The business and product plans for these companies are not always publicly known, but they may provide additional competition as to the Company's existing product lines as well as potential future products.

CONCENTRATION OF POTENTIAL CUSTOMERS; DEPENDENCE ON MAJOR CUSTOMERS. The Company's business, and particularly the size of its revenue growth potential, has historically been dependent on two customers, Sprint and MCIWorldCom. While the scope of commercial applications of the Company's MultiWave Firefly and MultiWave Metro product (scheduled for general commercial availability in the first calendar quarter of 1999) and is expected to expand the number of potential customers for the Company, in the near term, additional potential customers, consisting almost exclusively of long distance and other telecommunications carriers using fiberoptic networks, are relatively few in number, and of those, a very small number have revenue potential comparable to that of Sprint and MCI WorldCom. The absence of AT&T as a potential customer heightens the risks to CIENA inherent in having a relatively small number of customers; additionally, the Company expects Sprint's purchases in fiscal 1999 to be focused primarily on filling out installed systems with additional channel cards, and therefore substantially below the purchasing volume in either of the last two fiscal years. The Company's visibility into MCIWorldcom's purchasing plans for 1999 is at present very limited. The number of potential major customers may also decrease if and as customers merge with or acquire one another. In May 1998, SBC and Ameritech announced an agreement to merge; in July 1998, Bell Atlantic and GTE announced an agreement to merge. The distraction and/or reorganization sometimes attendant to such mergers could delay, limit or otherwise adversely affect the capital equipment purchasing patterns of the parties to them, with a corresponding adverse effect on the Company's sales, even if the customer is otherwise satisfied with or interested in the Company's products.

The extent to which the negative publicity relating to the Company and its terminated merger agreement with Tellabs will impact the Company's ability to develop additional customers, or obtain additional orders from existing customers, in the near term is difficult to predict; there can be no assurance that there will be no adverse effect. If the negative publicity has the effect of causing customers to delay or reduce purchases from the Company, the adverse effect could be material.

Additionally, the size and complexity of the Company's potential customers, and the typically long and unpredictable sales cycles associated with them, require the Company to make considerable early investments in account management personnel, product customization efforts in both engineering and manufacturing, and in some cases, facilities in proximity to the customer's locations, without assurance of future revenues. The Company invested considerable financial, engineering, manufacturing and logistics support resources in positioning the AT&T relationship to be successful, even though the Company had no assurance as to the volume, duration or timing of any purchases which might ensue from AT&T. The ongoing leveraging of these resources into other customer opportunities will need to be completed promptly and efficiently in order to minimize their impact on near term results of operations, and there is no assurance the Company will successfully do so. The Company also intends to invest in developing significant customer relationships with Bell Atlantic and other RBOCs and CLECs, as well as internationally. Over the near term, this investment of resources has been evident in increased operating expenses and in a rise in the Company's manufacturing and general overhead structure, with the result that the Company may experience operating losses, even if revenues were to increase. If the Company is unable to convert these investments into significant revenue generating relationships, the Company's business, financial condition and results of operations could be materially and adversely affected.

IMPACTS OF CHANGES IN CUSTOMER MIX. With the Company's equipment now widely deployed in the Sprint network, with MCIWorldCom beginning to resume purchasing but at modest levels, and without AT&T as a potential customer, the Company's sales efforts are focused on a greater number of smaller opportunities. The Company believes the pace of bandwidth demand is strong enough to create a number of smaller opportunities

sufficient to support revenue growth over the long-term. However, the smaller opportunities often represent new carriers working aggressively to establish saleable new capacity. These new carriers face a number of problems which the established carriers do not; specifically, they must attempt to balance the need to build their own customer base, acquire all necessary rights of way and interconnections necessary for saleable network service, and build out new capacity sufficient to meet anticipated needs, all while working within capital budget constraints. These aspects of newer carriers tend to make them even less predictable as to either timing or volume of purchasing than the established carriers; in turn, this tends to exacerbate the problem of limited visibility which the Company has regularly struggled with in conducting sales forecasting, materials and manufacturing planning, and in providing guidance to analysts as part of investor relations activities. See "Stock Price Volatility". Unless and until the Company's customer base broadens over the next several quarters, the likelihood of unanticipated changes in customer purchasing plans which could adversely impact the Company's results relative to investor expectations is higher than it has been in the past. Most of the Company's anticipated revenue over the next several quarters is comprised of less than \$25 million orders from each of several customers. Slips in timing of purchases, or changes in the amount of purchases at any one or more of these customers could have a material adverse effect on the Company's results of operations and relative to investor expectations. See "Stock Price Volatility".

ANTICIPATING DEMAND FOR BANDWIDTH. The Company's systems enable high capacity transmission over long distance, and with the introduction of MultiWave Firefly and MultiWave Metro, certain short-haul portions of, optical communications networks; however, the Company's customers and target customers determine how much capacity is required, when it will be deployed, and what equipment configurations will be used, if any. The Company has encountered a wide variety of customer views of how much capacity will be needed over what periods of time, as well as how to convert such capacity into revenue. Those views reflect the customers' differing competitive strategies and financial and marketing resources, and result in widely varying patterns and timing of evaluation, purchase and deployment of the Company's systems, other DWDM systems or other capacity solutions. Certain carriers believe the deployment of large-scale capacity quickly is a competitive advantage--i.e., they believe the accelerating demand for bandwidth will continue and the added capacity will be utilized quickly. This viewpoint leads to prompt and widespread deployment of high-channel count DWDM systems. Other carriers have adopted more of a wait-and-see approach, which dictates a more gradual channel by channel deployment of higher capacity systems. New carrier entrants sometimes try to combine these viewpoints, favoring rapid and widespread installation of the foundational elements of high capacity systems, while opting for pricing and other supply agreement features which allow for deferral of channel purchases until the need is demonstrated. These views are further influenced by the pace at which the higher bandwidth available over long distance routes is distributed or distributable over "the last mile" of the networks, as well as the willingness of carriers to aggressively lower their charges for services as a means of accelerating consumption of the higher bandwidth. All of these views are also subject to abrupt change, as competition and the evolving marketplace may demand. As an example, WorldCom informed the Company in February 1998 that its DWDM system requirements for 1998 would be substantially below the previous year's purchases of \$184.5 million. WorldCom indicated to the Company that in 1997 it had purchased DWDM systems from the Company at a level that contemplated two years' of capacity requirements, and that 1998's purchases would be substantially reduced. WorldCom's information in February 1998 demonstrated that there can be surprises as network operators and their purchasing groups grapple with unprecedented changes and challenges to network planning. As a further example of the impact of the evolving marketplace, during fiscal 1998 the Company shipped equipment to and recognized revenue from several new customers attempting to build out new networks--under circumstances where the Company had not even identified these customer opportunities as of a year prior to shipment.

Under these circumstances, for so long as the Company remains dependent on few customers, the Company will be vulnerable to significant quarterly fluctuations, and to difficulty in predicting the direction or magnitude of future demand for the Company's systems.

The Company believes growth in data communications and in commercial and consumer use of the Internet remains solid as a market driver of demand for bandwidth, which in turn fuels demand for DWDM systems and other high-bandwidth solutions. The Company also is confident that its products are well targeted toward the visible emerging chokepoints in the networks. The Company is less certain whether it will be able to accurately anticipate changes in direction or magnitude of near term demand. Unanticipated reductions in demand would adversely affect the Company's profitability and, depending on the size of the gap between actual, reduced demand, and investor expectation of such demand, could result in further stock price volatility irrespective of the Company's overall competitive position and long term prospects.

CUSTOMER CAPITAL EQUIPMENT SPENDING AND THE ECONOMY. In addition to the risks associated with assessing the core demand for bandwidth and its impact on individual customer purchasing decisions, broader concerns about the condition of the world and U.S. economy can have a generic dampening effect on the kind of large scale

commitments to capital equipment acquisition on which the Company's business depends. Established carriers may delay or reduce capital equipment acquisition during times of economic uncertainty. New competitive carriers may be less likely to delay or reduce capital equipment acquisition because their ability to generate revenue depends on the prompt deployment of service-providing equipment. But if the new competitive carrier is not adequately financed, economic uncertainty can limit its access to new financing sources and cause a delay in capital equipment purchasing. If current economic conditions deteriorate sufficiently to negatively impact the purchasing decisions of established or new carriers, or both, the Company's business will be adversely affected. Deteriorating economic conditions may also result in demands for vendor-supplied financing, particularly among less well-financed new carriers. The Company's larger competitors may be able to provide more attractive financing than can the Company, which may give them a competitive advantage over the Company in this segment of the market. Additionally, the pricing and gross margin pressures experienced by the Company as a result of competition could be magnified if deflationary expectations become broadly embedded in the world economy.

NEW PRODUCT DEVELOPMENT DELAYS. The Company's ability to anticipate changes in technology, industry standards, customer requirements and product offerings and to develop and introduce new and enhanced products in a timely fashion relative to customer expectations of increasingly short product development cycles, will be significant factors in the Company's ability to remain a market leader in the deployment of DWDM systems and in the optical communications market generally. The complexity of the technology involved in product development efforts in the DWDM field, including product customization efforts for individual customers, can result in unanticipated delays. The qualification and ramping up of new suppliers for new or customized products requires extensive planning and can result in unanticipated delays which affect the Company's ability to deliver such products in a timely fashion. The software certification process for new telecom equipment used in RBOC networks--a process traditionally conducted by Bellcore on behalf of the RBOCs--can also result in unanticipated delays, and has resulted in some delay in the commercial introduction of MultiWave Sentry and Firefly for the RBOC market. The failure to deliver new and improved products, or appropriately customized products, in a timely fashion relative to customer expectations (which can be influenced by competitors' announcements of competing products), would have a material adverse effect on the Company's competitive position and financial condition. See "Competition". The Company has made a general commitment to the commercial availability of MultiWave Metro within the next several months. The Company's performance on this commitment relative to customer expectations will likely have a material impact on the Company's ability to further solidify its position in the communications industry as a credible, long-term supplier of multiple products and successive next-generation solutions. The Company believes it will be successful in this effort, but there is no assurance of that, and there will likely be few objective "leading indicators" of the Company's success or failure, other than purchasing by its customers.

RECENT PRODUCT INTRODUCTION. The MultiWave 1600 has been operational and carrying live traffic for approximately two years; the MultiWave Sentry 1600 and MultiWave Sentry 4000 for less than a year; and the MultiWave Firefly is just now being introduced into the field. The in-service reliability of the Company's equipment has to date substantially exceeded statistical standards predicted for equipment of this kind. However, the introduction of new fiberoptic systems with high technology content is likely to involve occasional problems as the technology and manufacturing methods mature, and the Company's experience has been consistent with this expectation. Further, the Company's history of installation activity indicates that the newness and high precision nature of DWDM equipment may require enhanced customer training and installation support from the Company. The Company is aware of instances domestically and internationally in which installation and activation of certain MultiWave systems have been delayed due to faulty components found in certain portions of these systems. The Company is aware of few performance issues once the systems are installed and operational. However, if recurring or material reliability, quality or network monitoring problems should develop, a number of material and adverse effects could result, including manufacturing rework costs, high service and warranty expense, high levels of product returns, delays in collecting accounts receivable, reduced orders from existing customers and declining level of interest from potential customers. Although the Company maintains accruals for product warranties, there can be no assurance that actual costs will not exceed these amounts. The pace at which the customer requires upgrades from 16 to 40 to higher channel count systems occurs (which in some cases can involve replacement of portions of the existing equipment) can further complicate the assessment of appropriate product warranty reserves. The Company expects there will be interruptions or delays from time to time in the activation of the systems and the addition of channels, particularly because the Company does not control all aspects of the installation and activation activities. The Company believes its record to date of problem identification, diagnosis and resolution has been good, but if significant interruptions or delays occur, or if their cause is not promptly identified, diagnosed and resolved, confidence in the MultiWave systems could be undermined. An undermining of confidence in the MultiWave systems would have a material adverse effect on the Company's customer relationships, business, financial condition and results of operations.

FLUCTUATION IN QUARTERLY AND ANNUAL RESULTS. The Company's revenue and operating results have varied and are likely to continue to vary significantly from quarter to quarter and from year to year as a result of a number of factors, including the size and timing of orders, product mix and shipments of systems. The timing of order placement, size of orders, satisfaction of contractual customer acceptance criteria, as well as order delays or deferrals and shipment delays and deferrals, have caused and may continue to cause material fluctuations in revenue. See "Competition" and "Impacts of Changes in Customer Mix". Delays or deferrals in purchasing decisions may increase as competitors introduce new competing products, customers change purchasing practices, and as the Company develops and introduces new DWDM products or moves to next-generation versions of existing products, such as the MultiWave Sentry 1600, MultiWave Sentry 4000, MultiWave Firefly and MultiWave Metro. Consolidation among the Company's customers and target customers, such as that involved in the WorldCom/MCI merger, and the distraction and/or reorganization attendant to such consolidation - which may continue well after consummation - may also lead to delay or deferral of purchasing decisions. The Company believes its present limited visibility into MCIWorldcom's purchasing plan is in part a reflection of this phenomenon. See "Concentration of Potential Customers; Dependence on Major Customers". Changes in customers' approaches to bandwidth deployment can also materially impact purchasing decisions. See "Anticipating Demand for Bandwidth." The ongoing shift in the Company's customer mix also affects the likelihood of fluctuating results, as do general economic conditions. See "Impacts of Changes in Customer Mix"; "Customer Capital Equipment Spending and the Economy".

