ADE CORP
Form 10-K
July 30, 2001

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION

WASHINGTON, D.C. 20549

FORM 10-K

(MARK ONE)

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

FOR THE FISCAL YEAR ENDED APRIL 30, 2001
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 0-26714

ADE CORPORATION

(Exact name of registrant as specified in its charter)

MASSACHUSETTS	04-2441829
(State of incorporation)	(IRS Employer Identification No.)
80 WILSON WAY	02090
WESTWOOD, MASSACHUSETTS	(zip code)
(Address of principal executive offices)	

(781) 467-3500
(Registrant's telephone number, including area code)

SECURITIES REGISTERED PURSUANT TO SECTION 12(G) OF THE ACT:
COMMON STOCK, $0.01 PAR VALUE
(Title of class)

Indicate by check mark whether the registrant: (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such

filing requirements for the past 90 days. Yes /X/ No / /

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

As of July 24, 2001, there were outstanding 13,601,061 shares of common stock, $.01 par value per share. The aggregate market value of shares of common stock held by non-affiliates of the registrant, based upon the last sale price for such stock on that date as reported by Nasdaq, was approximately $196,535,000.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the definitive Proxy Statement for the 2001 Annual Meeting of Stockholders are incorporated by reference into Part III.

PART I

ITEM 1. BUSINESS

EXCEPT FOR HISTORICAL INFORMATION, THE FOLLOWING DESCRIPTION OF ADE'S BUSINESS CONTAINS FORWARD LOOKING STATEMENTS WHICH INVOLVE RISKS AND UNCERTAINTIES. THE OUTCOME OF THE EVENTS DESCRIBED IN THESE FORWARD LOOKING STATEMENTS IS SUBJECT TO RISKS AND ACTUAL RESULTS COULD DIFFER MATERIALLY. THE SECTIONS ENTITLED "RISK FACTORS", "MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS" AND "BUSINESS" AS WELL AS THOSE DISCUSSED ELSEWHERE IN THIS ANNUAL REPORT CONTAIN A DISCUSSION OF SOME OF THE FACTORS THAT COULD CONTRIBUTE TO THESE DIFFERENCES. ANY FORWARD-LOOKING STATEMENTS ARE MADE AS OF THE DATE OF THIS REPORT AND WE ASSUME NO OBLIGATION TO UPDATE ANY SUCH FORWARD-LOOKING STATEMENTS OR TO UPDATE THE REASONS WHY ACTUAL RESULTS COULD DIFFER MATERIALLY FROM THOSE ANTICIPATED IN SUCH FORWARD-LOOKING STATEMENTS.

ADE Corporation is engaged in the design, manufacture, marketing and service of production metrology and inspection systems for the semiconductor wafer, semiconductor device, data storage and optics manufacturing industries. Our systems analyze and report product quality at critical manufacturing process steps, sort wafers and disks, and provide manufacturers with quality certification data upon which they rely to manage processes and accept incoming material. Semiconductor wafer, device and data storage manufacturers use our systems to improve yield and capital productivity.

ADE's strategy is to provide our customers with complete metrology solutions for optimization of their processes, workflow, and engineering. We accomplish these goals by offering a broad range of plug and play metrology and inspection units that are combined with modular handling platforms and software analysis packages. Responsive to the wide range of production needs that our customers have required over the past decades, ADE designs focus on a modular approach which targets the lowest cost of ownership for a system at any given process step. The software analysis packages maximize information timeliness and availability while minimizing demands on customers' engineering staff.

PRODUCTS

Our products have evolved from single instruments used in off-line engineering analysis to full, 100% online automated metrology solutions

throughout the wafer and disk manufacturing processes. Our systems are designed to deliver the high throughput, reliability, information and analysis necessary to meet the demands of increasingly complex and time-sensitive manufacturing processes.

Our principal products in the semiconductor wafer, semiconductor device and data storage device industries are described below. All metrology and inspection systems have the capability to record, print and store measurement data locally, as well as distribute the data via a network for yield and process management, offline analysis, and SEMI standard Silicon Wafer Order Form (SWOF) quality certification.

SEMICONDUCTOR INDUSTRY PRODUCTS

ADVANCED FLATNESS SYSTEM. The AFS system advances ADE's established capacitance technology to 130nm semiconductor wafer production. Customers involved with 300mm and 400mm wafers are using this measurement platform to characterize wafer dimensional properties. The wafer is handled only by the edges, thereby minimizing the possibility of any surface contamination or damage due to contact with the polished surfaces of the wafer. AFS measurement systems are the dominant solution for qualification of 300mm wafer flatness.

ULTRAGAGE-REGISTERED TRADEMARK- SERIES. The UltraGage series of products are automated benchtop metrology systems containing a single measurement module which is capable of making any one of several measurements, including wafer shape, flatness, thickness and stress. The UltraGage series includes the 9530 model, which has been optimized to handle the ultra-thin processed wafers used in the manufacture of devices for smart cards and advanced electronic packages. UltraGage systems were designed to operate together with specialized applications software to be used to manage the device manufacturing process. The latest 9900

UltraGage systems meet 180nm technology requirements, allowing ADE customers to meet advanced industry needs for flat wafers without having to retool their manufacturing plants.

ULTRASCAN-REGISTERED TRADEMARK- SERIES. The UltraScan series of products are high throughput, inline production systems that perform measurement and sorting at various stages of the wafer manufacturing and device fabrication processes. UltraScan systems measure wafer thickness, flatness, shape, and other mission-critical dimensional properties and can be integrated with factory automation systems. The UltraScan series systems support customer requirements at the 0.35um, 0.25um, and the 180nm design rule technologies.

WAFERCHECK-REGISTERED TRADEMARK- SERIES. The WaferCheck series of products are flexible, modular systems capable of automatically characterizing, inspecting and sorting semiconductor wafers. These systems measure thickness, flatness, shape, conductivity type, and resistivity on raw and processed wafers and provide high speed sorting. The products combine an automated transfer belt module with one or more customer selected measurement modules into a single, floor mounted system. These systems typically operate in a Class 1000 cleanroom environment and provide nondestructive inline sorting and classification capability on all wafer diameters up through 200mm.

ADVANCED WAFER INSPECTION SYSTEM. The AWIS system is a fully automated inspection tool designed to handle the advanced surface inspecting requirements of 200 and 300mm polished and epi wafers for high volume wafer production. This system reduces the need for manual inspection of the wafers. The AWIS system is available with an edge gripping wafer handling system and operates in a Class 10 or better clean room. The system exceeds the 130nm design rules for

high speed sorting applications.

CR8X SERIES. The CR8X series products are high throughput, inline production systems that are used to detect, measure and characterize particles and other defects on wafer surfaces and provide process analysis and control information for the wafer manufacturer. These tools rely on ADE's proprietary flying spot laser scanning technology. The CR8X systems can be integrated with factory automation systems. We offer a variety of software packages to tailor the system to specific customer requirements.

SURFACE QUALITY MONITOR. The Surface Quality Monitor (SQM) is a new feature on our wafer inspection systems; CR8X and AWIS. This feature adds the characterization of the variations in nanotopography on the wafer surface to the surface defect characterization family. Nanotopography has become a leading technology requirement for yield optimization for design rules at 180nm and below. The integration of this inspection for nanotopography is a cornerstone in ADE's productivity enhancement program for our customers. This measurement is being applied to both 200 and 300mm wafer diameters.

NANOMAPPER-TM-. The NanoMapper system is a 200 and 300mm bridge tool that measures and analyzes nanotopography, front surface non-planar topographic wafer features, on semiconductor wafers using proprietary noncontact optical interference techniques. Nanotopography includes a variety of process-induced defects and process control failures in silicon wafer and device manufacturing processes. Improved control of these defects can increase yields and reduce costs for 130 and 100nm devices by improving CD control, shallow trench isolation (STI), and chemical mechanical planarization (CMP) results. The NanoMapper system was the winner of the prestigious R&D 100 award the year 2000 and is the standard for 300mm nanotopography characterization.

ACUDEP-TM- SYSTEM. ADE has signed an exclusive worldwide distribution agreement for the AcuDep Advanced Particle Deposition Systems manufactured by The Scatter Works, Inc. The AcuDep 300 system complements ADE's full line of wafer surface inspection and topology measurement systems by improving process control while reducing manufacturing costs for semiconductor device, wafer and disk manufacturers.

EPISCAN-TM- SERIES. The EpiScan series of products are high-speed tools used to measure and map the thickness of certain film layers, sometimes referred to as epi layers, that are applied to wafers. The EpiScan system is based on advanced FTIR optical technology, which is licensed from MKS Instruments Inc.,

On-Line Products. The newest addition to the EpiScan product line is the EpiScan 3000 system, which includes full edge grip handling for 300mm wafers.

ACUMAP-TM- SERIES. AcuMap systems are full-wafer film thickness monitoring tools for SOI, CMP and photolithography applications. In SOI processing, AcuMap measurements are used to monitor the thickness of both the silicon layer and new AcuMap 3110 is designed for 300mm.

INFOTOOLS-TM- SOFTWARE SUITE. The InfoTools product is an offline application suite of productivity tools for ADE's dimensional AFS, UltraScan, UltraGage and WaferCheck systems. InfoTools software includes the ReportTools-TM- software for offline processing of wafer data and the RecipeTools-TM- application for centralized process recipe management. Use of the InfoTools product increases machine availability and leads to a lower cost of ownership of an ADE tool.

WAFERANALYZER-TM-. This offline software package increases productivity in a wafer production polishing area by automating the advanced analytical

capability for wafer inspection data. In beta tests this software has proven to significantly reduce the process engineering man-hours required for process management and characterization and to add increased flexibility in analysis. The software is modularly priced based on the number of users and equipment connections.

DISK INDUSTRY PRODUCTS

PROPRIETARY ADE MAGNETIC TECHNOLOGY

VIBRATING SAMPLE MAGNETOMETERS (VSMS). The VSM is used to measure the magnetic properties of the broad-spectrum of magnetic materials. Although we supply the magnetics community with high performance VSMs, our flag-ship product is the fully-automated X9 designed for the HDD industry, with applications in both the development and production of TMR and GMR recording heads. The VSM product line is comprised of several models, varying in maximum field strength and sensitivity. Most of the systems can be configured to characterize anisotropy in magnetic materials, the understanding of which is rapidly becoming critical in the development of magnetic disks, recording heads, and MRAM. Specifically developed for this purpose is the Model 10, the most advanced Vector VSM available in the industry for research on directional properties of magnetic materials.

WAFER MAPPING SYSTEM (WMS). The Wafer Mapping System (WMS) rapidly and automatically creates 3-dimensional maps of the magnetic properties of entire wafers or coupons used to fabricate advanced GMR and TMR heads for disk drives, as well as the tunnel junctions of MRAM wafers. The WMS provides feedback to the design and fabrication process of GMR and TMR heads and TMR-based MRAM wafers. The system, which can be configured as a fully automated metrology system with a wafer handler and prealigner, and an MR measurement option, allows users to manage process uniformity in order to improve overall yield.

M2 DISKMAPPER-TM-. The M2 DiskMapper system is an inline fully automated noncontact measurement system that maps the variation of the most critical magnetic parameters over the surface of recording disks. The data provided by the tool is used to directly control the sputtering process. The M2 DiskMapper can be configured to handle multiple form factors.

PROPRIETARY ADE CAPACITANCE TECHNOLOGY

MICROSENSE-REGISTERED TRADEMARK- II. As the disk drive industry moves to ever-quieter fluid bearing motors there is an increasing requirement to measure non-repetitive run-out to achieve higher track densities. The MicroSense II product line has been widely adopted by disk drive motor manufactures. It has also achieved success in specialized applications such as fast tool servo control outside of the disk drive market.

PASSIVE GAGING. ADE's passive capacitive gaging systems make use of a design that is fundamentally different from the MicroSense II products. These passive capacitance gages are incorporated in a number of ADE products that serve the hard disk, compact disk and semiconductor markets. ADE Passive Gages are increasingly being used by other semiconductor capital equipment makers on an OEM basis to solve difficult servo control problems where high precision and high stability are required.

MOTOR TEST SYSTEMS. Utilizing the 3700 motor test system with ADE's noncontact dimensional gaging provides disk motor manufactures with motor shaft runout measurements in both time and frequency domains. This software allows users to define sophisticated pass/fail criteria for production testing.

PROPRIETARY ADE INTERFEROMETER BASED TOOLS

MINIFIZ SERIES OF INTERFEROMETERS. MiniFIZ series is a family of laser-based Fizeau interferometers that test the surface flatness, curvature and other shape characteristics of polished precision components such as optical mirrors, lenses and computer disks. The MiniFIZ interferometers provide interactive 3D modeling, statistical reporting, and user-selectable production and research modes. The product can be combined with full robotic automation to meet the needs of disk media and substrate process control.

MICROXAM OPTICAL PROFILERS. These 3D optical profilers are interference microscopes which produce measurements of the shape, density and distribution of laser bumps in the laser-textured area of hard disks. The MicroXAM optical profiler is the industry standard for measuring the laser-textured area of hard disk media. Other configurations of MicroXAM products measure disk dub-off. Dub-off is the transition between the top (usable) surface of the disk, and the rough edge of the disk. MicroXAM systems, consequently, are used widely by disk media manufacturers and by hard drive manufacturers.

OPTIFLAT FLATNESS GAGE. Similar to the MiniFIZ product, the OptiFLAT system is an accurate surface flatness tester primarily utilized to characterize the surface waviness of hard disks in order to improve and maintain process control in the hard disk manufacturing process. Waviness is a range of medium to high frequency surface features which is now gage is also uniquely suited to measure the flatness of uncoated transparent disk substrates.

PRODUCTS IN DEVELOPMENT

In order to maintain our technology leadership, we continue to introduce new products.

SERIES 4800 PASSIVE GAGING. The 4800 series of capacitive gages represents substantial improvement in the performance of ADE's very successful passive gaging product line. The new 4800 series offers significantly higher resolution and bandwidth as well as improved stability and new features. This product is designed to be used by OEM's in a wide variety of industries and will be part of a new modular measure system used for general gaging applications.

TECHNOLOGY

Our metrology and inspection products use our proprietary non-contact capacitive, optical, eddy-current, interferometric and magnetic technologies to measure the dimensional, electrical magnetic and surface characteristics of semiconductor wafers and devices and computer hard disks and disk drives.

DIMENSIONAL TECHNOLOGY

Our non-contact capacitive gaging technology, which is the subject of a series of patents, is used to measure the dimensional parameters (thickness, flatness, shape) of semiconductor wafers, computer hard disks and other objects. This technology is based on the measurement of the capacitance between a measurement probe and the surface of the object. The capacitance varies as a precise function of the distance between the probe and the object being measured. For example, in the measurement of a

semiconductor wafer, two probes, one on each side of the wafer, map both wafer surfaces simultaneously. Electronic circuitry converts the probe capacitance signal into distance signals which are translated by our software to produce information concerning the wafer's thickness, flatness and shape.

SURFACE INSPECTION TECHNOLOGY

We use optical methods to detect microscopic surface defects and non-uniformity. A finely focused laser beam is scanned over the surface of the wafer. Surface non-uniformities, particles or defects cause some of the beam's energy to deflect or scatter. Sensitive detectors quantify the scattering signals, which are translated by our software to produce information about particles, micro scratches, haze, nanotopography and other process-induced defects on the wafer surface. Although the principles of our optical technology are similar to those used by other manufacturers, we believe our theoretical modeling and patented optical engineering and proprietary software result in products having a superior combination of high sensitivity and throughput.

INTERFEROMETRIC TECHNOLOGY

Optical interference is a technique used to produce surface images of alternating bright and dark images, called fringes, which correspond to variations in surface height. Using multiple reflection, optical interference can precisely measure variations in the height of a surface as small as a few atomic layers. Our software provides the ability to create and analyze these three-dimensional surface maps, comprised of millions of data points, which are used by our customers in advanced process development and in production control.

FOURIER TRANSFORM INFRARED SPECTROSCOPY TECHNOLOGY

Fourier Transform InfraRed (FTIR) Spectroscopy Technology has classically been used in a broad range of laboratory applications for examining various technical properties of materials and chemicals. MKS Instruments Inc., On-Line Products, has licensed its rugged, industrial strength Fourier Transform Infrared Spectroscopy Technology to us for incorporation into metrology tools for the wafer market. We are integrating this technology to provide the increasing precision and accuracy needed to support ever-tightening Epi specifications.

MAGNETICS CHARACTERIZATION TECHNOLOGY

Our products for characterizing magnetic materials use a variety of non-contact measurement technologies including lasers (the Kerr effect), vibrating sample and torque-effect inductive sensing techniques. We believe our world-class theoretical modeling and magnetics engineering enable us to offer automated products with superior sensitivity, speed, accuracy and reproducibility.

PROPRIETARY SOFTWARE

Our proprietary software analyzes and transforms the large amounts of data generated by our metrology and inspection systems to produce information about process-induced defects that supports real-time process management. The flexible design of this software permits recipe-driven reconfiguration of these products to serve new applications with a minimum of hardware or software redesign or development. Our software is designed to integrate our various metrology functions with one another while implementing industry standards for integrating our products with the manufacturing facility's information systems. We currently have applied for patent protection on unique features of our software.

MARKETING, SALES AND CUSTOMER SUPPORT

We market and sell our semiconductor metrology and inspection products through our direct sales force, distributors and independent sales representatives. We market and sell our metrology and inspection

products in the United States, Europe and Malaysia through full-time salespersons located throughout the United States in Milpitas, Dallas, Portland and Boston as well as in the United Kingdom, Germany, and Malaysia. During the past fiscal year, approximately 70% of our revenue was derived through our direct sales organization. Our direct sales force is supported by applications engineers in selected field offices and in each of our manufacturing locations.

Sales of dimensional systems in Japan are supported by Japan ADE Limited, a joint venture between us and Kanematsu Electronics, Ltd. Sales of optical surface inspection products are provided in Japan by a separate distributor. We also sell our semiconductor metrology and inspection products in Israel, South Korea, Singapore, Taiwan, India and the People's Republic of China through independent sales representatives. We market and sell our non-contact capacitive, dimensional metrology and magnetic characterization data storage products in the United States through three full-time salespersons and internationally through distributors and sales representatives. We market and sell our interferometric based surface metrology products through two full time salespersons and internationally through distributors and sales representatives.

The selling process for our products frequently involves participation by sales, marketing and customer support personnel. Customers and potential customers often evaluate our products by sending semiconductor wafers to us for measurement or by installing demonstration equipment at their facilities. We maintain demonstration equipment at our manufacturing sites and at some of our sales offices for this purpose. We plan to continue our investment in demonstration equipment to accelerate the introduction of products. Our marketing activities also include participation in international standards organizations, trade shows, publication of articles in trade journals, in industry forums and distribution of sales literature.

We believe that our strong commitment to service is essential, based on the growing complexity of the equipment used in the semiconductor manufacturing process. This complexity makes it difficult for semiconductor wafer and device manufacturers to maintain an internal workforce sufficiently skilled and specialized to support the disparate equipment and technologies used in their processes. We have customer support centers in Boston, Dallas, Milpitas, Vancouver and Tucson in the United States; Milton Keynes, England; Munich, Germany; and Kuala Lumpur, Malaysia. In addition, our distributors and sales representatives provide customer support. We also offer training programs and maintenance contracts for our customers. We offer warranties of up to twelve months covering the performance and reliability of our products.

CUSTOMERS

Our customers include all of the leading semiconductor wafer manufacturers and many of the leading semiconductor device and data storage and disk drive manufacturers throughout the world. Historically, a relatively limited number of customers, comprising a large share of the market, have accounted for a substantial portion of our revenue. In fiscal years 2001, 2000 and 1999, sales to our top five customers accounted for approximately 46.1%, 45.8% and 45.1%, respectively, of our revenue. During fiscal year 2001 one of our customers accounted for 15.4% of our revenue. During the past fiscal year, approximately 69.1% of our revenue was derived from sales made to wafer manufacturers, with the remainder derived from sales to manufacturers of semiconductor devices, data storage and disk drives and semiconductor equipment. Our principal customers are as follows:

SEMICONDUCTOR WAFER MANUFACTURERS

Formosa Komatsu
MEMC Electronic Materials
Mitsubishi Silicon
Pure Wafer, Ltd.
Shin-Etsu Handotai
Siltron
Sumitomo Sitix Silicon
Wacker Siltronic

SEMICONDUCTOR DEVICE MANUFACTURERS

IBM
Intel
Micron Technology
Motorola
ST Microelectronics
Texas Instruments

DATA STORAGE AND DISK DRIVE MANUFACTURERS

IBM
Seagate Technology

RESEARCH AND DEVELOPMENT

The market for semiconductor wafer and device, data storage and disk drive equipment is characterized by rapid technological changes and product innovations. Our research and development efforts are designed to enhance our current products and develop new products to keep pace with technological developments and constantly evolving customer requirements. We devote significant resources to programs directed towards developing new and enhanced products, as well as developing new applications for existing products.

In fiscal years 2001, 2000 and 1999, our research and development expenditures were $22.6 million, $21.9 million and $24.0 million, respectively, representing 22.5%, 35.0% and 39.5% of revenue. Research and development expenditures consist primarily of salaries, project materials, consulting fees and other costs associated with our ongoing research and development efforts.