The Company's dependence on a small number of existing and potential customers increases the revenue impact of each customer's actions relative to these factors. The Company's expense levels in the future will be partially based on its expectations of long term future revenue and as a result net income for any quarterly period in which material orders are shipped or delayed or not forthcoming could vary significantly. The Company's expense levels for the next two quarters to some extent reflect the substantial investment in financial, engineering, manufacturing and logistics support resources already incurred in order to position the AT&T, RBOC, international and other potential commercial relationships to be successful, even though AT&T has now removed CIENA from further consideration as a DWDM vendor, and there is no assurance as to the volume, duration or timing of any purchases which might ensue from others. See "Concentration of Potential Customers; Dependence on Major Customers". Over the near term, this investment of resources has been evident in increased inventory levels and operating expenses, and in a rise in the Company's manufacturing and general overhead and expense structure, with the result that the Company's near term results of operations may be only modestly profitable or may involve operating losses, even if revenues sequentially increase. In general, quarter-to-quarter sequential revenue and operating results over the next 12 months are likely to fluctuate and therefore may not be reliable indicators of annual performance.

DEPENDENCE ON KEY PERSONNEL. The Company's success has always depended in large part upon its ability to attract and retain highly-skilled technical, managerial, sales and marketing personnel, particularly those skilled and experienced with optical communications equipment. The Company believes its heritage as an entrepreneurial startup has been an important factor in its success to date in attracting and retaining key personnel. However, competition for such personnel is intense and often increases when a company becomes party to a merger, as various recruiters look for key personnel interested in leaving. The terminated merger with Tellabs, and the attendant publicity and media speculation regarding its outcome and impact on the Company, have intensified competitors' efforts to entice employees to leave the Company. There can be no assurance that the Company will be able to retain all of its key contributors or attract new personnel to add to or replace them. Failure to retain the Company's key personnel, and to attract new personnel likely would have a material adverse effect on the Company's business, financial condition and results of operations.

LEGAL PROCEEDINGS. See Part II, "Legal Proceedings" for disclosure concerning recent shareholder class action lawsuits filed against the Company and certain of its officers and directors. The Company believes the lawsuits are without merit and is defending itself vigorously. However, because the lawsuits are at an early stage, it is not possible to predict the outcome at this time, and there is no assurance that the outcome would not have a material adverse effect on the Company's financial condition and results of operations.

COMPETITORS AS SUPPLIERS. Certain of the Company's component suppliers are both primary sources for such components and major competitors in the market for system equipment. For example, the Company buys certain key components from Lucent, Alcatel, Nortel, NEC and Siemens, each of which offers optical communications systems and equipment which are competitive with the Company's MultiWave systems. Lucent is the sole source of two integrated circuits and is one of two suppliers of Erbium-doped fiber. Alcatel and Nortel are suppliers of lasers used in MultiWave systems. NEC is a supplier of certain testing equipment. The Company's business, financial condition and results of operations could be materially and adversely affected if these supply relationships were to decline in reliability or otherwise change in any manner adverse to the Company. The Company to date has

not experienced to date any general decline in reliability among these vendors, but the intensifying competition described above makes this risk factor increasingly important.

LONG AND UNPREDICTABLE SALES CYCLES. The purchase of network equipment such as DWDM equipment is typically carried out by network operators pursuant to multiyear purchasing programs which may increase or decrease annually as the operators adjust their capital equipment budgets and purchasing priorities. The Company's customers do not typically share detailed information on the duration or magnitude of planned purchasing programs, nor do they consistently provide to the Company advance notice of contemplated changes in their capital equipment budgets and purchasing priorities. Such changes may occur due to factors unique to the individual customer or in response to general economic conditions. See "Customer Capital Equipment Spending and the Economy". Additionally, to the extent that the Company's customers follow budgeting cycles which generally correspond to the calendar year, the Company may experience a slow down in demand toward the calendar year end. Further, the Company is experiencing a shift in its customer mix which may add to the length and unpredictable nature of the sales cycle. See "Impacts of Changes in Customer Mix". These uncertainties substantially complicate the Company's manufacturing planning, and may lead to substantial and unanticipated fluctuations in the timing of orders and revenue. The Company has in fact experienced such unanticipated fluctuations in prior quarters, but until the third fiscal quarter of 1998, any unanticipated reduction in orders from one customer had been offset in part or in whole by unanticipated increases in orders for other routes with the same customer or in orders from another customer. There can be no assurance of the Company's ability to offset such reductions in the future.

Any curtailment or termination of customer purchasing programs, decreases in customer capital budgets or reduction in the purchasing priority assigned to equipment such as DWDM equipment, particularly if significant and unanticipated by the Company and not offset by increased purchasing from other customers, could have a material adverse effect on the predictability of the Company's business, and on its financial condition and results of operations.

Further, as is the case with most manufacturing companies, the Company has manufactured, and likely will continue to manufacture a portion of its finished products on the basis of non-binding customer forecasts rather than actual purchase orders. However, in contrast to most manufacturing companies, given the Company's dependence on very few customers, and the relatively high cost of the Company's DWDM systems, the financial consequences of mismatches between what is built and what is actually ordered can be magnified. Customers may also encounter delays in their build out of new routes or in their installation of new equipment in existing routes, with the result that orders for the MultiWave systems may be delayed or deferred. Any such delay with any major customer, as well as any other delay, deferral or unanticipated change in the configuration of orders for MultiWave systems, could result in material fluctuations in the timing of orders and revenue, and could have a material adverse effect on the Company's business, financial condition and results of operations.

STOCK PRICE VOLATILITY. The Company's Common Stock price has experienced substantial price volatility, and is likely to continue to do so. Such volatility can arise as a result of the activities of short sellers and risk arbitrageurs, and may have little relationship to the Company's financial results or prospects. Volatility can also arise as a result of any divergence between the Company's actual or anticipated financial results and published expectations of analysts and as a result of announcements by the Company, as occurred in the fiscal year just ended. The Company attempts to address this possible divergence through its public announcements and reports; however, the degree of specificity the Company can offer in such announcements, and the likelihood that any forward-looking statements made by the Company will prove correct in actual results, can and will vary, due primarily to the uncertainties associated with the Company's dependence on a small number of existing and potential customers, the impacts of changes in the customer mix, the actions of competitors, long and unpredictable sales cycles and customer purchasing programs, the absence of unconditional minimum purchase commitments from any customer, a lack of visibility into its customers' deployment plans over the course of the capital equipment procurement year, and the lack of reliable data on which to anticipate core demand for high bandwidth transmission capacity. An example of this uncertainty is evidenced in the February 1998 communication from WorldCom that its DWDM system requirements for 1998 would be substantially reduced relative to last year's purchases, due to a change in its purchasing policies. See "Concentration of Potential Customers; Dependence on Major Customers". A further example of this uncertainty occurred the third fiscal quarter, as an order expected to be \$25 million or more from a customer was unexpectedly delayed late in the quarter. This delayed order now appears likely to be withheld as the result of new commitments by the customer to purchase DWDM equipment from a competitor. See "Competition" and "Impacts of Changes in Customer Mix".

The WorldCom example in fiscal 1998, and the example of the third fiscal quarter indicate that divergence between the Company's actual or anticipated financial results and published expectations of stock analysts can occur notwithstanding the Company's efforts to address those expectations through public announcements and reports.

Such divergence will likely occur from time to time in the future, with resulting stock price volatility, irrespective of the Company's overall year to year performance or long term prospects. For so long as the Company remains highly dependent on few customers, and particularly in years, like the just completed fiscal year, when substantial majority of purchases by these customers are likely to be focused on products, such as MultiWave Sentry 1600 and 4000, and MultiWave Firefly, being introduced for the first time, there is substantial risk of widely varying quarterly results, including the so-called "missed quarter" relative to investor expectations which do not account for these issues, with attendant risk of higher volatility in the Company's stock price. See "Concentration of Potential Customers; Dependence on Major Customers"; and "Anticipating Demand for Bandwidth".

TECHNOLOGICAL CHANGE AND NEW PRODUCTS. The Company expects that new technologies will emerge, and existing technologies will rapidly evolve, as competition in the telecommunications industry increases and the need for higher and more cost efficient bandwidth expands. The Company's ability to anticipate changes in technology, industry standards, customer requirements and product offerings and to develop and introduce new and enhanced products will be significant factors in the Company's ability to remain the leader in the deployment of open architecture DWDM systems and other high-capacity solutions. There is no assurance of the Company's ability to successfully do so. The market for telecommunications equipment is characterized by substantial capital investment and diverse and competing technologies such as fiberoptic, cable, wireless and satellite technologies. The accelerating pace of deregulation in the telecommunications industry will likely intensify the competition for improved technology. Many of the Company's competitors have substantially greater financial, technical and marketing resources and manufacturing capacity with which to develop or acquire new technologies and generally to compete for market acceptance of their products. The introduction of new products embodying new technologies or the emergence of new industry standards could render the Company's existing products uncompetitive from a pricing standpoint, obsolete or unmarketable. Any of these outcomes would have a material adverse effect on the Company's business, financial condition and results of operations.

DEPENDENCE ON SUPPLIERS. Suppliers in the specialized, high technology sector of the optical communications industry are generally not as plentiful or, in some case, as reliable, as suppliers in more mature industries. The Company is dependent on a limited number of suppliers for key components of its MultiWave systems as well as equipment used to manufacture the MultiWave systems. MultiWave systems collectively utilize approximately 1,400 components, and certain key optical and electronic components are currently available only from a sole source. While alternative suppliers have been identified for certain key optical and electronic components, not all of those alternative sources have been qualified by the Company. The Company has to date conducted most of its business with suppliers through the issuance of conventional purchase orders against the Company's forecasted requirements. The Company also pursues long-term supply agreements with some key suppliers, but a large majority of its business with vendors continues to be done without such agreements. The Company has from time to time experienced minor delays in the receipt of key components, and any future difficulty in obtaining sufficient and timely delivery of them could result in delays or reductions in product shipments which, in turn, could have a material adverse effect on the company's business, financial condition and results of operations.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

The following discussion about the Company's market risk disclosures involves forward-looking statements. Actual results could differ materially from those projected in the forward-looking statements. The Company is exposed to market risk related to changes in interest rates and foreign currency exchange rates. The Company does not use derivative financial instruments for speculative or trading purposes.

INTEREST RATE SENSITIVITY. The Company maintains a short-term investment portfolio consisting mainly of corporate debt securities and U.S. government agency discount notes with an average maturity of less than six months. These held-to-maturity securities are subject to interest rate risk and will fall in value if market interest rates increase. If market interest rates were to increase immediately and uniformly by 10 percent from levels at October 31, 1998, the fair value of the portfolio would decline by an immaterial amount. The Company has the ability to hold its fixed income investments until maturity, and therefore the Company would not expect its operating results or cash flows to be affected to any significant degree by the effect of a sudden change in market interest rates on its securities portfolio.

FOREIGN CURRENCY EXCHANGE RISK. As a global concern, the Company faces exposure to adverse movements in foreign currency exchange rates. These exposures may change over time as business practices evolve and could have a material adverse impact on the Company's financial results. Historically the Company's primary exposures have been related to nondollar-denominated operating expenses in Canada, Europe and Asia where the Company sells primarily in U.S. dollars. The introduction of the Euro as a common currency for members of the European Monetary Union is scheduled to take place in the Company's fiscal year 1999. The Company has not determined

what impact, if any, the Euro will have on foreign exchange exposure. The Company is prepared to hedge against fluctuations in the Euro if this exposure becomes material. As of October 31, 1998 the assets and liabilities of the Company related to nondollar-denominated currencies was not material.

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

The following is an index to the consolidated financial statements and supplementary data :

	PAGE
	NUMBER

Report of Independent Accountants.....	36
Consolidated Balance Sheets.....	37
Consolidated Statements of Operations.....	38
Consolidated Statements of Changes in Stockholders' Equity (Deficit)....	39
Consolidated Statements of Cash Flows.....	40
Notes to Consolidated Financial Statements.....	41

REPORT OF INDEPENDENT ACCOUNTANTS

To the Board of Directors and
Stockholders of CIENA Corporation

In our opinion, the accompanying consolidated balance sheets and the related consolidated statements of operations, of cash flows and of changes in stockholders' equity (deficit) present fairly, in all material respects, the financial position of CIENA Corporation and subsidiaries at October 31, 1998 and 1997, and the results of their operations and their cash flows for each of the three years in the period ended October 31, 1998, in conformity with generally accepted accounting principles. 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 of these statements in accordance with generally accepted auditing standards which require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements, assessing the accounting principles used and significant estimates made by management, and evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for the opinion expressed above.

PricewaterhouseCoopers LLP

McLean, VA
November 25, 1998

CIENA CORPORATION
CONSOLIDATED BALANCE SHEETS
(IN THOUSANDS, EXCEPT SHARE DATA)

	October 31,	
	1997	1998
ASSETS		
Current assets:		
Cash and cash equivalents.....	\$ 268,588	\$ 227,397
Marketable debt securities.....	-	15,993
Accounts receivable (net of allowance of \$722 and \$1,528).....	72,336	85,472
Inventories, net.....	41,109	70,908
Deferred income taxes.....	9,139	15,301
Prepaid income taxes.....	-	8,558
Prepaid expenses and other.....	3,093	4,415
	-----	-----
Total current assets.....	394,265	428,044
Equipment, furniture and fixtures, net.....	67,618	123,405
Goodwill and other intangible assets, net.....	5	16,270
Other assets.....	1,391	4,705
	-----	-----
Total assets.....	\$ 463,279	\$ 572,424
	=====	=====
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable.....	\$ 24,760	\$ 25,686
Accrued liabilities.....	32,022	34,328
Income taxes payable.....	261	-
Deferred revenue.....	2,591	1,084
Other current obligations.....	1,179	838
	-----	-----
Total current liabilities.....	60,813	61,936
Deferred income taxes.....	28,167	34,125
Other long-term obligations.....	1,885	1,414
	-----	-----
Total liabilities.....	90,865	97,475
Commitments and contingencies.....	-	-
	-----	-----
Stockholders' equity:		
Preferred stock - par value \$.01; 20,000,000 shares authorized; zero shares issued and outstanding.....	-	-
Common stock - par value \$.01; 180,000,000 shares authorized; 100,287,653 and 103,239,704 shares issued and outstanding.....	1,003	1,032
Additional paid-in capital.....	245,219	294,926
Notes receivable from stockholders.....	(64)	(357)
Cumulative translation adjustment.....	(5)	(107)
Retained earnings.....	126,261	179,455
	-----	-----
Total stockholders' equity.....	372,414	474,949
	=====	=====
Total liabilities and stockholders' equity.....	\$ 463,279	\$ 572,424
	=====	=====

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

CIENA CORPORATION
 CONSOLIDATED STATEMENTS OF OPERATIONS
 (IN THOUSANDS, EXCEPT PER SHARE DATA)

	Year Ended October 31,		
	1996	1997	1998
Revenue.....	\$ 88,463	\$ 413,215	\$ 508,087
Cost of goods sold.....	47,315	166,472	256,014
Gross profit.....	41,148	246,743	252,073
Operating expenses:			
Research and development.....	8,922	23,308	64,536
Selling and marketing.....	5,641	22,627	45,945
General and administrative.....	6,422	11,823	17,825
Purchased research and development.....	-	-	9,503
Pirelli litigation	-	7,500	30,579
Cost of proposed merger.....	-	-	2,548
Total operating expenses.....	20,985	65,258	170,936
Income from operations.....	20,163	181,485	81,137
Interest and other income (expense), net.....	1,096	7,593	12,551
Interest expense.....	(443)	(408)	(259)
Income before income taxes.....	20,816	188,670	93,429
Provision for income taxes.....	3,553	72,703	40,235
Net income	\$ 17,263	\$ 115,967	\$ 53,194
Basic net income per common share.....	\$ 1.25	\$ 1.53	\$ 0.52
Diluted net income per common share and dilutive potential common share.....	\$ 0.19	\$ 1.11	\$ 0.49
Weighted average basic common shares outstanding.....	13,817	75,802	101,751
Weighted average basic common and dilutive potential common shares outstanding.....	92,407	104,664	107,895

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

CIENA CORPORATION
CONSOLIDATED STATEMENTS OF CHANGES IN STOCKHOLDERS' EQUITY (DEFICIT)
(DOLLARS IN THOUSANDS)

	COMMON STOCK		ADDITIONAL PAID-IN- CAPITAL	NOTES RECEIVABLE FROM STOCKHOLDERS	CUMULATIVE TRANSLATION ADJUSTMENT	RETAINED EARNINGS (DEFICIT)	TOTAL STOCKHOLDERS' EQUITY (DEFICIT)
	SHARES	AMOUNT					
BALANCE AT OCTOBER 31, 1995.....	12,935,415	129	178	-	-	(6,969)	(6,662)
Exercise of warrants.....	676,425	7	-	-	-	-	7
Exercise of stock options.....	579,745	6	71	(60)	-	-	17
Compensation cost of stock options.....	-	-	2	-	-	-	2
Issuance of warrant for settlement of certain equity rights.....	-	-	156	-	-	-	156
Net income.....	-	-	-	-	-	17,263	17,263
BALANCE OF OCTOBER 31, 1996.....	14,191,585	142	407	(60)	-	10,294	10,783
Issuance of common stock, net of issuance costs.....	7,002,060	70	173,947	-	-	-	174,017
Conversion of Preferred Stock.....	74,815,740	748	40,256	-	-	-	41,004
Exercise of warrants.....	666,086	7	-	-	-	-	7
Exercise of stock options.....	3,612,182	36	859	(73)	-	-	822
Tax benefit from the exercise of stock options.....	-	-	29,709	-	-	-	29,709
Repayment of receivables from stockholders.....	-	-	-	69	-	-	69
Translation adjustment.....	-	-	-	-	(5)	-	(5)
Compensation cost of stock options.....	-	-	41	-	-	-	41
Net income.....	-	-	-	-	-	115,967	115,967
BALANCE AT OCTOBER 31, 1997.....	100,287,653	1,003	245,219	(64)	(5)	126,261	372,414
Purchase acquisitions, net of transaction costs.....	304,144	3	20,817	-	-	-	20,820
Exercise of stock options.....	2,647,907	26	6,215	(392)	-	-	5,849
Tax benefit from the exercise of stock options.....	-	-	22,634	-	-	-	22,634
Repayment of receivables from stockholders.....	-	-	-	99	-	-	99
Translation adjustment.....	-	-	-	-	(102)	-	(102)
Compensation cost of stock options.....	-	-	41	-	-	-	41
Net income.....	-	-	-	-	-	53,194	53,194
BALANCE AT OCTOBER 31, 1998.....	103,239,704	\$ 1,032	\$ 294,926	\$ (357)	\$ (107)	\$ 179,455	\$ 474,949

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

CIENA CORPORATION
CONSOLIDATED STATEMENTS OF CASH FLOWS
(IN THOUSANDS)

	YEAR ENDED OCTOBER 31,		
	1996	1997	1998
Cash flows from operating activities:			
Net income	\$ 17,263	\$ 115,967	\$ 53,194
Adjustments to reconcile net income to net cash (used in) provided by operating activities:			
Non-cash charges from equity transactions.....	158	41	41
Amortization of premiums on marketable debt securities	-	-	464
Effect of translation adjustment	-	(5)	(102)
Purchased research and development	-	-	9,503
Write down of leasehold improvements and equipment.....	883	923	1,605
Depreciation and amortization.....	1,082	10,251	33,266
Provision for doubtful accounts.....	76	489	806
Provision for inventory excess and obsolescence.....	1,937	7,585	9,617
Provision for warranty and other contractual obligations.....	1,584	11,866	10,523
Changes in assets and liabilities:			
Increase in accounts receivable.....	(20,601)	(46,309)	(13,707)
Increase in inventories.....	(15,165)	(35,466)	(39,416)
Increase in deferred income tax assets.....	(1,834)	(7,305)	(6,162)
Increase in prepaid income taxes	-	-	(8,558)
Increase in prepaid expenses and other assets.....	(1,009)	(2,403)	(11,456)
Increase (decrease) in accounts payable and accrued expenses.....	7,259	30,311	(8,307)
Increase (decrease) in income taxes payable.....	3,801	(3,701)	(261)
Increase in deferred income tax liabilities.....	-	4,793	5,958
Increase (decrease) in deferred revenue and other obligations	3,386	(2,007)	(1,507)
Net cash (used in) provided by operating activities.....	(1,180)	85,030	35,501
Cash flows from investing activities:			
Additions to equipment, furniture and fixtures.....	(11,558)	(66,820)	(86,399)
Purchase of marketable debt securities.....	-	-	(93,869)
Maturities of marketable debt securities	-	-	77,876
Net cash paid for business combinations.....	-	-	(2,070)
Net cash used in investing activities.....	(11,558)	(66,820)	(104,462)
Cash flows from financing activities:			
Net proceeds from (repayment of) other obligations.....	2,543	(2,260)	(812)
Net proceeds from issuance of or subscription to mandatorily redeemable preferred stock.....	25,950	-	-
Net proceeds from issuance of common stock	24	175,446	5,849
Tax benefit related to exercise of stock options and warrants.....	-	53,083	22,634
Repayment of notes receivable from stockholders.....	-	69	99
Net cash provided by financing activities.....	28,517	226,338	27,770
Net increase (decrease) in cash and cash equivalents.....	15,779	244,548	(41,191)
Cash and cash equivalents at beginning of period.....	8,261	24,040	268,588
Cash and cash equivalents at end of period.....	\$ 24,040	\$ 268,588	\$ 227,397
SUPPLEMENTAL DISCLOSURE OF CASH FLOW INFORMATION:			
Cash paid during the period for:			
Interest.....	\$ 419	\$ 405	\$ 249
Income taxes.....	\$ 1,830	\$ 26,999	\$ 30,203
SUPPLEMENTAL DISCLOSURE OF NON-CASH FINANCING ACTIVITIES:			
Issuance of common stock for notes receivable from stockholders.....	\$ 60	\$ 73	\$ 392

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

CIENA CORPORATION

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

(1) THE COMPANY AND SIGNIFICANT ACCOUNTING POLICIES

Description of Business

CIENA Corporation (the "Company" or "CIENA") designs, manufactures and sells open architecture, dense wavelength division multiplexing ("DWDM") systems for fiberoptic communications networks, including long-distance and local exchange carriers. CIENA also provides a range of engineering, furnishing and installation services for telecommunications service providers.

Principles of Consolidation

The Company has ten wholly owned U.S. and international subsidiaries which have been consolidated in the accompanying financial statements. During the fiscal year ended October 31, 1998, the Company completed a merger with ATI Telecom International Ltd., ("Alta"). The merger constituted a tax-free reorganization and has been accounted for as a pooling of interests under Accounting Principles Board Opinion No. 16. Accordingly, all prior period consolidated financial statements presented have been restated to include the combined results of operations, financial position and cash flows of Alta as though it had been a part of CIENA. The accompanying consolidated financial statements include the accounts of the Company and its wholly owned subsidiaries. All material intercompany accounts and transactions have been eliminated in consolidation. See Note 2.

Fiscal Year

The Company has a 52 or 53 week fiscal year which ends on the Saturday nearest to the last day of October in each year (October 31, 1998; November 1, 1997; and November 2, 1996). For purposes of financial statement presentation, each fiscal year is described as having ended on October 31. Fiscal 1998 and 1997 comprised 52 weeks and fiscal 1996 comprised 53 weeks.

Use of Estimates

The preparation of financial statements in conformity with generally accepted accounting principles requires the Company to make estimates, judgements and assumptions that affect the reported amounts of assets, liabilities, revenue and expenses, together with amounts disclosed in the related notes to the financial statements. Actual results could differ from the recorded estimates.

Cash and Cash Equivalents

The Company considers all highly liquid investments purchased with original maturities of three months or less to be cash equivalents.

Marketable Debt Securities

The Company has classified its investments in marketable debt securities as held-to-maturity securities as defined by Statement of Financial Accounting Standards No. 115, "Accounting for Certain Investments in Debt and Equity Securities". Such investments are recorded at their amortized cost in the accompanying consolidated balance sheets. All of the marketable debt securities are corporate debt securities with contractual maturities of six months or less and have \$60,000 and \$9,000 of unrealized gain and unrealized loss, respectively, as of October 31, 1998.

Inventories

Inventories are stated at the lower of cost or market, with cost determined on the first-in, first-out basis. The Company records a provision for excess and obsolete inventory whenever such an impairment has been identified.

Equipment, Furniture and Fixtures

Equipment, furniture and fixtures are recorded at cost. Depreciation and amortization are computed using the straight-line method over useful lives of 2-5 years for equipment, furniture and fixtures and of 6-10 years for leasehold improvements.

Goodwill

The Company has recorded goodwill from two purchase transactions. See Note 2. It is the Company's policy to continually assess the carrying amount of its goodwill to determine if there has been an impairment to its carrying value. The Company would record any such impairment when identified.

Concentrations

Substantially all of the Company's cash and cash equivalents are custodied at four major U.S. financial institutions. The majority of the Company's cash equivalents include U.S. Government Federal Agency Securities, short term marketable securities, and overnight repurchase agreements. Deposits held with banks may exceed the amount of insurance provided on such deposits. Generally these deposits may be redeemed upon demand and, therefore, bear minimal risk.

Historically, the Company has relied on a limited number of customers for a substantial portion of its revenue. In terms of total revenue, the Company's largest two customers have been Sprint and WorldCom. While there were no revenues derived from WorldCom in fiscal 1996, Sprint accounted for 62% of the Company's fiscal 1996 revenues and both Sprint and WorldCom combined accounted for greater than 88% of the Company's 1997 fiscal revenues. WorldCom accounted for less than 10% and Sprint accounted for approximately 53% of the Company's fiscal 1998 revenues. The Company expects that a significant portion of its future revenue will continue to be generated by a limited number of customers. The loss of any one of these customers or any substantial reduction in orders by any one of these customers could materially adversely affect the Company's financial condition or operating results. Additionally, the Company's access to certain raw materials is dependent upon single and sole source suppliers. The inability of any supplier to fulfill supply requirements of the Company could impact future results.