Industry standards organizations, such as Semiconductor Equipment and Materials International and American Standards for Testing and Materials are pivotal in defining the test methods, measurement parameters and specifications governing commercial transactions within the semiconductor industry. We maintain a significant presence on standards committees of these two organizations and other international standards organizations. We believe that our involvement with these organizations has helped to ensure that our new products conform to industry standards.

BACKLOG

Backlog increased to approximately $53.6 million at April 30, 2001 from approximately $30.4 million at April 30, 2000. This increase in backlog is primarily attributable to an increase in demand for capital equipment in the semiconductor industry during the first nine months of calendar year 2000. We schedule production based on firm customer commitments and anticipated orders during the planning cycle. Backlog is comprised of written purchase orders accepted from customers to whom we expect to ship the related product or provide service within the following twelve months. Customers may cancel or delay orders with limited or no penalty. We do not believe that the level of backlog is an accurate indicator of our performance in future periods.

MANUFACTURING

Our principal manufacturing activities take place at our ISO 9001-registered facility in Westwood, Massachusetts, where semiconductor dimensional metrology systems and semiconductor optical surface inspection equipment are manufactured, in Newton, Massachusetts, where non-contact capacitive, dimensional metrology for gaging products and magnetic characterization products for the data storage industry are manufactured, in Tucson, Arizona, where interferometric based surface metrology products are manufactured and in Bethel, Connecticut, where optical and infrared based thin film thickness metrology products are manufactured. Manufacturing activities consist primarily of assembling and testing components and subassemblies which are supplied by third party vendors and then integrated into our finished products. Many of the components and subassemblies are standard products, although certain items are made to our specification. We manufacture many of our semiconductor metrology and inspection systems in a cleanroom environment.

PATENTS AND OTHER INTELLECTUAL PROPERTY RIGHTS

We rely on a combination of patent, copyright, trademark and trade secret laws and license agreements to establish and protect our proprietary rights in our products. We believe, however, that our success depends to a greater extent upon innovation, technological expertise and distribution strength. We enter into standard confidentiality agreements with our employees and consultants and seek to control access to and distribution of our proprietary information. Despite these precautions, it may be possible for a third party to copy or otherwise obtain and use our products or technology without authorization or to develop similar technology independently. In addition, effective patent, copyright and trade secret protection may be unavailable or limited in certain foreign countries.

As of July 24, 2001 we hold 33 United States patents and 19 foreign patents covering existing and potential products and have applied for 13 additional patents in the United States and 35 additional foreign patents. We have licensed certain patents and other intellectual property to a number of companies.

EMPLOYEES

As of April 30, 2001, we employed approximately 613 persons at all of our locations. Management believes that our ongoing success depends on our continued ability to attract and retain highly skilled employees. There can be no assurance that we will be successful in attracting or retaining such personnel. None of our employees are represented by a labor union, and we have experienced no work stoppages. We consider our employee relations to be good.

EXECUTIVE OFFICERS

The names, ages and positions held by our executive officers are as follows:

NAME	AGE	POSITION
Robert C. Abbe.....	63	President and Chief Executive Officer
Brian C. James.....	50	Vice President, Treasurer and Chief Financial Officer
AK Lum.....	52	Vice President and General Manager of ADE Semiconductor Systems

Chris L. Koliopoulos.....	48	Vice President and President of ADE Phase Shift, Inc.
Noel S. Poduje.....	56	Vice President of Strategic Technology Development

All executive officers are elected by the Board of Directors to serve in their respective capacities until their successors are elected and qualified or until their earlier resignations or removal.

Robert C. Abbe founded ADE in 1967. Since that time, he has served as President, Chief Executive Officer and a Director of ADE. Mr. Abbe received an AB in Physics from Harvard College.

Brian C. James joined ADE in August, 2000 and serves as Vice President, Treasurer and Chief Financial Officer. Mr. James served as Executive Vice President and Chief Financial Officer of CCT, Inc. and as Corporate Vice President and Chief Financial Officer of The Aerostructures Corporation, both privately held investor-backed companies, prior to joining ADE. Mr. James had previously served as Group Controller for Textron Inc.'s Aerospace-Technology sector and has held various operations and financial positions with Allied-Signal and Ford Motor Company. Mr. James received a BA from the University of Vermont and an MS in finance from the University of Massachusetts.

Chris L. Koliopoulos joined ADE in June, 1998 through the merger with Phase Shift Technology, Inc., which became a wholly owned subsidiary of ADE. Dr. Koliopoulos was President and founder of Phase Shift Technology, has served as a Vice President of ADE and President of ADE Phase Shift since the merger and is a Director of ADE. Dr. Koliopoulos received a BS from the University of Rochester and an MS and PhD from the University of Arizona.

AK Lum joined ADE in 1998 and has served as Vice President and General Manager of ADE Semiconductor Systems Group. From 1997 to 1998, Mr. Lum served as Vice President of Manufacturing of Epson Portland Inc. From 1974 to 1997, Mr. Lum served Shin-Etsu Handotai-Group in various senior management positions. Mr. Lum received a BA in electrical engineering from University of Technology, Malaysia, and an MBA from City University, State of Washington.

Noel S. Poduje joined ADE in 1972 and has served as Vice President of Strategic Technology Development since 1985. Mr. Poduje received a BS in Electrical Engineering from the Massachusetts Institute of Technology.

CYCLICALITY OF OUR BUSINESS

Our business depends in large part upon the capital expenditures of semiconductor wafer and device and data storage manufacturers, which in turn depend on the current and anticipated market demand for integrated circuits, products utilizing integrated circuits and systems requiring data storage, respectively. The semiconductor and data storage industries are cyclical and have historically experienced periodic downturns, which have had a severe effect on the demand for capital equipment. Prior semiconductor and data storage industry downturns and construction of excess capacity by the industries have adversely affected our revenue, gross margin and net income and have also adversely affected the market price of our common stock. In addition, the need for continued investment in research and development and extensive customer service and support capability worldwide will continue to limit our ability to reduce expenses during industry downturns.

COMPETITION

The semiconductor and data storage equipment industries are highly competitive. Companies with complementary technologies and greater financial resources may enter these industries and develop products that are superior to our products or achieve market acceptance. In the market for optical defect inspection equipment, we compete directly with Hitachi Electronics Engineering Co., Ltd. and KLA-Tencor Corporation, both of which have significantly greater total assets and annual revenue than we do. In the metrology area of the device industry, we have encountered, and expect to encounter in the future, competition from companies offering similar and competing technologies, some of which have significantly greater total assets and annual revenue than we do or have an existing market presence in the device industry, or both. We also expect to encounter intense competition in the areas of metrology and inspection for the data storage industry. Our competitors can be expected to continue to improve the design and performance of their products and to introduce new products with competitive price/ performance characteristics. Competitive pressures can necessitate price reductions or non-revenue generating shipments of new products to certain strategic customers for evaluation purposes, which can adversely affect our operating results. In order to remain competitive, we must maintain a high level of investment in research and development, sales, marketing and customer service. There can be no assurance that we will have sufficient resources to continue to make such investment or that we will be able to make the technological advances necessary to remain competitive.

We expect acquisitions and business combinations by our competitors and potential competitors in the metrology as well as in the defect inspection markets. The impact of this activity could:

- Allow them to offer new products without the lengthy time delays typically associated with internal product development

- Limit our access to commercially significant technologies and/or new or complementary products

- Permit them to accelerate the development and commercialization of new competitive products and the marketing of existing competitive products to their larger installed bases.

Accordingly, such business combinations and acquisitions by these companies could have an adverse impact on both our market share and the pricing of our products, which could have a material adverse effect on our business.

CUSTOMER AND INDUSTRY CONCENTRATION

A relatively limited number of customers have historically accounted for a substantial portion of our revenue in each year. In fiscal years 2001, 2000 and 1999, sales to our top five customers in each period accounted for approximately 46.1%, 45.8% and 45.1%, respectively, of our revenue. The loss of or any reduction in orders by any of these customers, including reductions due to market, economic or competitive conditions in the semiconductor industry or in other industries that manufacture products utilizing semiconductors, could adversely affect our business, financial condition and results of operations. In fiscal 2001, 2000 and 1999, we derived 69.1%, 58.3% and 57.7% of our revenue, respectively, from customers in the semiconductor wafer industry. While we are increasing our emphasis on expanding the level of our business in the device and data storage industries, there can be no assurance that our efforts will be successful. Our ability to maintain or increase our sales levels in the future will depend in part upon our ability to obtain orders from new customers as well as the financial condition and success of our existing customers and the general economy. There can be no assurance that we will be able to increase the level of our revenue in the future or that we will be able to retain existing customers or to attract new customers. In addition, given the limited number of customers, any delay in collecting, or inability to collect, accounts receivable could have

a material adverse effect on our financial results. See Notes 2 and 13 of Notes to Consolidated Financial Statements.

DEPENDENCE ON SUPPLIERS

Certain of the components and subassemblies, including certain systems controllers and robotics components, incorporated in our current systems and those under development are obtained from a single source or a limited group of suppliers. In some instances, we have not qualified a second source for these products and the partial or complete loss of certain of these sources could have an adverse effect on our results of operations and damage customer relationships. Further, a significant increase in the price of one or more of these components or failure to perform up to specification could adversely affect our results of operations.

RISKS ASSOCIATED WITH INTERNATIONAL OPERATIONS

International sales accounted for 63.5%, 64.2% and 59.3% of our revenue for fiscal years 2001, 2000 and 1999, respectively. See Note 13 of Notes to Consolidated Financial Statements. We expect that international sales will continue to represent a significant percentage of revenue. Our international business may be affected by changes in demand resulting from:

- Fluctuations in interest and currency exchange rates

- The investment policies of foreign countries

- Changes in trade policies and/or tariff regulations

- Difficulties in obtaining U.S. export licenses.

Given that historically approximately 45%--50% of our revenue has come from Asia, financial instability in certain Asian countries could materially affect our competitive position and consequently, financial results.

ACQUISITIONS AND ALLIANCES

ADE has addressed the need to offer new products, in part, through the acquisition of technology and other businesses. The acquisition of other businesses involves numerous risks, including:

- Difficulties assimilating the operations, technologies and products of acquired businesses.

- Diversion of management's attention from other business concerns.

- Entering markets in which we have no or limited direct prior experience and must compete with competitors having stronger market positions.

- Potential loss of key employees of the acquired business.

Integrating acquired businesses requires, among other things, integration of product offerings and coordination of sales, marketing, research and development and management organizations. There can be no assurance that such integration will be accomplished smoothly or successfully. The difficulties of integration may be increased by the necessity of coordinating organizations that are separated geographically. The inability of management to successfully integrate the operations of any acquired businesses could have a material adverse effect on our business and results of operations.

ITEM 2. PROPERTIES

Our corporate headquarters and principal manufacturing operations of our ADE Semiconductor Systems Group are located in an approximately 118,000 square foot company-owned building in Westwood, Massachusetts. We own and occupy a 60,000 square foot building in Tucson, Arizona, which contains the headquarters and manufacturing operations of ADE Phase Shift. We also own and occupy a 46,000 square foot building in Newton, Massachusetts which contains the headquarters and manufacturing operations of ADE Technologies. In addition, we lease a 9,300 square foot building in Milpitas, California under a five year lease that expires in October 2006. We lease a 5,000 square foot building in Bethel, Connecticut where additional manufacturing operations of the ADE Semiconductor Systems Group are located. We also lease space for sales and service support offices in various other domestic and overseas locations.

ITEM 3. LEGAL PROCEEDINGS

On October 12, 2000, the Company filed a patent infringement lawsuit against KLA-Tencor (KLA), a competitor, in the U.S. District Court in Delaware. The Company seeks damages and a permanent injunction against further infringement upon United States Patent Number 6,118,525, entitled "Wafer Inspection System for Distinguishing Pits and Particles." On November 22, 2000, KLA filed a counterclaim in the United States District Court in Delaware that ADE has infringed upon three patents owned by KLA. KLA is seeking damages for patent infringement and a permanent injunction against any future infringement activity. In addition, KLA has asked the District Court for a declaration that United States Patent Number 6,118,525, owned by ADE, is invalid and not infringed upon by KLA. Since these matters are at a preliminary stage, the Company cannot predict the outcome or the amount of gain or loss, if any.

ITEM 4. SUBMISSION OF MATTERS TO SECURITY HOLDERS

There were no matters submitted to a vote of security holders during the fourth quarter of the fiscal year ended April 30, 2001.

PART II

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

MARKET PRICE OF COMMON STOCK

Our common stock trades on the Nasdaq National Market System under the symbol "ADEX." The following table presents the high and low sale prices for each quarter for the common stock as reported for the periods indicated.

FISCAL YEAR ENDED APRIL 30, 2001	HIGH	LOW
First quarter	24.00	13.25
Second quarter	23.13	15.00
Third quarter	22.88	10.44
Fourth quarter	16.65	11.33

FISCAL YEAR ENDED APRIL 30, 2000	HIGH	LOW
First quarter	14.13	8.44
Second quarter	17.00	10.88
Third quarter	22.63	14.88
Fourth quarter	27.00	14.44

The last sale price of the common stock on July 24, 2001, as reported by Nasdaq, was $14.45 per share. As of July 24, 2001, there were 92 holders of record of the common stock (approximately 2,800 beneficial holders).

We have never declared or paid any cash dividends on our common stock and currently expect to retain future earnings for use in our business.

RECENT ISSUANCE OF UNREGISTERED SECURITIES

In June 1998, in consideration of a merger between ADE and Phase Shift Technology, Inc., a privately-owned company, ADE issued an aggregate of 2,000,000 shares of common stock to the Phase Shift shareholders. All of the recipients of shares were "accredited investors" under the definition of that term in Regulation D under the Securities Act. The issuance of the shares was privately negotiated in the context of negotiations for the merger with Phase Shift, and was exempt from the registration requirements of Section 5 of the Securities Act of 1933 pursuant to Section 4(2) of that Act.

ITEM 6. SELECTED CONSOLIDATED FINANCIAL DATA

The following table summarizes the financial data for our business. You should read the selected financial data in conjunction with our historical financial statements and related notes and the section of this annual report entitled "Management's Discussion and Analysis of Financial Condition and Results of Operations."

	YEAR ENDED APRIL 30			
	2001	2000	1999	
	(IN THOUSANDS, EXCEPT PER S			
STATEMENT OF OPERATIONS DATA:				
Revenue	$ 100,183	$ 62,506	$ 60,885	$
Cost of revenue	50,236	35,475	46,489	
Gross profit	49,947	27,031	14,396	
Operating expenses:				
Research and development	22,583	21,884	24,026	
Purchased in-process research and development	--	--	--	
Marketing and sales	16,218	13,002	12,280	
General and administrative	9,948	12,281	11,153	
Restructuring charges	--	--	2,318	
Total operating expenses	48,749	47,167	49,777	
Income (loss) from operations	1,198	(20,136)	(35,381)	

Interest and other income, net	1,130	1,280	2,600	
Income (loss) before provision for (benefit from) income taxes, equity in net earnings (loss) of affiliated companies and cumulative effect of change in accounting principle	2,328	(18,856)	(32,781)	
Provision for (benefit from) income taxes	37	102	(9,335)	
Income (loss) before equity in net earnings (loss) of affiliated companies and cumulative effect of change in accounting principle	2,291	(18,958)	(23,446)	
Equity in net earnings (loss) of affiliated companies	2	(1,489)	(1,082)	
Income (loss) before cumulative effect of change in accounting principle	2,293	(20,447)	(24,528)	
Cumulative effect of change in accounting principle, net of $0 tax	(1,785)	--	--	
Net income (loss)	$ 508	$(20,447)	$(24,528)	$
Net earnings (loss) per share:				
Basic				
Earnings (loss) before cumulative effect of change in accounting principle	$ 0.17	$ (1.53)	$ (1.89)	$
Cumulative effect of change in accounting principle	$ (0.13)	$ --	$ --	$
Basic earnings (loss) per share	$ 0.04	$ (1.53)	$ (1.89)	$
Diluted				
Earnings (loss) before cumulative effect of change in accounting principle	$ 0.17	$ (1.53)	$ (1.89)	$
Cumulative effect of change in accounting principle	$ (0.13)	$ --	$ --	$
Diluted earnings (loss) per share	$ 0.04	$ (1.53)	$ (1.89)	$
Weighted average common shares outstanding				
Basic	13,507	13,353	12,989	
Diluted	13,754	13,353	12,989	
Pro forma amounts assuming retroactive effect of change in accounting principle related to revenue recognition: (1)				
Net revenues	$ 100,183	$ 61,966	$ 63,194	
Net income (loss)	$ 508	$(20,700)	$(22,511)	
Basic earnings (loss) per share	$ 0.04	$ (1.55)	$ (1.73)	
Diluted earnings (loss) per share	$ 0.04	$ (1.55)	$ (1.73)	

	APRIL 30,			
	2001	2000	1999	
			(IN THOUSANDS)	
BALANCE SHEET DATA:				
Cash and cash equivalents	$ 29,220	$ 35,001	$ 61,278	$
Working capital	71,958	65,710	90,654	
Total assets	146,707	132,870	153,430	
Long-term debt, less current portion	11,339	11,950	12,537	
Total stockholders' equity	$ 104,664	$101,872	$120,822	$

* Data is not available to provide pro forma information for these years.

(1) The Company recorded a non-cash charge of $1.8 million, net of $0 taxes, or $0.13 per diluted share to reflect the cumulative effect of the accounting change as of May 1, 2000 related to the adoption of Staff Accounting Bulletin No. 101, "Revenue Recognition in Financial Statements." See Note 3 of the consolidated financial statements. The pro forma results for the prior periods presented above were calculated assuming the accounting change was made retroactively to those periods.

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

THE FOLLOWING DISCUSSION OF OUR FINANCIAL CONDITION AND RESULTS OF OPERATIONS SHOULD BE READ TOGETHER WITH THE DESCRIPTION OF BUSINESS, FINANCIAL STATEMENTS AND THE RELATED NOTES OF ADE WHICH APPEAR ELSEWHERE IN THIS ANNUAL REPORT. THE FOLLOWING DISCUSSION CONTAINS FORWARD-LOOKING STATEMENTS THAT REFLECT ADE'S PLANS, ESTIMATES AND BELIEFS. OUR ACTUAL RESULTS COULD DIFFER MATERIALLY FROM THOSE DISCUSSED BELOW AND IN THE FORWARD-LOOKING STATEMENTS APPEARING ELSEWHERE IN THIS ANNUAL REPORT.

OVERVIEW

ADE was founded in 1967 to develop and market certain advanced concepts and designs in capacitance and other measurement technologies suitable for industrial applications requiring precise, reliable, damage-free and repeatable measurements. Our products have evolved from single instruments used in off-line engineering analysis to multi-function systems for automated in-line monitoring of process-induced defects throughout the semiconductor wafer, device and data storage manufacturing processes. We operate three major business segments, the Semiconductor Systems Group (SSG), ADE Phase Shift (PST) and ADE Technologies (ATI). The Semiconductor Systems Group manufactures multifunctional semiconductor metrology and automation systems and optical wafer defect inspection equipment used to detect particles and other defects on silicon wafer surfaces. ADE Phase Shift manufactures high performance, non-contact surface metrology equipment using advanced interferometric technology that provides enhanced yield management to the data storage, semiconductor and optics industries. ADE Technologies manufactures high precision magnetic characterization and non-contact dimensional metrology gaging systems primarily for the data storage industry.

The Company changed its revenue recognition policy effective January 1, 2000, based on guidance provided in SEC Staff Accounting Bulletin No. 101 (SAB 101), "Revenue Recognition in Financial Statements." The Company recognizes revenue when persuasive evidence of an arrangement exists, delivery has occurred or services have been rendered, the seller's price is fixed or determinable and collectibility is reasonably assured. For some of the Company's sales transactions, a portion, usually 10%, of the fee is not due until installation occurs and the customer accepts the product. If the Company has met defined customer acceptance experience levels with a specific type of product, these transactions are accounted for as multiple-element arrangements with the deferral of the portion of the fee not due until installation is complete and customer acceptance has occurred. The portion of the fee related to the installation of the product and customer training is classified as service revenue. All other sales with customer acceptance provisions are recognized as revenue upon customer acceptance.

The Company's transactions frequently involve the sales of systems and services under multiple element arrangements. Revenue under multiple element

arrangements is allocated to all elements except systems based upon the fair value of those elements. The amounts allocated to training are based upon the price charged when this element is sold separately and unaccompanied by the other elements. The amount allocated to installation revenue is based upon hourly rates and the estimated time to complete the service. The amount allocated to system and parts is done on a residual method basis. Under this method, the total arrangement value is allocated first to undelivered elements, based on their fair values, with the remainder being allocated to systems revenue. Installation and training are not essential to the functionality of systems as these services do not alter the equipment's capabilities, are available from other vendors and the systems are standard products.

We accrue for anticipated warranty costs upon shipment. Service revenue is recognized as the services are performed provided collection of the related receivable is probable. Service contract revenue is recognized ratably over the contractual periods the services are provided. We do not provide the right to return products. Revenue from software licenses is recognized when an agreement has been executed, software has been delivered, fees are fixed or determinable and collection of the related receivable is

probable. Revenue from software consulting services provided on a time and reimbursable expense basis is recognized as the services are provided.