The Company performs ongoing credit evaluations of its customers and generally does not require collateral from its customers. The Company maintains an allowance for potential losses when identified and has not incurred any significant losses to date. As of October 31, 1997, Sprint and WorldCom accounted for 84% of the trade accounts receivable. Sprint and three other customers comprise of 10%, 11%, 25% and 26% of the trade accounts receivable respectively as of October 31, 1998.

Revenue Recognition

The Company recognizes product revenue in accordance with the shipping terms specified. For transactions where the Company has yet to obtain customer acceptance, revenue is deferred until the terms of acceptance are satisfied. Revenue for installation services is recognized as the services are performed unless the terms of the supply contract combine product acceptance with installation, in which case revenues for installation services are recognized when the terms of acceptance are satisfied and installation is completed. Revenues from installation service fixed price contracts are recognized on the percentage of costs incurred to date compared to estimated total costs for each contract. Amounts received in excess of revenue recognized are recorded as deferred revenue. For distributor sales where risks of ownership have not transferred, the Company recognizes revenue when the product is shipped through to the end user.

Revenue-Related Accruals

The Company provides for the estimated costs to fulfill customer warranty and other contractual obligations upon the recognition of the related revenue. Such reserves are determined based upon actual warranty cost experience, estimates of component failure rates, and management's industry experience. The Company's contractual sales arrangements generally do not permit the right of return of product by the customer after the product has been accepted.

Research and Development

The Company charges all research and development costs to expense as incurred.

Income Taxes

The Company accounts for income taxes in accordance with Statement of Financial Accounting Standards No. 109 (SFAS No. 109), "Accounting for Income Taxes". SFAS No. 109 is an asset and liability approach that requires the recognition of deferred tax assets and liabilities for the expected future tax consequences attributable to differences between the carrying amounts of assets and liabilities for financial reporting purposes and their respective tax bases, and for operating loss and tax credit carryforwards. In estimating future tax consequences, SFAS No. 109 generally considers all expected future events other than the enactment of changes in tax laws or rates. Tax savings resulting from deductions associated with stock options and certain stock warrants are credited directly to additional paid in capital when realization of such benefit is fully assured and to deferred tax liabilities prior to such point. See Note 8.

Foreign Currency Translation

The majority of the Company's foreign branches and subsidiaries use the U.S. dollar as their functional currency as the U.S. parent exclusively funds the branches and subsidiaries' operations with U.S. dollars. For those subsidiaries using the local currency as their functional currency, assets and liabilities are translated at exchange rates in effect at the balance sheet date. Resulting translation adjustments are recorded directly to a separate component of shareholders' equity. Where the U.S. dollar is the functional currency, translation adjustments are recorded in other income. The net gain (loss) on foreign currency remeasurement and exchange rate changes for fiscal 1996, 1997, and 1998 was immaterial for separate financial statement presentation .

Computation of Basic Net Income per Common Share and Diluted Net Income per Common and Dilutive Potential Common Share

In February 1997, the Financial Accounting Standards Board issued Statement of Financial Accounting Standards No. 128, "Earnings per Share" (SFAS No. 128). SFAS No. 128 simplifies the earnings per share (EPS) computation and replaces the presentation of primary EPS with a presentation of basic EPS. This statement also requires dual presentation of basic and diluted EPS on the face of the income statement for entities with a complex capital structure and requires a reconciliation of the numerator and denominator used for the basic and diluted EPS computations. The Company has implemented SFAS No. 128 in fiscal 1998, as required. Accordingly, all prior period EPS data has been restated. See Note 6.

Software Development Costs

Statement of Financial Accounting Standards No. 86, "Accounting for the Costs of Computer Software to be Sold, Leased or Otherwise Marketed", requires the capitalization of certain software development costs incurred subsequent to the date technological feasibility is established and prior to the date the product is generally available for sale. The capitalized cost is then amortized over the estimated product life. The Company defines technological feasibility as being attained at the time a working model is completed. To date, the period between achieving technological feasibility and the general availability of such software has been short and software development costs qualifying for capitalization have been insignificant. Accordingly, the Company has not capitalized any software development costs.

Accounting for Stock Options

In October 1995, the Financial Accounting Standards Board issued Statement of Financial Accounting Standards No. 123 (SFAS No. 123), "Accounting for Stock-Based Compensation", which is effective for the Company's consolidated financial statements for fiscal years 1996, 1997, and 1998. SFAS No. 123 allows companies to either account for stock-based compensation under the new provisions of SFAS No. 123 or using the intrinsic value method provided by Accounting Principles Board Opinion No. 25 (APB No. 25), "Accounting for Stock Issued to Employees", but requires pro forma disclosure in the footnotes to the financial statements as if the measurement provisions of SFAS No. 123 had been adopted. The Company has elected to continue to account for its stock based compensation in accordance with the provisions of APB No. 25 and present the pro forma disclosures required by SFAS No. 123. See Note 7.

Newly Issued Accounting Standards

In June 1997, the Financial Accounting Standards Board issued Statement of Financial Accounting Standards No. 130 (SFAS No. 130), "Comprehensive Income". SFAS No. 130 becomes effective for the Company's fiscal

year 1999 and requires reclassification of earlier financial statements for comparative purposes. SFAS No. 130 requires that changes in the amounts of certain items, including foreign currency translation adjustments and gains and losses on certain securities be shown in the financial statements. SFAS No. 130 does not require a specific format for the financial statement in which comprehensive income is reported, but does require that an amount representing total comprehensive income be reported in that statement. The Company believes the adoption of SFAS No. 130 will not have a material effect on the consolidated financial statements.

Also in June 1997, the Financial Accounting Standards Board issued Statement of Financial Accounting Standards No. 131 (SFAS No. 131), "Disclosures about Segments of an Enterprise and Related Information". This Statement will change the way public companies report information about segments of their business in annual financial statements and requires them to report selected segment information in their quarterly reports issued to stockholders. It also requires entity-wide disclosures about the products and services an entity provides, the material countries in which it holds assets and reports revenues, and its major customers. The Statement is effective for the Company's fiscal year 1999. The Company believes the adoption of SFAS No. 131 will not have a material effect on the consolidated financial statements.

In June 1998, the Financial Accounting Standards Board issued Statement of Financial Accounting Standards No. 133 (SFAS No. 133), "Accounting for Derivative Instruments and Hedging Activities". This Statement requires companies to record derivatives on the balance sheet as assets or liabilities, measured at fair value. Gains or losses resulting from changes in the values of those derivatives would be accounted for depending on the use of the derivative and whether it qualifies for hedge accounting. SFAS 133 will be effective for the Company's fiscal year ending October 31, 2000. The Company believes the adoption of SFAS No. 133 will not have a material effect on the consolidated financial statements.

Reclassification

Certain prior year amounts have been reclassified to conform to current year consolidated financial statement presentation.

(2) BUSINESS COMBINATIONS

Astracom

During December 1997 the Company completed an Agreement and Plan of Merger with Astracom, Inc. ("Astracom"), an early stage telecommunications company located in Atlanta, Georgia. The purchase price was approximately \$13.1 million and consisted of the issuance of 169,754 shares of CIENA common stock, the payment of \$2.4 million in cash, and the assumption of certain stock options. The transaction was recorded using the purchase accounting method with the purchase price representing approximately \$11.4 million in goodwill and other intangibles, and approximately \$1.7 million in net assets assumed. The amortization period for the intangibles, based on management's estimate of the useful life of the acquired technology, is five years. The operations of Astracom are not material to the consolidated financial statements of the Company and, accordingly, separate pro forma financial information has not been presented.

Alta

On February 19, 1998 the Company completed a merger with ATI Telecom International Ltd., ("Alta"), a Canadian corporation headquartered near Atlanta, Georgia, in a transaction valued at approximately \$52.5 million. Alta provides a range of engineering, furnishing and installation services for telecommunications service providers in the areas of transport, switching and wireless communications. Under the terms of the agreement the Company exchanged 1,000,000 shares of its common stock for all the common stock of Alta. The merger constituted a tax-free reorganization and has been accounted for as a pooling of interests under Accounting Principles Board Opinion No. 16. Accordingly, all prior period consolidated financial statements presented have been restated to include the combined results of operations, financial position and cash flows of Alta as though it had been a part of CIENA.

Prior to the merger, Alta's year ended on December 31. In recording the business combination, Alta's prior period financial statements have been restated to conform to CIENA's fiscal year end.

All intercompany transactions between CIENA and Alta have been eliminated in consolidation. Certain reclassifications were made to Alta financial statements to conform to CIENA's presentation. No material adjustments were made to conform to CIENA's accounting policies.

The following table shows the separate historical results of CIENA and Alta for the periods prior to the consummation of the merger of the two entities:

(in thousands)

	Year Ended October 31,	
	1996	1997
Revenues:		
CIENA	\$ 54,838	\$ 373,827
Alta	33,625	39,531
Intercompany eliminations	-	(143)
Consolidated revenues	\$ 88,463	\$ 413,215
Net Income (loss):		
CIENA	\$ 14,718	\$ 112,945
Alta	2,545	3,022
Consolidated net income	\$ 17,263	\$ 115,967

Terabit

During April 1998 the Company completed an Agreement and Plan of Reorganization with Terabit Technology, Inc. ("Terabit"), a developer of optical components known as photodetectors or optical receivers. Terabit is located in Santa Barbara, California. The purchase price was approximately \$11.5 million and consisted of the issuance of 134,390 shares of CIENA common stock, the payment of \$1.1 million in cash, and the assumption of certain stock options. The transaction was recorded using the purchase accounting method with the purchase price representing approximately \$9.5 million in purchased research and development, \$1.8 million in goodwill and other intangibles, and approximately \$0.2 million in net assets assumed. The amortization period for the intangibles, based on management's estimate of the useful life of the acquired technology, is five years. The operations of Terabit are not material to the consolidated financial statements of the Company and, accordingly, separate pro forma financial information has not been presented.

In connection with the Terabit acquisition, the Company recorded a \$9.5 million charge in the year ended October 31, 1998 for purchased research and development. This generally represents the estimated value of purchased in-process technology related to Terabit's avalanche photodiodes (APD) that have not yet reached technological feasibility and have no alternative future use.

The amount of purchase price allocated to in-process research and development was determined using the discounted cash flow method. This method consisted of estimating future net cash flows attributable in-process APD technology for a discrete projection period and discounting the net cash flows back to their present value. The discount rate includes a factor that takes into account the uncertainty surrounding the successful development of the purchased in-process technology. The estimated revenue associated with the APD technology future net cash flows assumed a five year compound annual growth rate of between 5% to 43%. The revenue growth rates were developed considering, among other things, the current and expected industry trends and acceptance of the technologies in historical growth rates for similar industry products. Management's estimates or projections were based upon an estimated period of ten years with revenues reaching a peak in 2002 and declining through 2008. The estimated net cash flows were discounted to present value at a rate of return which considers the relative risk of achieving the net cash flows and the time value of money. A 30% was used to effect the risk associated with Terabits APD technology. This rate is higher than the Company's normal discount rate due to inherent uncertainties surrounding the successful development of purchase in-process technology, the useful life of the technology, and the profitability levels of such technology.

The resulting net cash flows from the APD project was based on management's estimates of revenues, cost of sales, research and development costs, selling general and administrative costs, and income taxes associated with the project.

(3) INVENTORIES

Inventories are comprised of the following (in thousands):

	October 31,	
	1997	1998
Raw materials.....	\$ 27,716	\$ 43,268
Work-in-process.....	5,679	8,592
Finished goods.....	15,180	30,202
	48,575	82,062
Reserve for excess and obsolescence.....	(7,466)	(11,154)
	\$ 41,109	\$ 70,908

The following is a table depicting the activity in the Company's reserve for excess and obsolescence (in thousands):

	October 31,	
	1997	1998
Beginning balance.....	\$ 1,937	\$ 7,466
Provision charged to operations.....	7,585	9,617
Amounts written off to reserve.....	(2,056)	(5,929)
Ending balance.....	\$ 7,466	\$ 11,154

(4) EQUIPMENT, FURNITURE AND FIXTURES

Equipment, furniture and fixtures are comprised of the following (in thousands):

	October 31,	
	1997	1998
Equipment, furniture and fixtures.....	\$ 65,444	\$ 139,142
Leasehold improvements.....	13,953	24,055
	79,397	163,197
Accumulated depreciation and amortization.....	(12,279)	(41,144)
Construction-in-progress.....	500	1,352
	\$ 67,618	\$ 123,405

(5) ACCRUED LIABILITIES

Accrued liabilities are comprised of the following (in thousands):

	October 31,	
	1997	1998
Warranty and other contractual obligations.....	\$ 12,205	\$ 17,256
Accrued compensation.....	8,284	9,128
Legal and related costs.....	4,577	534
Consulting and outside services.....	3,219	2,837
Unbilled construction-in-process and leasehold improvements.....	1,427	-
Other.....	2,310	4,573
	\$ 32,022	\$ 34,328

(6) EARNINGS PER SHARE CALCULATION

The following is a reconciliation of the numerators and denominators of the basic net income per common share ("basic EPS") and diluted net income per common and dilutive potential common share ("diluted EPS"). Basic EPS is computed using the weighted average number of common shares outstanding. Diluted EPS is computed using the weighted average number of common shares outstanding, stock options and warrants using the treasury stock method and shares issued upon conversion of all outstanding shares of Mandatorily Redeemable Preferred Stock (in thousands except per share amounts).