The Company previously recorded revenue on product sales upon shipment, provided that evidence of an arrangement exists, fees are fixed or determinable and collection of the related receivable is probable. In accordance with the guidance provided in SAB 101, the Company recorded a non-cash charge of $1.8 million, net of $0 income taxes, or $0.13 per share to reflect the cumulative effect of the change in accounting principle as of May 1, 2000, the beginning of the fiscal year. For the fiscal year ended April 30, 2001, the Company recognized approximately $1.7 million in revenue that was included in the cumulative effect adjustment as of May 1, 2000. The effect of that revenue was to increase income by $1.4 million (net of $0 in taxes) for the fiscal year ended April 30, 2001. The pro forma amounts presented in the Consolidated Statement of Operations were calculated assuming that the accounting change was retroactive to prior periods. For periods prior to fiscal year 1999, data was not available to provide pro forma information.

On June 11, 1998, ADE merged with Phase Shift Technology, Inc., an Arizona corporation. Each outstanding share of Phase Shift's common stock was exchanged for two shares of the ADE's common stock. A total of 2,000,000 shares of our common stock were issued in this transaction. This transaction has been accounted for as a pooling-of-interests. Accordingly, all prior period financial statements have been restated to reflect the inclusion of Phase Shift operations.

RESULTS OF OPERATIONS

The following table presents the percentage of total revenue for the respective line items in ADE's consolidated statements of operations.

	YEAR ENDED APRIL 30,		
	2001	2000	1999
Revenue	100.0%	100.0%	100.0%
Cost of revenue	50.1%	56.8%	76.3%

Gross profit	49.9%	43.2%	23.7%
Operating expenses:			
Research and development	22.5%	35.0%	39.5%
Marketing and sales	16.2%	20.8%	20.2%
General and administrative	9.9%	19.6%	18.3%
Restructuring charges	--	--	3.8%
Income (loss) from operations	1.2%	(32.2)%	(58.1)%
Interest and other income (expense), net	1.1%	2.0%	4.3%
Net income (loss)	0.1%	(32.7)%	(40.3)%

RESTRUCTURING

In January 1999, we began the consolidation of our Charlotte, North Carolina operations and certain of our Milpitas, California operations into our Massachusetts facilities to better align our cost structure with the prevailing semiconductor and data storage market conditions and to position ourselves with more efficient operations for expected industry recoveries. Anticipated savings upon the completion of the consolidation efforts included reduced cost of sales due to reduced capacity-related expense, reduced payroll and related costs and reduced travel costs. Expenses associated with these consolidations incurred in fiscal 2000 and 1999 totaled $3.5 million and $4.5 million, respectively. The fiscal 1999 consolidation expenses included a restructuring charge of $2.3 million and $2.2 million in other non-recurring expenses. The restructuring charges included severance costs of $1.2 million related to the termination of 71 employees in general and administrative, marketing and sales, manufacturing, and engineering functions; $185,000 in lease termination penalties; and $931,000 in non-cash fixed asset impairments related to

furniture, fixtures and building improvements on the terminated leased facilities. Other non-recurring expenses included travel, consulting, and employee retention bonuses and were included in general and administrative expenses. Retention bonus expense related to payments to employees who had been notified of their termination dates, but whose services were required through specified dates during the consolidation process. This expense was recorded ratably over the respective estimated service periods. During fiscal 2000 we incurred recruiting costs and labor redundancy costs associated with replacing certain personnel in Charlotte who elected not to relocate to Massachusetts. Moving and related costs were incurred through the end of January 2000 and were included in general and administrative expenses. During fiscal 2001, the remainder of the restructuring accrual was paid, which consisted of $278,000 of severance payments.

In July 2001, the Company reduced its workforce by approximately 5% as part of a cost-cutting program that was implemented in response to softening market conditions. All job reductions were associated with the Company's New England facilities.

REALIZABILITY OF DEFERRED TAX ASSETS

During the year ended April 30, 2001, we increased our valuation allowance against deferred tax assets by $2.2 million, as the full value of our capital loss carryforward in relation to the sale of one of the Company's investments during the year and temporary differences may not be realized. This increase was based upon weighing all evidence available to management, including fiscal 2001 pre-tax income of $2.3 million, current estimates of future taxable income, the cyclicality of the semiconductor and data storage industries and the current uncertainty within those markets. Net operating loss carryforwards generated in fiscal 1999 and 2000 begin to expire in fiscal 2004 for state income tax purposes and in fiscal 2019 for federal income tax purposes. We will need to

generate approximately $27.9 million of future taxable income to realize the benefit of our net deferred tax assets as of April 30, 2001. The amount of the deferred tax assets considered realizable could materially change in the near term if estimates of future taxable income change or do not materialize.

FISCAL YEAR ENDED APRIL 30, 2001 COMPARED TO FISCAL YEAR ENDED APRIL 30, 2000

REVENUE. Revenue increased 60.3% to $100.2 million in fiscal 2001 from $62.5 million in fiscal 2000. The increase was primarily due to increased unit sales of our products in all segments of our business. Increased sales of the Company's products were primarily due to an increase in demand for capital equipment in the semiconductor wafer and device industries while demand in the computer hard disk industry remained consistent compared with the prior year. Capital equipment utilization at wafer and device manufacturers has improved, resulting in some capital equipment purchases to adjust capacity on existing lines. Advanced industry requirements driven by shrinking device dimensions and larger silicon wafers have resulted in increased purchases of the Company's next generation of products.

Revenue from sales to Japan ADE Ltd, our 50% owned affiliate and a distributor of our products, by the Semiconductor Systems Group, ADE Technologies and ADE Phase Shift are reflected in segment revenue during the period they are shipped by the respective segment, which can differ from the period the revenue is recognized for consolidated financial reporting purposes. Consolidated revenue on sales to Japan ADE Ltd is recognized when the related product or software is shipped to and accepted by the end user of the product or software. Consolidated revenue in fiscal 2001 was $2.9 million less than aggregate segment revenue for this period and reflects the impact of revenue that was not recognized in fiscal 2001 for consolidated reporting purposes but was recognized during fiscal 2001 on a segment basis.

GROSS MARGIN. Gross margin increased to 49.9% in fiscal 2001 from 43.2% in fiscal 2000. The increase in the gross margin resulted primarily from the effect of increased sales volume of shipments of legacy products and increased absorption of overhead expenses due to significantly increased manufacturing activity in the SSG segment. In addition, our capacity utilization for the SSG segment

improved during fiscal 2001 compared to fiscal 2000 as a result of efficiencies realized since the completion of the consolidation of the SSG manufacturing operations from Charlotte, North Carolina into the Westwood, Massachusetts facility in the latter half of fiscal 2000. Gross margins at PST increased in fiscal 2001 compared to fiscal 2000 primarily as a result of increased sales volume, while gross margins at ATI decreased during fiscal 2001 compared to fiscal 2000 due to product mix.

RESEARCH AND DEVELOPMENT. Research and development expense in fiscal 2001 increased 3.2% to $22.6 million from $21.9 million in fiscal 2000 and decreased as a percentage of revenue to 22.5% from 35.0%. The increase in expense resulted primarily from continued investment by the SSG segment to develop its AFS and AWIS advanced wafer inspection systems to capitalize on the next wave of worldwide capital spending, which is expected to be focused on 300mm production. Also contributing to the increase in expense was continued investment by PST on its NanoMapper wafer nanotopography system. The overall increase in expense was offset somewhat by a decrease in project materials expenses at ATI. The decrease in expense as a percentage of revenues resulted primarily from the increase in revenues during fiscal 2001 compared to fiscal 2000. The Company has continued its development efforts to enhance its existing 200mm and advanced 200mm wafer systems as its semiconductor industry customers seek to improve their yields on 200mm wafers as well as efforts to develop and enhance bridge tools, which can

be used with either 200mm or 300mm wafers. The Company also continues to develop new products for the computer disk industry, including those, which measure the magnetic properties of materials used in manufacturing disk drives. The Company is committed to continuing its investment in research and development to maintain its position as a technological leader, which may necessitate continued research and development spending at or above current levels.

MARKETING AND SALES. Marketing and sales expense increased 24.7% to $16.2 million in fiscal 2001 from $13.0 million in fiscal 2000, and decreased as a percentage of revenue to 16.2% from 20.8%. The increased expense resulted primarily from increased commissions expense on sales made through external sales representatives, primarily in Asia, for the SSG segment due to increased sales volume during fiscal 2001 compared to fiscal 2000. Also contributing to the increase in expense was an increase in payroll and benefits expenses in SSG in fiscal 2001 compared to fiscal 2000. Expenses for PST and ATI remained consistent with the prior year. The mix of sales channels through which the Company's products are sold may have a significant impact on the Company's marketing and sales expense and the results in any period may not be indicative of marketing and sales expense for future periods.

GENERAL AND ADMINISTRATIVE. General and administrative expenses decreased 19.0% to $9.9 million in fiscal 2001 from $12.3 million in fiscal 2000 and decreased as a percentage of revenue to 9.9% from 19.6% in fiscal 2000. Expenses decreased primarily as a result of decreased payroll and travel expenses savings related to the final consolidation of SSG's Charlotte, North Carolina operations into the Westwood, Massachusetts facility which was completed during the latter half of fiscal 2000. Expenses at PST decreased due to a reallocation of benefits and expenses at ATI were consistent with the prior year.

OTHER INCOME. Other income was $1.1 million in fiscal 2001 versus $1.3 million in fiscal 2000. Fiscal 2001 interest and other income of $2.0 million was partially offset by interest expense of $841,000 associated with the Industrial Development Bonds used to finance the acquisition and renovation of our corporate headquarters and SSG manufacturing facility in Westwood, Massachusetts, the headquarters and manufacturing facility of ATI in Newton, Massachusetts and the construction of the PST headquarters and manufacturing facility in Tucson, Arizona.

PROVISION FOR INCOME TAXES. The provision for income taxes was $37,000 in 2001 compared to $102,000 in fiscal 2000. The fiscal 2001 provision for income taxes consisted of state and foreign income taxes and federal income taxes, all of which represent alternative minimum taxes. There was no change in net deferred tax assets during fiscal 2001.

FISCAL YEAR ENDED APRIL 30, 2000 COMPARED TO FISCAL YEAR ENDED APRIL 30, 1999

REVENUE. Revenue increased 2.7% to $62.5 million in fiscal 2000 from $60.9 million in fiscal 1999. The increase was primarily due to increased unit sales of our products. Increased sales of the Company's products were primarily due to an increase in demand for capital equipment in the semiconductor wafer and device industries as well as the computer hard disk industry. Capital equipment utilization at wafer and device manufacturers has improved, resulting in some capital equipment purchases to adjust capacity on existing lines. Advanced industry requirements driven by shrinking device dimensions and larger silicon wafers have resulted in technology purchases to evaluate the Company's next generation of products.

Revenue from sales to Japan ADE Ltd, our 50% owned affiliate and a distributor of our products, by the Semiconductor Systems Group and ADE Technologies are reflected in segment revenue during the period they are shipped

by the respective segment, which can differ from the period the revenue is recognized for consolidated financial reporting purposes. Consolidated revenue on sales to Japan ADE Ltd is recognized when the related product or software is shipped to and accepted by the end user of the product or software. Consolidated revenue in fiscal 2000 was $1.9 million more than aggregate segment revenue for this period and reflects the impact of revenue that was recognized in fiscal 2000 for consolidated reporting purposes but recognized in a prior period on a segment basis.

GROSS MARGIN. Gross margin increased to 43.2% in fiscal 2000 from 23.6% in fiscal 1999. The increase in the gross margin resulted primarily from the effect of increased sales volume and a reduction in material costs due to decreased excess and obsolete inventory expense during fiscal 2000 compared to fiscal 1999.

RESEARCH AND DEVELOPMENT. Research and development expense in fiscal 2000 decreased 8.9% to $21.9 million from $24.0 million in fiscal 1999 and decreased as a percentage of revenue to 35.0% from 39.5%. The decrease in expense resulted from cost control measures implemented during fiscal 2000 compared to fiscal 1999. The Company has continued its development efforts to enhance its existing 200mm and advanced 200mm wafer systems as its semiconductor industry customers seek to improve their yields on 200mm wafers as well as efforts to develop and enhance bridge tools, which can be used with either 200mm or 300mm wafers. The Company also continues to develop new products for the computer disk industry, including those, which measure the magnetic properties of materials used in manufacturing disk drives. The Company is committed to continuing its investment in research and development to maintain its position as a technological leader, which may necessitate continued research and development spending at or above current levels.

MARKETING AND SALES. Marketing and sales expense increased 5.9% to $13.0 million in fiscal 2000 from $12.3 million in fiscal 1999, and increased as a percentage of revenue to 20.8% from 20.2%. The increased expense resulted primarily from increased commissions expense due to increased sales volume during the third and fourth quarters of fiscal 2000. Also contributing to the increase was an increase in marketing expense due to an investment by the Company to enhance device marketing. The mix of sales channels through which the Company's products are sold may have a significant impact on the Company's marketing and sales expense and the results in any period may not be indicative of marketing and sales expense for future periods.

GENERAL AND ADMINISTRATIVE. General and administrative expenses increased 10.1% to $12.3 million in fiscal 2000 from $11.2 million in fiscal 1999 and increased as a percentage of revenue to 19.6% from 18.3%. Expenses increased primarily as a result of expenses related to the final consolidation of the Charlotte operations into the Westwood, Massachusetts facility.

OTHER INCOME. Other income was $1.3 million in fiscal 2000 versus $2.6 million in fiscal 1999. Fiscal 2000 interest and other income of $2.2 million was partially offset by interest expense of $919,000 associated with the Industrial Development Bonds used to finance the acquisition and renovation of our corporate headquarters and Semiconductor Systems Group manufacturing facility in Westwood,

Massachusetts, the headquarters and manufacturing facility of ADE Technologies in Newton, Massachusetts and the construction of the ADE Phase Shift manufacturing facility in Tucson, Arizona.

PROVISION FOR INCOME TAXES. The provision for income taxes was $102,000 in 2000 versus a benefit of $9.3 million in fiscal 1999. The fiscal 2000 provision

for income taxes consisted of state and foreign income taxes. The increase in deferred tax assets during fiscal 2000 was offset entirely by an increase in the valuation allowance of $7.1 million. The effective tax rate for fiscal 1999 was 28.5% and differed from the federal statutory rate primarily because of a $3 million increase in the valuation allowance against deferred tax assets as of April 30, 1999, partially offset by alternative minimum tax credit carryforwards.

SELECTED CONSOLIDATED QUARTERLY OPERATING RESULTS

The following table presents consolidated statement of operations data for each of the eight quarters in the period beginning May 1, 1999 and ending April 30, 2001. This information has been derived from ADE's unaudited consolidated financial statements. The unaudited financial statements have been prepared on the same basis as the audited financial statements and include all normal recurring adjustments considered necessary to present fairly this information when read in conjunction with ADE's annual audited financial statements and related notes appearing elsewhere in this annual report. Our quarterly operating results have varied and may continue to vary significantly. Our quarterly revenue typically is derived from a relatively small number of customer orders. These customer orders may consist of multiple systems, each of which are priced between approximately $100,000 and $750,000. As a result, the timing of significant orders or a reduction in the number of systems shipped in a quarter could have a material effect on our revenue and results of operations for that quarter. The results for a particular quarter may also vary due to a number of other factors, including:

- Economic conditions in the semiconductor and data storage industries
- Product mix of our sales for the period
- The sales distribution channel of our sales for the period
- Competitive pricing pressures
- Our ability to design, introduce and manufacture new products on a cost effective and timely basis
- Customer cancellations or rescheduled shipments
- Production difficulties or the inability to obtain critical components resulting in delayed shipments
- Seasonal factors such as customers' capital budget approval cycles.

These factors could have a material adverse effect on our results of operations. Significant levels of our expenses are fixed in advance and based in part on our expectations as to future revenue. As a consequence, any material shortfall in revenue in a given quarter could have a material adverse effect on our earnings.

	QUARTER ENDED				
JULY 31, 1999	OCT. 31, 1999	JAN. 31, 2000	APRIL 30, 2000	JULY 31, 2000(1)
		(IN THOUSANDS, EXCEPT PER SHAR		

STATEMENT OF OPERATONS DATA:					
Revenue	$ 12,362	$ 13,625	$ 16,576	$ 19,943	$ 21,387
Cost of revenue	7,249	8,904	9,225	10,097	11,111
Gross profit	5,113	4,721	7,351	9,846	10,276
Operating expenses:					
Research and development	5,556	4,571	5,411	6,346	5,154
Marketing and sales	2,717	3,367	3,134	3,784	4,262
General and administrative	3,560	2,877	2,964	2,880	2,228
Total operating expenses	11,833	10,815	11,509	13,010	11,644
Income (loss) from operations	(6,720)	(6,094)	(4,158)	(3,164)	(1,368)
Interest and other income (expense), net	149	374	318	439	340
Income (loss) before provision for (benefit from) income taxes, equity in net earnings (loss) of affiliated companies and cumulative effect of change in accounting principle	(6,571)	(5,720)	(3,840)	(2,725)	(1,028)
Provision for (benefit from) income taxes	--	--	--	102	--
Income (loss) before equity in net earnings (loss) of affiliated companies and cumulative effect of change in accounting principle	(6,571)	(5,720)	(3,840)	(2,827)	(1,028)
Equity in net earnings (loss) of affiliated companies	(614)	(149)	(676)	(50)	(722)
Income (loss) before cumulative effect of change in accounting principle	(7,185)	(5,869)	(4,516)	(2,877)	(1,750)
Cumulative effect of change in accounting principle, net of $0 tax	--	--	--	--	(1,785)
Net Income (loss)	$ (7,185)	$ (5,869)	$ (4,516)	$ (2,877)	$ (3,535)
Net earnings (loss) per share:					
Basic					
Earnings (loss) before cumulative effect of change in accounting principle	$ (0.54)	$ (0.44)	$ (0.34)	$ (0.21)	$ (0.13)
Cumulative effect of change in accounting principle	$ --	$ --	$ --	$ --	$ (0.13)
Basic earnings (loss) per share	$ (0.54)	$ (0.44)	$ (0.34)	$ (0.21)	$ (0.26)
Diluted					
Earnings (loss) before cumulative effect of change in accounting principle	$ (0.54)	$ (0.44)	$ (0.34)	$ (0.21)	$ (0.13)
Cumulative effect of change in accounting principle	$ --	$ --	$ --	$ --	$ (0.13)
Diluted earnings (loss) per share	$ (0.54)	$ (0.44)	$ (0.34)	$ (0.21)	$ (0.26)
Weighted average shares					

outstanding--basic.....	13,198	13,360	13,403	13,458	13,483
Weighted average shares outstanding--diluted.....	13,198	13,360	13,403	13,458	13,483

	QUARTER ENDED				
	JULY 31, 1999	OCT. 31, 1999	JAN. 31, 2000	APRIL 30, 2000	JULY 31, 2000
PERCENTAGE OF REVENUE:					
Revenue.....	100.0%	100.0%	100.0%	100.0%	100.0%
Cost of revenue.....	58.6%	65.4%	55.7%	50.6%	52.0%
Gross profit.....	41.4%	34.6%	44.3%	49.4%	48.0%
Operating expenses:					
Research and development.....	44.9%	33.5%	32.6%	31.8%	24.1%
Marketing and sales.....	22.0%	24.7%	18.9%	19.0%	19.9%
General and administrative.....	28.8%	21.1%	17.9%	14.4%	10.4%
Income (loss) from operations.....	(54.4)%	(44.7)%	(25.1)%	(15.9)%	(6.4)%
Other income, net.....	1.2%	2.7%	1.9%	2.2%	1.6%
Net income (loss).....	(58.1)%	(43.1)%	(27.2)%	(14.4)%	(16.5)%

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(1) Effective May 1, 2000, the Company changed its method of accounting for revenue recognition in accordance with Staff Accounting Bulletin No. 101 (SAB 101). As a result, the quarterly information presented above for the first three quarters of fiscal 2001 has been restated from that previously filed on the Quarterly Reports on Form 10-Q. The adoption of SAB 101 had the effect of decreasing net revenue by $430,000, increasing net loss by $2.3 million and decreasing basic and diluted loss by $0.17 per share for the first quarter of fiscal 2001. The adoption of SAB 101 had the effect of decreasing net revenue and net income by $373,000 and $249,000, respectively, and decreasing basic and diluted earnings per share by $0.02 per share for the second quarter of fiscal 2001. The adoption of SAB 101 had the effect of increasing net revenue by $93,000, decreasing net income by $17,000, decreasing diluted earnings per share by $0.01 and no effect on basic earnings per share for the third quarter of fiscal 2001.

Our quarterly operating results have varied and may continue to vary significantly due to a number of factors, including economic conditions in the semiconductor and data storage industries, the timing of shipments of orders to major customers, the mix of products sold and competitive pricing. Customers may cancel or reschedule shipments. Product shipments could be delayed by production difficulties or critical component inventory shortages. These factors could have a material adverse effect on our results of operations. As cost of revenue includes manufacturing overhead, which is relatively constant from quarter to quarter, gross margin can vary significantly from quarter to quarter due to varying levels of production and revenue. Marketing and sales expenses can vary from quarter to quarter based on a number of factors, including mix of sales channels, geographic mix and the timing of marketing events. There can be no assurance that we will be profitable in any future period.

LIQUIDITY AND CAPITAL RESOURCES

At April 30, 2001, we had $29.2 million in cash and cash equivalents and $72.0 million in working capital. In addition, we had $3.5 million in restricted cash used as security for a tax-exempt Industrial Development Bond issued through the Massachusetts Industrial Finance Agency in December 1997. We may substitute a letter of credit in an amount equal to approximately 105% of the outstanding principal balance as collateral for our obligations under this bond, assuming we have the ability to borrow under a credit facility. This substitution would allow the restricted cash balance to be used for general corporate purposes.