	October 31,		
	1996	1997	1998
Net Income.....	\$ 17,263	\$ 115,967	\$ 53,194
Weighted average shares-basic.....	13,817	75,802	101,751
Effect of dilutive securities:			
Employee stock options and warrants.....	8,533	8,774	6,144
Conversion of preferred stock.....	70,057	20,088	-
Weighted average shares-diluted.....	92,407	104,664	107,895
Basic EPS.....	\$ 1.25	\$ 1.53	\$ 0.52
Diluted EPS.....	\$ 0.19	\$ 1.11	\$ 0.49

(7) STOCKHOLDERS' EQUITY

Stockholder Rights Plan

In December 1997, the Company's Board of Directors adopted a Stockholder Rights Plan. This plan is designed to deter any potential coercive or unfair takeover tactics in the event of an unsolicited takeover attempt. It is not intended to prevent a takeover of the Company on terms that are favorable and fair to all shareholders and will not interfere with a merger approved by the Board of Directors. Each right entitles shareholders to buy a "unit" equal to one one-thousandth of a share of Preferred Stock of the Company. The rights will be exercisable only if a person or a group acquires or announces a tender or exchange offer to acquire 15% or more of the Company's common stock or if the Company enters into certain other business combination transactions not approved by the Board of Directors.

In the event the rights become exercisable, the rights plan allows for CIENA shareholders to acquire stock of the surviving corporation, whether or not CIENA is the surviving corporation, having a value twice that of the exercise price of the Rights. The Rights were distributed to shareholders of record in January 1998. The Rights will expire December 2007 and are redeemable for \$.001 per right at the approval of the Company's Board of Directors.

Public Offerings

In February 1997, the Company successfully completed its initial public offering of Common Stock. The Company sold 5,750,000 shares, inclusive of 750,000 shares from the exercise of the underwriters over-allotment option, at a price of \$23 per share. Net proceeds from the offering were approximately \$121,800,000 with an additional \$600,000 received from the exercise of 300,000 shares of outstanding Convertible Preferred Stock warrants.

In July 1997 the Company completed a public offering of 10,477,216 shares of Common Stock of which 1,252,060 shares were sold by the Company inclusive of 252,060 shares from the exercise of the underwriters over-allotment option, at a price of \$44 per share. Net proceeds to the Company from the public offering were approximately \$52,200,000.

Stock Incentive Plans

The Company has an Amended and Restated 1994 Stock Option Plan (the "1994 Plan"). Under the 1994 Plan, 20,050,000 shares of the Company's authorized but unissued Common Stock are reserved for options issuable to

employees. Certain of these options are immediately exercisable upon grant, and both the options and the shares issuable upon exercise of the options generally vest to the employee over a four year period. The Company has the right to repurchase any exercised and non-vested shares at the original purchase price from the employees upon termination of employment. In June 1996 the Company approved the 1996 Outside Directors Stock Option Plan (the "1996 Plan"). Under the 1996 Plan, 750,000 shares of the Company's authorized but unissued Common Stock are reserved for options issuable to outside members of the Company's Board of Directors. These options vest to the director over periods from one to three years, depending on the type of option granted, and are exercisable once vested. Under the 1994 Plan and the 1996 Plan, options may be incentive stock options or non-qualified options, and the exercise price for each option shall be established by the Board of Directors provided, however, that the exercise price per share shall not be not less than the fair market value for incentive stock options and not less than 85% of fair market value for non-qualified stock options.

Following is a summary of the Company's stock option activity:

	Shares (in thousands)	Weighted Average Exercise Price
Balance at October 31, 1995.....	6,941	\$ 0.03
Granted.....	5,901	1.85
Exercised.....	(579)	0.14
Canceled.....	(1,180)	0.18
Balance at October 31, 1996.....	11,083	0.97
Granted.....	1,737	32.81
Exercised.....	(3,612)	0.27
Canceled.....	(98)	0.52
Balance at October 31, 1997.....	9,110	7.33
Granted.....	4,654	26.12
Exercised.....	(2,648)	2.40
Canceled.....	(3,280)	40.85
Balance at October 31, 1998.....	7,836	5.83

During September 1998, the Company cancelled and re-issued outstanding employee stock options with exercise prices in excess of the fair market value, except those options held by outside directors and officers of the Company. A total of 2,905,116 options with an average exercise price of \$42.87 were cancelled and reissued at \$12.38 per share. At October 31, 1998 approximately 292,000 shares of Common Stock subject to repurchase by the Company had been issued upon the exercise of options and approximately 2.2 million of the total outstanding options were vested and not subject to repurchase by the Company upon exercise.

The following table summarizes information with respect to stock options outstanding at October 31, 1998:

Range of Exercise Price	Options Outstanding			Options Not Subject to Repurchase Upon Exercise	
	Number Outstanding at Oct. 31, 1998	Weighted Average Remaining Contractual Life (Years)	Weighted Average Exercise Price	Number at Oct. 31, 1998	Weighted Average Exercise Price
\$ 0.02 - \$ 0.03	1,048,678	6.23	\$ 0.03	878,524	\$ 0.03
\$ 0.06 - \$ 1.66	1,102,096	7.41	\$ 0.80	363,080	\$ 0.80
\$ 2.25 - \$ 4.34	2,648,482	7.66	\$ 2.48	450,455	\$ 2.54
\$ 4.40 - \$ 11.56	189,216	8.56	\$ 6.55	47,818	\$ 6.15
\$ 12.38 - \$ 12.38	2,761,977	8.93	\$ 12.38	419,150	\$ 12.36
\$ 12.56 - \$ 43.25	85,675	9.57	\$ 32.40	-	\$ -
	-----			-----	
\$ 0.02 - \$ 43.25	7,836,124	7.92	\$ 5.83	2,159,027	\$ 3.21
	=====			=====	

Pro forma Stock-Based Compensation

The Company has elected to continue to follow the provisions of APB No. 25 for financial reporting purposes and has adopted the disclosure-only provisions of SFAS No. 123. Had compensation cost for the Company's stock option plans been determined based on the fair value at the grant date for awards in fiscal years 1996, 1997, and 1998 consistent with the provisions of SFAS No. 123, the Company's net income and net income per share for fiscal

years 1996, 1997, and 1998 would have been decreased to the pro forma amounts indicated below (in thousands, except per share amounts):

	October 31,		
	1996	1997	1998
Net income applicable to common stockholders - as reported.....	\$ 17,263	\$ 115,967	\$ 53,194
Net income applicable to common stockholders - pro forma.....	\$ 16,770	\$ 110,404	\$ 28,327
Basic net income per share - as reported.....	\$ 1.25	\$ 1.53	\$ 0.52
Basic net income per share - pro forma.....	\$ 1.21	\$ 1.46	\$ 0.28
Diluted net income per share - as reported.....	\$ 0.19	\$ 1.11	\$ 0.49
Diluted net income per share - pro forma.....	\$ 0.18	\$ 1.05	\$ 0.26

The above pro forma disclosures are not necessarily representative of the effects on reported net income or loss for future years.

The aggregate fair value and weighted average fair value of each option granted in fiscal years 1996, 1997 and 1998 were approximately \$6.7 million, \$33.6 million, \$73.0 million and \$1.14, \$19.33, and \$20.90 respectively. The fair value of each option grant is estimated on the date of grant using the Black-Scholes Option Pricing Model with the following weighted average assumptions for fiscal years 1996, 1997, and 1998:

	October 31,		
	1996	1997	1998
Expected volatility	60%	60%	109%
Risk-free interest rate	6.1%	5.8%	4.4%
Expected life	3 yrs.	3 yrs.	3yrs.
Expected dividend yield	0%	0%	0%

(8) INCOME TAXES

Income before income taxes and the provision for income taxes consists of the following (in thousands):

	October 31,		
	1996	1997	1998
Income before income taxes.....	\$ 20,816	\$ 188,670	93,429
Provision for income taxes:			
Current:			
Federal.....	\$ 4,483	\$ 67,744	39,780
State.....	694	7,373	4,444
Foreign.....	210	98	40
Total current.....	5,387	75,215	44,264
Deferred:			
Federal.....	(1,690)	(2,015)	(3,376)
State.....	(144)	(497)	(653)
Foreign.....	-	-	-
Total deferred.....	(1,834)	(2,512)	(4,029)
Provision for income taxes.....	\$ 3,553	\$ 72,703	40,235

The tax provision reconciles to the amount computed by multiplying income before income taxes by the U.S. federal statutory rate of 35% as follows:

	October 31,		
	1996	1997	1998
Provision at statutory rate.....	35.0 %	35.0 %	35.0 %
Reversal of valuation allowance.....	(20.0)	-	-
Non-deductible purchased research and development	-	-	3.8
State taxes, net of federal benefit.....	2.7	2.6	3.8
Research and development credit.....	-	-	(3.6)
Other.....	(0.6)	0.9	4.1
	-----	-----	-----
	17.1 %	38.5 %	43.1 %
	=====	=====	=====

The significant components of deferred tax assets and liabilities were as follows (in thousands):

	October 31,	
	1997	1998
Deferred tax assets:		
Reserves and accrued liabilities.....	\$ 9,281	\$ 14,611
Other.....	-	690
Net operating loss and credit carry forward.....	1,555	1,562
	-----	-----
Gross deferred tax assets.....	10,836	16,863
Valuation allowance.....	(1,697)	(1,562)
	-----	-----
Net current deferred tax asset.....	\$ 9,139	\$ 15,301
	=====	=====
Deferred tax liabilities:		
Equipment leases.....	\$ 3,985	\$ 7,978
Services.....	19,389	21,594
Depreciation and other.....	4,793	4,553
	-----	-----
Deferred long term tax liabilities.....	\$ 28,167	\$ 34,125
	=====	=====

As of October 31, 1997 the Company assumed net operating loss carry forwards of approximately \$4.5 million through its acquisition of Alta. The net operating loss carry forwards begin expiring in fiscal 2002.

The income tax provisions do not reflect the tax savings resulting from deductions associated with the Company's stock option plans or the exercise of certain stock warrants. Tax benefits of approximately \$29.7 million and \$23.4 million in fiscal 1997, and \$22.6 million and \$3.6 million in fiscal 1998, from exercises of stock options and certain stock warrants were credited directly to additional paid-in-capital and to long-term deferred income taxes, respectively.

(9) EMPLOYEE BENEFIT PLANS

Employee 401(k) Plan

In January 1995, the Company adopted a 401(k) defined contribution profit sharing plan. The plan covers all full-time employees who are at least 21 years of age, have completed three months of service and are not covered by a collective bargaining agreement where retirement benefits are subject to good faith bargaining. Participants may contribute up to 15% of pre-tax compensation, subject to certain limitations. The Company may make discretionary annual profit sharing contributions of up to the lesser of \$30,000 or 25% of each participant's compensation. In fiscal 1997 the Company revised the plan to include an employer matching contribution equal to 100% of the first 3% of participating employee contributions, with a five year vesting plan applicable to the Company's contribution. The Company has made no profit sharing contributions to date. During fiscal 1997 and 1998 the Company made matching contributions of approximately \$0.3 million and \$1.1 million, respectively.

Employee Stock Purchase Plan

In March 1998, the shareholders approved the Corporation's 1998 Stock Purchase Plan ("the Purchase Plan") under which 2.5 million shares of common stock have been reserved for issuance. Eligible employees may purchase a limited number of shares of the Company's stock at 85% of the market value at certain plan-defined dates, the first of which occurs in March 1999. As of October 31, 1998 no shares had been issued from the Purchase Plan.

(10) COMMITMENTS AND CONTINGENCIES

Operating Lease Commitments

The Company has certain minimum obligations under noncancelable operating leases expiring on various dates through 2006 for equipment and facilities. Future annual minimum rental commitments under noncancelable operating leases at October 31, 1998 are as follows (in thousands):

Fiscal year ending October 31,
- - - - -

1999.....	\$	5,729
2000.....		5,510
2001.....		5,070
2002.....		4,282
2003.....		3,050
Thereafter.....		10,358
	\$	33,999
		=====

Rental expense for fiscal 1996, 1997 and 1998 was approximately \$717,000, \$2,652,000 and \$5,616,000, respectively.

Litigation

Class Action Litigation. A class action complaint was filed on August 26, 1998 in U.S. District Court for the District of Maryland entitled *Witkin et.al v. CIENA Corporation et. al* (Case No. Y-98-2946). Several other complaints, substantially similar in content, have been filed. These cases were consolidated by court order on November 30, 1998. The complaint alleges that CIENA and certain officers and directors violated certain provisions of the federal securities laws, including Section 10(b) and Rule 10b-5 under the Securities Exchange Act of 1934, by making false statements, failing to disclose material information and taking other actions intending to artificially inflate and maintain the market price of CIENA's common stock during the Class Period of May 21, 1998 to September 14, 1998, inclusive. The plaintiffs seek designation of the suit as a class action on behalf of all persons who purchased shares of CIENA's common stock during the Class Period and the awarding of compensatory damages in an amount to be determined at trial and attorneys' fees. The proceedings are at an early stage. No discovery has been taken, and no prediction can be made as to its outcome. The Company believes the suit is without merit and intends to defend itself vigorously.

Kimberlin Litigation. On September 9, 1998 the U.S. District Court for the Southern District of New York granted summary judgment with respect to federal securities law claims brought against the Company and certain of its individual directors by investor Kevin Kimberlin and related parties, finding "no violations" of federal securities laws in the Company's or directors' conduct. The Court also dismissed all related state law claims without prejudice, declining to exercise jurisdiction over these claims. The remaining state law claims, as well as the Company's counterclaim against the Kimberlin-related parties, were fully and finally resolved in October 1998 by agreement of the parties.

Pirelli Litigation. On June 1, 1998 the Company resolved the long-standing litigation with Pirelli S.p.A. The terms of the settlement involve dismissal of Pirelli's three lawsuits against CIENA previously pending in Delaware, dismissal of CIENA's legal proceedings against Pirelli in the United States International Trade Commission, a worldwide, non-exclusive cross-license to each party's patent portfolios, a five-year moratorium on future litigation between the parties. As a result of the settlement, CIENA recorded a charge for the fiscal year ended October 31, 1998 of \$30.6 million relating to the Pirelli settlement and associated legal fees.

(11) FOREIGN SALES

The Company has sales and marketing operations outside the United States in Canada, The United Kingdom, Belgium, France, Japan, China and the Philippines. The Company has distributor or marketing representative arrangements covering Austria, Germany, Italy and Switzerland in Europe, and the Republic of Korea and Japan in Asia. The Company also has representatives in Mexico and Brazil. Included in revenues are export sales of approximately \$3.5 million, \$11.7 million, and \$117.1 million in fiscal years 1996, 1997 and 1998, respectively.

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

None.

PART III

ITEM 10. DIRECTORS AND EXECUTIVE OFFICERS OF THE REGISTRANT

Information relating to the directors and executive officers of the Company is set forth in Part I of this report under the caption Item 1. Business-"Directors, and Executive Officers" and is incorporated by reference herein.

SECTION 16(a) BENEFICIAL OWNERSHIP REPORTING COMPLIANCE

Rebecca K. Seidman and Jon W. Bayless each filed one late Form 4, each reporting a single transaction.

ITEM 11. EXECUTIVE COMPENSATION

The information is incorporated herein by reference to the Company's definitive 1999 Proxy Statement.

ITEM 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT

The information is incorporated herein by reference to the Company's definitive 1999 Proxy Statement.

ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS

The information is incorporated herein by reference to the Company's definitive 1999 Proxy Statement.

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

(a) The following documents are filed as a part of this Form:

1. Financial Statement Schedules:

All schedules are omitted because they are not applicable or the required information is shown in the consolidated financial statements or notes thereto.

2. Exhibits: See Index to Exhibits on page 55. The Exhibits listed in the accompanying Index to Exhibits are filed or incorporated by reference as part of this report.

(b) Reports on Form 8-K

Date of Report -----	Description -----
August 14, 1998	Announcement of preliminary fiscal 1998 third quarter results.
August 21, 1998	Announcements regarding AT&T decision not to pursue further evaluation of CIENA's DWDM system. CIENA Corporation and Tellabs agree to adjourn their respective shareholder meetings until September 9, 1998.
August 27, 1998	CIENA and Tellabs entered into a First Amendment to their Merger Agreement dated June 2, 1998.
September 13, 1998	CIENA and Tellabs announced on September 14, 1998 that they had agreed to terminate the Plan of Merger dated June 2, 1998.
September 14, 1998	Announcement of merger termination, introduction of OC-192 capability, bolstering of its strategy, marketing and sales functions, statement from CIENA's Patrick Nettles, granting of CIENA's motion for summary judgement in the Kimberlin litigation.
October 14, 1998	Amendment of CIENA's Shareholder Rights Agreement

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the Registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Linthicum, County of Anne Arundel, State of Maryland, on the 10 day of December 1998.

CIENA CORPORATION

By: /s/ Patrick H. Nettles

Patrick H. Nettles
President, Chief Executive Officer
and Director

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed by the following persons in the capacities and on the date indicated.

Signatures	Title	Date
/s/ Patrick H. Nettles ----- Patrick H. Nettles	President, Chief Executive Officer and Director (Principal Executive Officer)	December 10, 1998
/s/ Joseph R. Chinnici ----- Joseph R. Chinnici	Sr. Vice President, Finance and Chief Financial Officer (Principal Financial Officer)	December 10, 1998
/s/ Andrew C. Petrik ----- Andrew C. Petrik	Vice President, Controller and Treasurer (Principal Accounting Officer)	December 10, 1998
/s/ Jon W. Bayless ----- Jon W. Bayless	Director	December 10, 1998
/s/ Harvey B. Cash ----- Harvey B. Cash	Director	December 10, 1998
/s/ Clifford H. Higerson ----- Clifford H. Higerson	Director	December 10, 1998
/s/ Billy B. Oliver ----- Billy B. Oliver	Director	December 10, 1998
/s/ Michael J. Zak ----- Michael J. Zak	Director	December 10, 1998
/s/ Stephen P. Bradley ----- Stephen P. Bradley	Director	December 10, 1998

INDEX TO EXHIBITS

Exhibit Number -----	Description -----
3.1*	Certificate of Amendment to Third Restated Certificate of Incorporation
3.2*	Third Restated Certificate of Incorporation
3.3*	Amended and Restated Bylaws
4.1*	Specimen Stock Certificate
4.2***	Rights Agreement dated December 29, 1997
4.3****	Amendment to Rights Agreement
10.1*	Form of Indemnification Agreement for Directors and Officers
10.2*	Amended and Restated 1994 Stock Option Plan
10.3*	Form of Employee Stock Option Agreements
10.4*	1996 Outside Directors Stock Option Plan
10.5*	Forms of 1996 Outside Directors Stock Option Agreement
10.7*	Lease Agreement dated October 5, 1995 between the Company and CS Corridor-32 Limited Partnership
10.6*	Series C Preferred Stock Purchase Agreement dated December 20, 1995
10.8+*	Purchase Agreement Between Sprint/United Management Company and the Company dated December 14, 1995
10.9+*	Basic Purchase Agreement between WorldCom Network Services, Inc. and the Company dated September 19, 1996
10.10*	Settlement Agreement and Mutual Release, between the Company and William K. Woodruff & Company, dated August 26, 1996
10.13*	Employment Agreement dated April 9, 1994 between the Company and Patrick Nettles
10.14*	Lease Agreement dated November 1, 1996 by and between the Company and Aetna Life Insurance Company
10.15*	Revolving Note and Business Loan Agreement dated November 25, 1996 between the Company and Mercantile-Safe Deposit & Trust Company
10.16+*	First Addendum to Procurement Agreement between the Registrant and Sprint/United Management Company dated December 19, 1996
10.17++	Third Addendum to Procurement Agreement between the Registrant and Sprint/United Management Company
10.18	Form of Transfer of Control/Severance Agreement
21**	Subsidiaries of registrant
23.1	Consent of Independent Accountants
27	Financial Data Schedule

* Incorporated by reference from the Company's Registration Statement on Form S-1 (333-17729).

** Incorporated by reference from the Company's Registration Statement on Form S-1 (333-28525).

*** Incorporated by reference from the Company's Form 8-K dated December 29, 1997.

**** Incorporated by reference from the Company's Form 8-K dated October 14, 1998.

+ Confidential treatment has been granted by the Securities and Exchange Commission with respect to certain portions of these exhibits.

++ Confidential treatment has been requested with respect to certain portions of this exhibit.

The confidential portions have been filed separately with the Securities and Exchange Commission.

THIRD ADDENDUM TO PROCUREMENT AGREEMENT
BETWEEN
SPRINT/UNITED MANAGEMENT COMPANY
AND
CIENA CORPORATION

This Third Addendum to Procurement Agreement (the "Addendum") is executed this * day of * and is effective as of the * day of * (the "Effective Date"), by and between Sprint/United Management Company, a Kansas corporation, having its principal place of business at 2330 Shawnee Mission Parkway, Westwood, Kansas 66205 (hereinafter referred to as "Sprint") and CIENA Corporation, a Delaware corporation, having its principal place of business at 1201 Winterson Road, Linthicum, Maryland 21090 (hereinafter referred to as "CIENA"), as an addendum to that certain Procurement Agreement KC103251ML dated December 14, 1995, between Sprint and CIENA (the "Agreement"). Except as otherwise indicated, defined terms in this Addendum have the same meaning as in the Agreement, as amended through the Second Addendum.

A. BACKGROUND

1. Pursuant to the Agreement, Sprint has been purchasing and CIENA has been supplying Deliverables.
2. Sprint and CIENA implemented a special purchasing arrangement in November 1996 for purchases in 1997, which arrangement was memorialized by that certain First Addendum to Procurement Agreement between Sprint/United Management Company and CIENA Corporation dated November 7, 1996 (the "First Addendum"). The parties implemented a special purchasing arrangement in March 1998 for purchases in 1998, which arrangement was memorialized by that certain Second Addendum to Procurement Agreement between Sprint/United Management Company and CIENA Corporation dated March 10, 1998 (the "Second Addendum"). The Procurement Agreement, First Addendum and Second Addendum shall constitute the "Agreement".) The parties now desire to implement this Third Addendum.
3. Sprint contemplates purchasing new Deliverables (Addendum Deliverables as defined below) from CIENA *.
4. Except as amended by this Third Addendum, the Agreement shall remain in full force and effect.

Now, therefore, in consideration of the foregoing premises, the parties agree as follows:

B. ADDENDUM

1. DEFINITIONS.

- 1.1 "Addendum Deliverables" means Deliverables ordered during the Addendum Term and the training services specified herein. Addendum Deliverables shall not include orders for installation services, emergency technical and support services.
- 1.2 "Addendum Term" means the period from * through *. "Addendum Deliverables Schedule" means *. The Deliverables Schedule is incorporated by reference into this Addendum as Exhibit F.
- 1.3 "Addendum Deliverables Schedule" means *.
- 1.4 "Preferred Provider" means *.

2. PREFERRED PROVIDER.

Sprint designates CIENA as its Preferred Provider during the Addendum Term.

* The asterisk denotes that confidential portions of this exhibit have been omitted in reliance on Rule 24b-2 of the Securities Exchange Act of 1934. The confidential portions have been submitted separately to the Securities and Exchange Commission.

3. PRICES, QUANTITIES AND DELIVERY SCHEDULES.

(a) Section 2.1 of the 1998 Agreement is deleted in its entirety and replaced with the following:

(1) During the Addendum Term, Sprint shall furnish Supplier a monthly Projection Schedule ("Schedule") setting forth a rolling twelve (12) month forecast of the respective quantities of each type of Addendum Deliverable that Sprint then estimates it will require for each month in the immediately succeeding twelve (12) month period. Sprint and CIENA shall meet on a monthly basis to review Sprint's issuance of Purchase Orders for the Addendum Deliverables, and CIENA's deliveries of same, each in relation to the Addendum Deliverables Schedule.

(2) The Addendum Deliverables Schedule, which is set forth and incorporated as Exhibit F, is Sprint's *. Except as specifically provided in Section 4(a) below, CIENA acknowledges that such forecast is not a commitment and may change from time to time.

(b) Section 3.1, Exhibit "C" pricing * is deleted in its entirety and replaced with the new Exhibit C "New Pricing", which is set forth and incorporated herein by reference, *.

(c) Section 13.10 in the 1998 Agreement and the related portions of Exhibit C thereto * are hereby deleted and replaced by Exhibit D attached hereto, which refers to Supplier's 96 channel system.

(d) CIENA will provide Sprint, *.

4. ADDITIONAL COMMITMENTS OF THE PARTIES.

(a) Sprint shall order *. Any unfilled purchase orders issued prior to execution of this Addendum as identified below will be priced *.

*

(b) * training services during the Addendum Term; provided, however, that Sprint shall pay or reimburse CIENA for travel, meals and lodging expenses for CIENA employees performing training services for Sprint during the Addendum Term at a location other than CIENA's training headquarters in Linthicum, Maryland.

(c) *.

(d) In the event of force majeure affecting CIENA's manufacturing capacity or delivery capability, Sprint shall thereupon have the first priority on CIENA's manufacturing output for so long as necessary to fill Sprint's orders which were pending at the time of the force majeure or otherwise scheduled in accordance with the Addendum Deliverables Schedule. *.

(e) * Addendum Deliverables for use on dispersion shifted fiber ("DSF") shall be as set forth in Exhibit E.

(f) *.

(g) Any successors or assignees of Sprint or CIENA must honor all the terms and conditions of the Agreement and this third Addendum.