Cash used in operating activities for the year ended April 30, 2001 was $1.7 million. This amount resulted from net income of $0.5 million, adjusted for net non-cash charges of $7.7 million and a $9.9 million net increase in working capital accounts. Non-cash items primarily consisted of $5.8 million of depreciation and amortization and $1.8 million from the cumulative effect of the change in accounting.

The net increase in working capital total of $9.9 million was comprised of increased accounts receivable, inventories and prepaid expenses of $9.9 million, $8.9 million and $810,000, respectively, as well as increases in accounts payable, accrued expenses and other current liabilities and deferred income on sales to Japan ADE Ltd. (JAL), our 50% owned Japanese affiliate, of $2.8 million, $5.1 million and $1.8 million, respectively.

The increase in accounts receivable resulted from the significantly increased billings and revenue during fiscal 2001. The increase in inventory resulted primarily from inventory purchases related to a ramp up in production to meet the increase in customer orders. The increase in prepaid expenses results primarily from the timing of payments and an increase in prepaid commissions due to increased sales levels. The increase in accounts payable resulted primarily from increased purchases of inventory. The increase in accrued expenses and other current liabilities resulted from increases in deferred revenue and accrued warranty, which is related to increased sales levels. The increase in deferred income on sales to Japan ADE Ltd. is due to the timing of shipments to JAL and the acceptance of those shipments by JAL's customers.

Cash used in investing activities was $4.3 million, and consisted of $3.7 million for purchases of fixed assets, $449,000 in advances to affiliated companies and an increase in other assets of $367,000 and a decrease in restricted cash of $180,000.

Cash provided by financing activities was $211,000 and consisted of proceeds from the issuance of common stock from the exercise of stock options and the purchase of stock under the employee stock purchase plan of $799,000. This amount was partially offset by $588,000 in repayments of long-term debt.

We expect to meet our near-term working capital needs and capital expenditures primarily through our available cash and cash equivalents.

NEW ACCOUNTING PRONOUNCEMENTS

In June 1998, the Financial Accounting Standards Board ("FASB") issued Statement of Financial Accounting Standards ("SFAS") No. 133, "Accounting for Derivative Instruments and Hedging Activities", as amended by SFAS No. 137, "Accounting for Derivative Instrument and Hedging Activities-Deferral of Effective Date of FASB Statement No. 133," and SFAS No. 138, "Accounting for Certain Derivative Instruments and Certain Hedging Activities--an amendment of FASB Statement No. 133," which establishes accounting and reporting standards for derivative instruments and hedging activities. The Company will adopt SFAS

No. 133, as amended, in fiscal year 2002. To date the Company has not utilized derivative instruments or hedging activities and, therefore, the adoption of SFAS 133 is not expected to have a significant impact on our financial position or results of operations.

In July 2001, the FASB issued SFAS No. 141, "Business Combinations" and SFAS No. 142, "Goodwill and Other Intangible Assets." SFAS No. 141 requires that all business combinations be accounted for under the purchase method only and that certain acquired intangible assets in a business combination be recognized as assets apart from goodwill. SFAS No. 142 requires that ratable amortization of goodwill be replaced with periodic tests of the goodwill's impairment and that intangible assets other than goodwill be amortized over their useful lives. SFAS No. 141 is effective for all business combinations initiated after June 30, 2001 and for all business combinations accounted for by the purchase method for which the date of acquisition is after June 30, 2001. The provisions of SFAS No. 142 will be effective for fiscal years beginning after December 15, 2001, and will thus be adopted by the Company, as required, in fiscal year 2003. The impact of SFAS No. 141 and SFAS No. 142 on the Company's financial statements has not yet been determined.

INFLATION

To date, inflation has not had a significant impact on our operations.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

At April 30, 2001, the Company's exposure to market risk relates primarily to changes in interest rates on its investment portfolio. The Company's cash equivalents consist primarily of fixed income securities. The Company invests only with high credit quality issuers and does not use derivative financial instruments in its investment portfolio. We do not believe that a sharp increase or decrease in interest rates would have a material adverse impact on the fair value of our investment portfolio. The Company's long-term borrowings are at fixed interest rates.

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

The information required by Item 8 is contained on pages F-1 through F-23 of this report.

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

None.

PART III

ITEM 10. DIRECTORS AND EXECUTIVE OFFICERS OF THE REGISTRANT

The information regarding directors required by this Item is included in the definitive Proxy Statement for the Company's 2001 Annual Meeting of Stockholders, to be filed with the Commission on or about August 16, 2001 under "Election of Directors" and is incorporated herein by reference. The information regarding executive officers required by this Item is included in Part I of this Form 10-K.

ITEM 11. EXECUTIVE COMPENSATION

The information required by this Item is included in the 2001 Proxy Statement under "Executive Compensation" and is incorporated herein by reference (excluding, however, the "Report on Executive Compensation" and the Performance Graph contained in the 2001 Proxy Statement, which shall not be deemed incorporated herein).

ITEM 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT

The information required by this Item is included in the 2001 Proxy Statement under "Security Ownership of Certain Beneficial Owners and Management" and is incorporated herein by reference.

ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS

Not applicable.

PART IV

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

(a)(1) Financial Statements. The Financial Statements required to be filed by Item 8 of Form 10-K, and filed herewith, are as follows:

All other schedules are omitted because they are either not applicable or the required information is included in the financial statements or related notes.

(a)(3) Exhibits.

EXHIBIT NUMBER	DESCRIPTION
2.1	Agreement and Plan of Merger dated as of February 27, 1997 by and between ADE Corporation, ADE Technologies, Inc., Digital Measurement Systems, Inc., Dennis E. Speliotis, Elias Speliotis, Evanthia Speliotis, Ismene Speliotis, Advanced Development Corporation, David C. Bono and Alan Sliski (filed as Exhibit 10.18 to the Company's Form 10-K for the fiscal year ended April 30, 1997 and incorporated herein by reference).
2.2	Agreement and Plan of Merger dated as of May 31, 1998 by and among ADE Corporation, Theta Acquisition Corp., Phase Shift Technology, Inc., Chris Koliopoulos and David Basila (filed as Exhibit 2 to the Company's Form 8-K dated June 25, 1998 and incorporated herein by reference).
2.3	Purchase and Sale Agreement dated as of February 28, 1997 by and between ADE Corporation and Dennis E. Speliotis, individually and as Trustee of Thouria Investment Trust under a Declaration of Trust dated August 18, 1992, Elias Speliotis, Evanthia Speliotis and Ismene Speliotis (filed as Exhibit 10.20 to the Company's Form 10-K for the fiscal year ended April 30, 1997 and incorporated herein by reference).
3.1	Restated Articles of Organization (filed as Exhibit 3.1 to the Company's Registration Statement on Form S-1 (33-96408) or amendments thereto and incorporated herein by reference).
3.2	By-laws (filed as Exhibit 3.2 to the Company's Registration Statement on Form S-1 (33-96408) or amendments thereto and incorporated herein by reference).
4.1	Registration Rights Agreement dated as of February 28, 1997 by and between ADE Corporation and Dennis E. Speliotis, individually and as Trustee of Thouria Investment Trust under a Declaration of Trust dated August 18, 1992 recorded in the Middlesex South District Registry of Deeds at Book 22305, Page 375 (filed as Exhibit 10.21 to the Company's Form 10-K for the fiscal year ended April 30, 1997 and incorporated herein by reference).
4.2	Registration Rights Agreement dated as of February 27, 1997, by and among ADE Corporation and Advanced Development Corporation, David C. Bono and Alan Sliski (filed as Exhibit 10.19 to the Company's Form 10-K for the fiscal year ended April 30, 1997 and incorporated herein by reference).
4.3	Registration Rights Agreement dated as of May 31, 1998 by and among ADE Corporation, Chris Koliopoulos and David Basila (filed as Exhibit 4.6 to the Company's Form 8-K dated June 25, 1998 and incorporated herein by reference).
10.1	Form of Employee Confidentiality Agreement (filed as Exhibit 10.1 to the Company's Registration Statement on Form S-1 (333-96408) or amendments thereto and incorporated herein by reference).

10.2	2000 Stock Option Plan (filed as Exhibit A to the Company's Proxy Statement with respect to its Annual Meeting of Shareholders for the fiscal year ended April 30, 2000 and incorporated herein by reference).*
10.3	1997 Stock Option Plan (filed as Exhibit 4.3 to the Company's Registration Statement on Form S-8(333-46505) or amendments thereto and incorporated herein by reference).*

10.4	Amendment to 1997 Stock Option Plan dated April 7, 1999 (filed as Exhibit 10.3 to the Company's Form 10-K for the fiscal year ended April 30, 1999 and incorporated herein by reference).*
10.5	1995 Stock Option Plan (filed as Exhibit 10.4 to the Company's Registration Statement on Form S-1 (33-96408) or amendments thereto and incorporated herein by reference).*
10.6	1992 Stock Option Plan (filed as Exhibit 10.5 to the Company's Registration Statement on Form S-1 (33-96408) or amendments thereto and incorporated herein by reference).*
10.7	Amendment to 1992 Stock Option Plan dated April 7, 1999 (filed as Exhibit 10.6 to the Company's Form 10-K for the fiscal year ended April 30, 1999 and incorporated herein by reference).*
10.8	1982 Stock Option Plan (filed as Exhibit 4.5 to the Company's Registration Statement on Form S-8 (333-2280) and incorporated herein by reference).*
10.9	Employee Stock Purchase Plan (as amended) (filed as Exhibit 10.6 to the Company's Form 10-K for the fiscal year ended April 30, 1996 and incorporated herein by reference).*
10.11	Purchase and Sale Agreement for 80 Wilson Way, Westwood, Massachusetts, dated January 11, 1996, between Met Path New England, Inc., and the Company, with Schedules (filed as Exhibit 10.12 to the Company's Form 10-K for the fiscal year ended April 30, 1996 and incorporated herein by reference).
10.12	Loan Agreement dated as of June 7, 1996, among GE Capital Public Finance, Inc., Massachusetts Industrial Finance Agency and the Company (filed as Exhibit 10.9 to the Company's Form 10-K for the fiscal year ended April 30, 1996 and incorporated herein by reference).
10.13	Certificate as to Nonarbitrage and Tax Compliance, dated as of June 7, 1996, from the Company to Massachusetts Industrial Finance Agency (filed as Exhibit 10.10 to the Company's Form 10-K for the fiscal year ended April 30, 1996 and incorporated herein by reference).
10.14	Letter of Credit Agreement, dated June 7, 1996, between Citizens Bank of Massachusetts and the Company (filed as Exhibit 10.11 to the Company's Form 10-K for the fiscal year ended April 30, 1996 and incorporated herein by reference).