5. GENERAL

Except as amended by this Third Addendum, the 1998 Agreement shall remain in full force and effect. In the event of a conflict between the terms of the 1998 Agreement and this Third Addendum, this Third Addendum will control.

This Third Addendum is executed by authorized representatives of Sprint and CIENA and is made a part of and incorporates the terms and conditions of the 1998 Agreement.

* The asterisk denotes that confidential portions of this exhibit have been omitted in reliance on Rule 24b-2 of the Securities Exchange Act of 1934. The confidential portions have been submitted separately to the Securities and Exchange Commission.

IN WITNESS WHEREOF, the parties hereto have caused this Third Addendum to be executed by their duly authorized representatives as of the day and year below written.

CIENA CORPORATION

SPRINT/UNITED MANAGEMENT COMPANY

By: _____

By: _____

Title: _____

Title: _____

Date: _____

Date: _____

Attachments:

- Exhibit F - Addendum Deliverables Schedule
- Exhibit C - * Pricing
- Exhibit D - MW 9600 *
- Exhibit E - CIENA Plan *

* The asterisk denotes that confidential portions of this exhibit have been omitted in reliance on Rule 24b-2 of the Securities Exchange Act of 1934. The confidential portions have been submitted separately to the Securities and Exchange Commission.

CIENA CORPORATION
TRANSFER OF CONTROL/SEVERANCE AGREEMENT

This Transfer of Control/Severance Agreement (the "Agreement"), dated as of November 11, 1998, between CIENA Corporation, a Delaware corporation (together with its subsidiaries, the "Corporation") and _____ (the "Executive").

WITNESSETH

The Executive is serving as the _____ of the Corporation and possesses an intimate knowledge of the business and affairs of the Corporation. The Corporation recognizes the Executive's contribution to its growth and success and desires to enter into this Agreement with the Executive in order to assure to the Corporation the benefits of the Executive's expertise and knowledge. The Executive, in turn, desires an assurance of compensation by the Corporation during the period set forth herein. The Corporation also wants assurance that it will have the continued dedication, loyalty, and service of, and the availability of objective advice and counsel from, the Executive notwithstanding the possibility, threat or occurrence of a bid or other action to take over control of the Corporation.

In the event the Corporation receives any proposals from a third party concerning a possible business combination with the Corporation, or acquisition of the Corporation's equity securities, the Board of Directors of the Corporation (the "Board") believes it imperative that the Corporation and the Board be able to rely upon the Executive to continue in the Executive's position and be available for advice, if requested, without concern that the Executive might be distracted by the personal uncertainties and risks created by such a proposal, or be influenced to consider other employment opportunities or prospects because of such uncertainties or risks.

Should the Corporation receive any such proposals, in addition to the Executive's regular duties, the Executive, in light of the Executive's experience and knowledge gained within that portion of the business in which he or she is principally engaged, may be called upon to assist in the assessment of proposals, advise management and the Board as to whether such proposals would be in the best interest of the Corporation and its shareholders, and to take such other actions as the Board might determine to be appropriate.

Accordingly, in consideration of the mutual covenants and representations contained herein and the mutual benefits derived herefrom, the parties hereto agree as follows:

1. Certain Definitions. IN ADDITION TO THOSE TERMS DEFINED ELSEWHERE HEREIN, WHEN USED HEREIN, THE FOLLOWING CAPITALIZED TERMS SHALL HAVE THE MEANINGS INDICATED:

1.1. "Cause" means (i) the Executive's willful or continued failure substantially to perform the duties of the Executive's position (other than as a result of Disability or as a result of termination by the Executive for Good Reason) after written notice to the Executive by the Board specifying such failure, provided that such "cause" shall have been found by a majority vote of the Board after at least 10 days' written notice to the Executive specifying the failure on the part of the Executive and after an opportunity for the Executive to be heard at a meeting of the Board; (ii) any willful act or omission by the Executive constituting dishonesty, fraud or other malfeasance, or any act or omission by the Executive constituting immoral conduct, which in any such case is injurious to the financial condition or business reputation of the Corporation or any of its affiliates; or (iii) the Executive's indictment for a felony under the laws of the United States or any state thereof or any other jurisdiction in which the Corporation conducts business. For purposes of this definition, no act or failure to act shall be deemed "willful" unless effected by the Executive not in good faith and without a reasonable belief that such action or failure to act was in or not opposed to the Corporation's best interests.

1.2. "Disability" means either (i) "total disability" as defined for purposes of the Corporation's long-term disability benefit plan; or (ii) the Executive's inability, as a result of physical or mental incapacity, to perform the Executive's duties for a period of six consecutive months or for an aggregate of six months in any twelve consecutive month period.

1.3. "Effective Date" means the date on which a Transfer of Control occurs. In the event of a subsequent Transfer of Control within one year of the prior Transfer in Control, "Effective Date" shall be adjusted to mean the date on which the subsequent Transfer in Control occurs. Anything in this Agreement to the contrary notwithstanding, if a Transfer of Control occurs, and if the Executive's employment with the Corporation had terminated prior to the date on

which the Transfer of Control occurred, and if it is reasonably demonstrated by the Executive that such termination of employment either was at the request of a third party who had taken steps reasonably calculated to effect the Transfer of Control or otherwise arose in connection with or in anticipation of the Transfer of Control, then, for all purposes of this Agreement, the term "Effective Date" shall mean, with respect to such Executive only, the date immediately prior to the date of such termination of employment.

1.4. "Good Reason" means (i) removal from, or failure to be reappointed or reelected to, the Executive's principal positions immediately prior to the Effective Date (other than as a result of a promotion); (ii) material diminution in the Executive's title, position, duties or responsibilities, or the assignment to the Executive of duties that are inconsistent, in a material respect, with the scope of duties and responsibilities associated with the Executive's position immediately prior to the Effective Date; (iii) reduction in base salary or Incentive Compensation opportunity, or a reduction in level of participation in long term incentive, benefit and other plans for senior executives as in effect immediately preceding the Effective Date, or their equivalents; (iv) relocation of the Executive's principal workplace without the Executive's consent to a location which is more than 50 miles from the Executive's principal workplace on the Effective Date; or (v) any failure by the Corporation to comply with and satisfy the requirements of Section 7.3, provided that the successor shall have received at least ten days' prior written notice from the Corporation or the Executive of the requirements of Section 7.3. For purposes of clauses (i), (ii) or (iii) of the preceding sentence, an isolated, insubstantial and inadvertent action not taken in bad faith and which is remedied by the Corporation promptly after receipt of notice thereof given by the Executive shall be excluded.

1.5. "Incentive Compensation" includes any bonus or award received, or which the Executive is eligible to receive, under any corporate incentive plan or under any corporate long-term incentive plan maintained by the Corporation (or any successor to any such plan).

1.6. "Transfer of Control" shall be deemed to have taken place on the earliest of the date of (a) the direct or indirect sale or exchange by the stockholders of the Corporation of all or substantially all of the stock of the Corporation where the stockholders of the Corporation before such sale or exchange do not retain, directly or indirectly, at least a majority of the beneficial interest in the voting stock of the surviving, continuing, successor, or purchasing corporation or parent corporation thereof, as the case may be (the "Acquiring Corporation") after such sale or exchange; (b) a merger or consolidation where the stockholders of the Corporation before such merger or consolidation do not retain, directly or indirectly, at least a majority of the beneficial interest in the voting stock of the Acquiring Corporation after such merger or consolidation; (c) the sale, exchange, or transfer of all or substantially all of the assets of the Corporation (other than a sale, exchange, or transfer to one (1) or more subsidiary corporations of the Corporation); (d) a liquidation or dissolution of the Corporation; or (e) any other event that the Board, in its sole discretion, shall determine constitutes a Transfer of Control. In each case the determination of whether or not a "Transfer of Control" is deemed to have taken place shall be made without regard to whether such events or occurrences constituting the Transfer of Control were hostile or against the position of the Board, or were approved or concurred in by the Board.

2. Term of Agreement.

Upon execution by the Executive, this Agreement shall commence as of November 11, 1998. This Agreement shall continue in effect through November 10, 2001; provided, however, that commencing on November 11, 1999, and every annual anniversary of such date, the term of this Agreement shall automatically be extended for an additional year unless, not later than ninety (90) calendar days prior to the anniversary on which this Agreement otherwise automatically would be extended, the Corporation shall have given notice to the Executive that it does not wish to extend this Agreement; provided further, however, that if a Transfer of Control shall have occurred during the original or any extended term of this Agreement, this Agreement shall continue in effect for a period of twelve (12) months beyond the month in which the Transfer of Control occurred. No termination or expiration of this Agreement shall affect any rights, obligations or liabilities of either party that shall have accrued on or prior to the date of such termination or expiration.

3. Triggering Event.

In the event the Executive's employment with the Corporation is terminated without Cause by the Corporation, or for Good Reason by the Executive, on or within one year after the Effective Date, the Corporation shall (in addition to any compensation or benefits to which the Executive may otherwise be entitled under any other agreement, plan or arrangement with the Corporation, other than amounts excluded by Section 6.2) make the payments and shall provide the benefits to the Executive specified under Section 4 hereof, and, if applicable, the payments contemplated under Section 5 of this Agreement. For purposes of this Section 3, an Executive's employment with the Corporation will be deemed to have terminated on the earlier of the date the Executive's employment with the Corporation ceases or the date that written notice of any such termination is received by the Executive or by the Corporation, as the case may be, even though the parties may agree in connection therewith that the Executive's employment with the Corporation will continue for a specified period thereafter. The failure by the Executive or the Corporation to set forth in any such notice sufficient facts

or circumstances showing Good Reason or Cause, as the case may be, shall not waive any right of the Executive or the Corporation or preclude either party from asserting such facts or circumstances in the enforcement of any such right.

4. Severance Benefits.

4.1. Salary Continuation. For a period of twelve (12) months following the Executive's last day of employment with the Corporation, the Corporation shall pay to the Executive as compensation, payable in installments in accordance with the Company's standard payroll practices applicable to employees, an amount (subject to any applicable payroll or other taxes required to be withheld) equal to the Executive's actual annual rate of base salary as in effect immediately prior to either the date of the Executive's termination of employment with the Corporation or the Effective Date, whichever is higher. In determining actual annual rate of base salary, such sums shall be adjusted to include the dollar value of any compensation that would have been paid to the Executive but was deferred or excluded for federal income tax purposes pursuant to any deferred compensation program approved by the Corporation.

4.2. Outstanding Annual Bonus Awards. For a period of twelve (12) months following the Executive's last day of employment with the Corporation, the Corporation shall pay to the Executive as compensation, payable in quarterly installments in accordance with the Company's standard payroll practices applicable to employees, an amount (subject to any applicable payroll or other taxes required to be withheld) equal to the Executive's annual bonus amount under any incentive plan(s) or program(s) in which the Executive participated immediately prior to either the date of the Executive's termination of employment with the Corporation or the Effective Date, whichever annual bonus amount is higher. Such bonus shall be based on an assumed achievement of 100% of the targeted performance goal for such award. Upon receipt of an amount specified under this Section 4.2, neither the Executive nor any other person claiming any payment by reason of the Executive's participation in the applicable annual bonus plan, shall have any right to any payment under such plan(s) or program(s) with respect to any applicable award thereunder.

4.3. Welfare Benefit and Director and Officer Insurance Continuation. The Executive's (and, where applicable, members of the Executive's family's) participation in the group medical, dental, life and disability plans maintained by the Corporation shall be continued on substantially the same basis as if the Executive were an employee of the Corporation until the earlier of the first anniversary of the Executive's termination or the last day of the month in which the Executive commences employment with another employer (the "Coverage Period"). In the event that the Corporation is unable for any reason to provide for the Executive's (and, where applicable, the Executive's family's) continued participation in one or more of such plans during the Coverage Period, the Corporation shall pay or provide at its expense equivalent benefit coverage for the remainder of the Coverage Period. The Corporation shall also pay to the Executive at least annually an amount which shall be sufficient on an after tax basis to compensate the Executive for all additional taxes incurred by reason of any income realized as a result of the continued coverage under this subparagraph, to the extent such taxes result from the Executive's status as a non-employee and would not be incurred if the Executive was an employee of the Corporation, on a grossed-up basis at the highest marginal income tax rate for individuals. The Coverage Period shall not be taken into account as a period of continuation coverage for purposes of Part 6 of Title I of the Employee Retirement Income Security Act of 1974, as amended ("ERISA"), or for purposes of any other obligation of the Corporation to provide any continued coverage to the Executive (and, where applicable, members of the Executive's family) under any group medical, dental, life or disability plan. The Corporation shall continue to maintain director and officer insurance covering the Executive, and shall maintain in effect any indemnification agreements providing for indemnification of the Executive by the Corporation, until the period under the applicable statute of limitations has ended.

4.4. Stock Options. All options granted to an Executive to purchase capital stock of the Corporation under any plan, program or arrangement maintained by the Corporation, shall become vested and exercisable upon a Transfer of Control to the extent provided for under the terms of such plan, program or arrangement. Vesting under all circumstances shall cease on the last day of the Executive's active employment with the Corporation, irrespective of the existence of salary continuation payments beyond such last day.