10.15	Mortgage, Security Agreement, and Assignment, dated June 7, 1996, from the Company to Citizens Bank of Massachusetts (filed as Exhibit 10.13 to the Company's Form 10-K for the fiscal year ended April 30, 1996 and incorporated herein by reference).
10.16	Pledge Agreement, dated June 7, 1996, from the Company to Citizens Bank of Massachusetts (filed as Exhibit 10.14 to the Company's Form 10-K for the fiscal year ended April 30, 1996 and incorporated herein by reference).
10.17	Oil and Hazardous Materials Indemnification Agreement, dated June 7, 1996, between the Company and Citizens Bank of Massachusetts (filed as Exhibit 10.15 to the Company's Form 10-K for the fiscal year ended April 30, 1996 and incorporated herein by reference).
10.18	Indemnification Agreement, dated as of February 28, 1996, among MetPath of New England, Inc., Corning Life Sciences, Inc. and the Company (filed as Exhibit 10.16 to the Company's Form 10-K for the fiscal year ended April 30, 1996 and incorporated herein by reference).
10.19	Letter Agreement regarding collateral assignment of Indemnification from the Company to Citizens Bank of Massachusetts, with attachment, (filed as Exhibit 10.17 to the Company's Form 10-K for the fiscal year ended April 30, 1996 and incorporated herein by reference).

10.20	Noncompetition Agreement dated as of May 31, 1998 by and between ADE Corporation and Chris Koliopoulos (filed as Exhibit 10.21 to the Company's Form 10-K for the fiscal year ended April 30, 1998, and incorporated herein by reference).
10.21	Noncompetition Agreement dated as of May 31, 1998 by and between ADE Corporation and David Basila (filed filed as Exhibit 10.22 to the Company's Form 10-K for the fiscal year ended April 30, 1998, and incorporated herein by reference).
21.1	Subsidiaries of the Company (filed as Exhibit 21.1 to the Company's Form 10-Q for the quarter ended October 31, 2000 and incorporated herein by reference).
23.1	Consent of PricewaterhouseCoopers LLP (filed herewith).
24.1	Power of Attorney (filed herewith as part of the signature page hereto).

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* Compensatory plan or agreement applicable to management and employees.

(b) Reports on Form 8-K

There were no reports on Form 8-K filed by the Company during the fourth quarter

of fiscal year 2001.

SIGNATURES

PURSUANT TO THE REQUIREMENTS OF SECTION 13 OR 15(D) OF THE SECURITIES EXCHANGE ACT OF 1934, THE COMPANY HAS DULY CAUSED THIS ANNUAL REPORT ON FORM 10-K TO BE SIGNED ON ITS BEHALF BY THE UNDERSIGNED, THEREUNTO DULY AUTHORIZED.

ADE CORPORATION

July 19, 2001

By: /s/ ROBERT C. ABBE
Robert C. Abbe
PRESIDENT AND CHIEF EXECUTIVE OFFICER

Each person whose signature appears below constitutes and appoints Robert C. Abbe, Brian C. James, Eileen Smith Ewing, and each of them, his true and lawful attorneys-in-fact and agents, with full power of substitution and resubstitution in each of them, for him and in his name, place, and stead, and in any and all capacities, to sign this annual report on Form 10-K of ADE Corporation and any amendments thereto, and to file the same, with all exhibits thereto and any other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorneys-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing requisite or necessary to be done in and about the premises, as fully and to all intents and purposes as he might or could do in person, hereby ratifying and confirming all that said attorneys-in-fact and agents or any of them or their or his substitute or substitutes may lawfully do or cause to be done by virtue hereof.

PURSUANT TO THE REQUIREMENTS OF THE SECURITIES EXCHANGE ACT OF 1934, THIS REPORT HAS BEEN SIGNED BELOW BY THE FOLLOWING PERSONS ON BEHALF OF THE COMPANY IN THE CAPACITIES AND ON THE DATES INDICATED.

SIGNATURE	TITLE	DATE
/s/ ROBERT C. ABBE Robert C. Abbe	President, Chief Executive Officer and Director (Principal Executive Officer)	July 19,
/s/ BRIAN C. JAMES Brian C. James	Vice President, Treasurer and Chief Financial Officer (Principal Financial Officer)	July 19,
/s/ JOSEPH E. ROVATTI Joseph E. Rovatti	Controller (Principal Accounting Officer)	July 19,
/s/ LANDON T. CLAY Landon T. Clay	Chairman of the Board	July 19,
/s/ CHRIS L. KOLIOPOULOS	Vice President of ADE, President	July 19,

Chris L. Koliopoulos	of ADE Phase Shift and Director

SIGNATURE	TITLE	DATE
/s/ FRANCIS B. LOTHROP, JR. Francis B. Lothrop, Jr.	Director	July 19,
/s/ H. KIMBALL FAULKNER H. Kimball Faulkner	Director	July 19,
/s/ KENDALL WRIGHT Kendall Wright	Director	July 19,
/s/ HARRIS CLAY Harris Clay	Director	July 19,

REPORT OF INDEPENDENT ACCOUNTANTS

To the Board of Directors and Stockholders
of ADE Corporation

In our opinion, the consolidated financial statements listed in the index appearing under Item 14 (a)(1) on page 26 present fairly, in all material respects, the financial position of ADE Corporation and its subsidiaries at April 30, 2001 and 2000, and the results of their operations and their cash flows for each of the three years in the period ended April 30, 2001, in conformity with accounting principles generally accepted in the United States of America. In addition, in our opinion, the financial statement schedule listed in the index appearing under Item 14 (a) (2) on page 26 presents fairly, in all material respects, the information set forth therein when read in conjunction with the related consolidated financial statements. These financial statements and financial statement schedule are the responsibility of the Company's management; our responsibility is to express an opinion on these financial statements and financial statement schedule based on our audits. We conducted our audits of these statements in accordance with auditing standards generally accepted in the United States of America, 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 our opinion.

As discussed in Note 3 to the consolidated financial statements, during the year ended April 30, 2001, the Company changed its method of recognizing revenue.

PricewaterhouseCoopers LLP

Boston, Massachusetts
June 19, 2001

ADE CORPORATION

CONSOLIDATED BALANCE SHEETS

(IN THOUSANDS, EXCEPT SHARE DATA)

	APRIL 30, 2001	APRIL 30, 2000
ASSETS		
Current assets:		
Cash and cash equivalents	$ 29,220	$ 35,001
Marketable securities	1,913	--
Accounts receivable:		
Trade, less allowance for doubtful accounts of $917 and $629, respectively	20,898	13,935
Affiliate	3,526	614
Inventories	39,025	29,968
Prepaid expenses and other current assets	1,566	756
Deferred income taxes	6,514	4,484
Total current assets	102,662	84,758
Fixed assets, net	29,569	30,724
Deferred income taxes	4,076	6,106
Investments	3,221	3,331
Intangible assets, net	3,286	3,892
Restricted cash	3,525	3,705
Other assets	368	354
Total assets	$146,707	$132,870
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Current portion of long-term debt	$ 621	$ 598
Accounts payable	6,833	4,017
Accrued expenses and other current liabilities	21,134	14,096
Deferred income on sales to affiliate	2,116	337
Total current liabilities	30,704	19,048
Long-term debt	11,339	11,950
Commitments and contingencies (Note 16)		
STOCKHOLDERS' EQUITY:		
Preferred stock, $1.00 par value; 1,000,000 shares authorized; none issued or outstanding	--	--
Common stock, $.01 par value; 25,000,000 shares authorized; 13,552,966 and 13,479,066 issued and		

outstanding at April 30, 2001 and 2000, respectively....	136	135
Capital in excess of par value.....	102,429	101,580
Retained earnings.....	686	178
Accumulated other comprehensive income.....	1,413	--
	104,664	101,893
Deferred compensation.....	--	(21)
	104,664	101,872
Total liabilities and stockholders' equity.....	$146,707	$132,870

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

ADE CORPORATION

CONSOLIDATED STATEMENTS OF OPERATIONS

(IN THOUSANDS, EXCEPT PER SHARE DATA)

	YEAR ENDED APRIL 30,		
	2001	2000	1999
Net Revenue:			
System and parts.....	$ 74,390	$ 46,120	$ 40,761
System and parts--affiliate.....	15,452	8,787	9,254
Service.....	10,341	7,599	10,870
Total revenue.....	100,183	62,506	60,885
Cost of revenue:			
System and parts.....	31,704	21,893	28,341
System and parts--affiliate.....	6,343	3,285	4,012
Service.....	12,189	10,297	14,136
Total cost of revenue.....	50,236	35,475	46,489
Gross profit.....	49,947	27,031	14,396
Operating expenses:			
Research and development.....	22,583	21,884	24,026
Marketing and sales.....	16,218	13,002	12,280
General and administrative.....	9,948	12,281	11,153
Restructuring charges.....	--	--	2,318
Total operating expenses.....	48,749	47,167	49,777
Income (loss) from operations.....	1,198	(20,136)	(35,381)
Other income (expense):			
Interest and other income.....	1,971	2,199	3,220
Interest expense.....	(841)	(919)	(620)
Income (loss) before provision for (benefit from) income			

taxes, equity in net loss of affiliated companies and cumulative effect of change in accounting principle	2,328	(18,856)	(32,781)
Provision for (benefit from) income taxes	37	102	(9,335)
Income (loss) before equity in net earnings (loss) of affiliated companies and cumulative effect of change in accounting principle	2,291	(18,958)	(23,446)
Equity in net earnings (loss) of affiliated companies	2	(1,489)	(1,082)
Income (loss) before cumulative effect of change in accounting principle	2,293	(20,447)	(24,528)
Cumulative effect of change in accounting principle, net of $0 tax	(1,785)	--	--
Net income (loss)	$ 508	$(20,447)	$(24,528)
Net earnings (loss) per share:			
Basic			
Earnings (loss) before cumulative effect of change in accounting principle	$ 0.17	$ (1.53)	$ (1.89)
Cumulative effect of change in accounting principle	$ (0.13)	$ --	$ --
Basic earnings (loss) per share	$ 0.04	$ (1.53)	$ (1.89)
Diluted			
Earnings (loss) before cumulative effect of change in accounting principle	$ 0.17	$ (1.53)	$ (1.89)
Cumulative effect of change in accounting principle	$ (0.13)	$ --	$ --
Diluted earnings (loss) per share	$ 0.04	$ (1.53)	$ (1.89)
Pro forma amounts assuming retroactive effect of change in accounting principle related to revenue recognition:			
Net revenues	$100,183	$ 61,966	$ 63,194
Net income (loss)	$ 508	$(20,700)	$(22,511)
Basic earnings (loss) per share	$ 0.04	$ (1.55)	$ (1.73)