5. Certain Additional Payments by the Corporation.

5.1. Excise Tax Protection. In the event it shall be determined that any payment or distribution by the Corporation to or for the benefit of the Executive (whether paid or payable or distributed or distributable pursuant to the terms of this Agreement or otherwise, but determined without regard to any additional payments required under this Section 5) (a "Payment") would be subject to the excise tax imposed by Section 4999 (or any successor provision) of the Code or any interest or penalties are incurred by the Executive with respect to such excise tax (such excise tax, together with any such interest and penalties, are hereinafter collectively referred to as the "Excise Tax"), then the Corporation shall pay to the Executive an additional amount (a "Gross-Up Payment") such that, after payment by the Executive of all income and employment taxes and Excise Tax imposed upon the Gross-Up Payment, the Executive will retain an amount of the Gross-Up Payment equal to the Excise Tax imposed upon the Payments.

5.2. Determinations. Subject to the provisions of Section 5.3 below, all determinations required to be made under this Section 5, including whether and when a Gross-Up Payment is required, the amount of such Gross-Up Payment and the assumptions to be utilized in arriving at such determination, shall be made by the Corporation's then acting independent certified public accounting firm at the Effective Date (the "Tax Firm"), which shall provide detailed supporting calculations both to the Corporation and the Executive within 15 business days of the receipt of notice from the Executive that there has been a Payment, or such earlier time as may be requested by the Corporation. The Tax Firm may employ and rely upon the opinions of actuarial or legal professionals to the extent it deems necessary or advisable. In the event that the Tax Firm determines for any reason that it is unable to perform such services, or declines to do so, the Corporation shall select another nationally recognized law or accounting firm to make the determinations required under this section (which firm shall then be referred to as the Tax Firm hereunder). All fees and expenses of the Tax Firm shall be borne solely by the Corporation. Any Gross-Up Payment determined pursuant to this Section 5 shall be paid by the Corporation to the Executive within five business days of the Corporation's receipt of the Tax Firm's determinations. If the Tax Firm determines that no Excise Tax should be payable by the Executive, the Tax Firm shall be requested to furnish the Executive with a written opinion that failure to report the Excise Tax on the Executive's applicable federal income tax return would not result in the imposition of a negligence or similar penalty. Any determination by the Tax Firm shall be binding upon the Corporation and the Executive. As a result of possible uncertainty in the application of Section 4999 of the Code at the time of the initial determination by the Tax Firm hereunder, it is possible that Gross-Up Payments which will not have been made by the Corporation should have been made or that the Gross-Up Payments which are made by the Corporation will be insufficient to satisfy the Excise Taxes and/or all applicable income and employment taxes incurred by the Executive on the Gross-Up Payments (in either case, an "Underpayment"), consistent with the calculations required to be made hereunder. In the event that the Corporation exhausts its remedies pursuant to Section 5.3, and the Executive thereafter is required to make a payment of any Excise Tax, the Tax Firm shall determine the amount of the Underpayment that has occurred and any such Underpayment shall be promptly paid by the Corporation to or for the benefit of the Executive.

5.3. Underpayments. The Executive shall notify the Corporation in writing of any claim by the Internal Revenue Service that, if successful, would result in the assessment or collection of any Underpayment with respect to the Executive. Such notification shall be given as soon as practicable but no later than ten business days after the Executive is informed in writing of such claim and shall apprise the Corporation of the nature of such claim and the date on which such claim is requested to be paid; provided, however, that a failure by the Executive to give notice timely shall not relieve the Corporation of its obligations hereunder except to the extent it shall have been materially prejudiced. The Executive shall not pay such claim prior to the expiration of the 30-day period following the date on which it gives such notice to the Corporation (or such shorter period ending on the date that any payment of taxes with respect to such claim is due). If the Corporation notifies the Executive in writing prior to the expiration of such period that it desires to contest such claim, the Executive shall:

- (i) give the Corporation any information reasonably requested by the Corporation relating to such claim,
- (ii) take such action in connection with contesting such claim as the Corporation shall reasonably request in writing from time to time, including, without limitation, accepting legal representation with respect to such claim by the Tax Firm or any other law firm selected by the Corporation,
- (iii) cooperate with the Corporation in good faith in order effectively to contest such claim, and
- (iv) permit the Corporation to participate in any proceedings relating to such claim;

provided, however, that the Corporation shall bear and pay directly all costs and expenses (including additional interest and penalties) incurred in connection with such contest and shall indemnify and hold the Executive harmless, on an after-tax basis, for any Excise Tax or income and employment tax (including interest and penalties with respect thereto) imposed as a result of such representation and payment of costs and expenses.

5.4. Refunds. If, after the receipt by the Executive of any amount paid or advanced by the Corporation in connection with a contest undertaken pursuant to Section 5.3, the Executive becomes entitled to receive any refund or credit with respect thereto, the Executive shall (subject to the Corporation's complying with the requirements of Section 5.3) promptly pay to the Corporation the amount of such refund or credit (together with any interest paid or credited thereon after taxes applicable thereto).

6. Terms and Conditions of Participation.

6.1. Conditions of Participation. As a condition to being covered by this Agreement, the Executive acknowledges and agrees that (i) except as may otherwise be expressly provided under any other executed agreement

between the Executive and the Corporation, nothing contained in this Agreement (including, but not limited to using the term "Cause" to determine benefits under this Agreement) is intended to change the fact that the employment of the Executive by the Corporation is "at will" and, prior to the Effective Date, may be terminated by either the Executive or the Corporation at any time, and (ii) disputes regarding the Executive's employment with the Corporation (regardless of whether such dispute involves the terms of this Agreement) shall be subject to arbitration as provided in Section 7.5 of this Agreement.

6.2. Non-Duplication. As a condition of being covered by this Agreement, and notwithstanding any other agreement to the contrary, the Executive, agrees that (i) the payments under this Agreement shall be the only severance or similar payments that are payable by the Corporation under any plan, program, policy or agreement, and (ii) except for amounts payable under any retirement plans, stock purchase plans or deferred compensation plans of the Corporation in which the Executive may participate, the payments under this Agreement are in full and complete satisfaction of all liabilities of the Corporation with respect to the Executive under all such other plans, programs and agreements.

6.3 No Effect on Other Agreements; Inconsistent Provisions. This Agreement shall be in addition to, and have no effect on, the provisions of any other agreements, including without limitation indemnification agreements and proprietary inventions/confidentiality agreements that may exist between the Corporation and the Executive. Notwithstanding the foregoing, to the extent that the terms and conditions of this Agreement are inconsistent with those found in any other agreement or plan to which the Corporation and the Executive are each a party, the terms and conditions of this Agreement shall be controlling.

6.4. Amendment and Termination. This Agreement may not be amended or terminated after the Effective Date. Prior to the Effective Date, the Board may, in its sole discretion, modify or amend this Agreement in any respect, or terminate the Agreement, provided such actions do not reduce the amount or defer the receipt of any payment or benefit provided under this Agreement.

7. General.

7.1. Payment Obligations; Overdue Payments. The Corporation's obligations to make the payments and provide the benefits to the Executive under this Agreement shall be absolute and unconditional and shall not be affected in any way by any circumstances, including, without limitation, any offset, counterclaim, recoupment, defense or other right which the Corporation may have against the Executive or anyone else, provided, however, that as a condition to payment of amounts under this Agreement, the Executive shall execute a general release and waiver ("Waiver"), in form and substance reasonably satisfactory to the Corporation, of all claims relating to the Executive's employment by the Corporation and the termination of such employment, including, but not limited to, discrimination claims, employment-related tort claims, contract claims and claims under this Agreement (other than claims with respect to benefits under the Corporation's tax-qualified retirement plans, continuation of coverage or benefits solely as required by Part 6 of Title I of ERISA, or any obligation of the Corporation to provide future performance under Section 4 and Section 5). All amounts payable by the Corporation hereunder shall be paid without requiring notice or demand from the Executive, except as may be required with respect to the Waiver. Each and every payment made hereunder by the Corporation shall be final and the Corporation will not seek to recover all or any part of such payment from the Executive or from whosoever may be entitled thereto, for any reason whatsoever (other than as provided in Section 5.4). The Executive shall be entitled to receive interest at the prime rate of interest published from time to time by The Wall Street Journal (the "Prime Rate") on any payments under this Agreement that are thirty days overdue, provided, however, that no payments shall be deemed to be overdue until the Executive executes the Waiver and any rescission period with respect to such Waiver has expired.

7.2 No Mitigation. The Executive shall not be obligated to seek other employment in mitigation of the amounts payable or arrangements made under any provision of this Agreement, and the obtaining of any such other employment shall in no event effect any reduction of the Corporation's obligations to make the payments and provide the benefits required under this Agreement, except as provided in the first sentence of Section 4.3.

7.3. Successors. All rights under this Agreement are personal to the Executive and, without the prior written consent of the Corporation, shall not be assignable by the Executive otherwise than by will or the laws of descent and distribution. This Agreement shall inure to the benefit of and be enforceable in the event of the Executive's death or disability by the Executive's legal representative. This Agreement shall inure to the benefit of and be binding upon the Corporation and its successors and assigns. The Corporation will require any successor (whether direct or indirect, by purchase, merger, consolidation or otherwise) to all or substantially all of the business and/or assets of the Corporation to assume expressly and agree to perform this Agreement in the same manner and to the same extent that the Corporation would be required to perform it if no such event resulting in a successor had taken place. As used in this Agreement, "Corporation" shall mean the Corporation and any successor to its business and/or assets as aforesaid which assumes and agrees, or is otherwise obligated, to perform this Agreement by operation of law, or otherwise.

7.4. Controlling Law. This Agreement shall in all respects be governed by, and construed in accordance with, the laws of the State of Delaware (without regard to the principles of conflicts of laws).

7.5. Arbitration. DISPUTES REGARDING THE EXECUTIVE'S EMPLOYMENT WITH THE CORPORATION, INCLUDING, WITHOUT LIMITATION, ANY DISPUTE HEREUNDER, WHICH CANNOT BE RESOLVED BY NEGOTIATIONS BETWEEN THE CORPORATION AND THE EXECUTIVE SHALL BE SUBMITTED TO, AND SOLELY DETERMINED BY, FINAL AND BINDING ARBITRATION CONDUCTED BY JAMS/ENDISPUTE, INC. OR ANY SUCCESSOR THERETO, IN ACCORDANCE WITH JAMS/ENDISPUTE, INC.'S ARBITRATION RULES APPLICABLE TO EMPLOYMENT DISPUTES, AND THE PARTIES AGREE TO BE BOUND BY THE FINAL AWARD OF THE ARBITRATOR IN ANY SUCH PROCEEDING. THE ARBITRATOR SHALL APPLY THE LAWS OF THE STATE OF DELAWARE WITH RESPECT TO THE INTERPRETATION OR ENFORCEMENT OF ANY MATTER RELATING TO THIS AGREEMENT. ARBITRATION MAY BE HELD IN BALTIMORE, MARYLAND OR SUCH OTHER PLACE AS THE PARTIES HERETO MAY MUTUALLY AGREE, AND SHALL BE CONDUCTED SOLELY BY A FORMER JUDGE. JUDGMENT UPON THE AWARD BY THE ARBITRATOR MAY BE ENTERED IN ANY COURT HAVING JURISDICTION THEREOF. THE PREVAILING PARTY IN THE ARBITRATION, AS DETERMINED BY THE ARBITRATOR, SHALL BE ENTITLED TO REIMBURSEMENT OF HIS REASONABLE ATTORNEY'S FEES AND DISBURSEMENTS INCURRED IN SUCH PROCEEDINGS BY THE NON-PREVAILING PARTY.

7.6. Severability. Any provision in this Agreement which is prohibited or unenforceable in any jurisdiction shall, as to such jurisdiction, be ineffective only to the extent of such prohibition or unenforceability without invalidating or affecting the remaining provisions hereof, and any such prohibition or unenforceability in any jurisdiction shall not invalidate or render unenforceable such provision in any other jurisdiction.

7.7. Counterparts. This Agreement may be executed in counterparts, each of which shall be deemed an original, but all of which together will constitute one and the same instrument.

IN WITNESS WHEREOF, the parties have executed and delivered this Agreement on the date first above written.

CIENA CORPORATION

By: _____
Name: _____
Title: _____

EXECUTIVE

Name:

EXHIBIT 23.1

CONSENT OF INDEPENDENT ACCOUNTANTS

We hereby consent to the incorporation by reference in the Registration Statements on Form S-8 (No. 333-2713, No. 333-52467) of CIENA Corporation of our report dated November 25, 1998 appearing on page 36 of this Annual Report on Form 10-K.

PRICEWATERHOUSECOOPERS LLP

McLean, VA
December 8, 1998

THIS SCHEDULE CONTAINS SUMMARY FINANCIAL INFORMATION EXTRACTED FROM THE CONSOLIDATED BALANCE SHEET, CONSOLIDATED STATEMENT OF OPERATION AND CONSOLIDATED STATEMENT OF CASH FLOWS INCLUDED IN THE COMPANY'S FORM 10-K FOR THE PERIOD ENDING OCTOBER 31, 1998, AND IS QUALIFIED IN ITS ENTIRETY BY REFERENCE TO SUCH FINANCIAL STATEMENTS.

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