

SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

FORM S-4
REGISTRATION STATEMENT
UNDER
THE SECURITIES ACT OF 1933

MKS INSTRUMENTS, INC.
(EXACT NAME OF REGISTRANT AS SPECIFIED IN ITS CHARTER)

MASSACHUSETTS
(STATE OR OTHER JURISDICTION OF
INCORPORATION OR ORGANIZATION)

3823
(PRIMARY STANDARD INDUSTRIAL
CLASSIFICATION CODE NUMBER)

04-2277512
(I.R.S. EMPLOYER
IDENTIFICATION NUMBER)

SIX SHATTUCK ROAD
ANDOVER, MA 01810
(978) 975-2350
(ADDRESS, INCLUDING ZIP CODE, AND TELEPHONE NUMBER,
INCLUDING AREA CODE, OF REGISTRANT'S PRINCIPAL EXECUTIVE OFFICES)

JOHN R. BERTUCCI
CHAIRMAN AND CHIEF EXECUTIVE OFFICER
MKS INSTRUMENTS, INC.
SIX SHATTUCK ROAD
ANDOVER, MA 01810
(978) 975-2350
(NAME, ADDRESS, INCLUDING ZIP CODE, AND TELEPHONE
NUMBER, INCLUDING AREA CODE, OF AGENT FOR SERVICE)

COPIES TO:

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NEIL H. ARONSON, ESQ.
MINTZ, LEVIN, COHN, FERRIS,
GLOVSKY AND POPEO, P.C.
ONE FINANCIAL CENTER
BOSTON, MASSACHUSETTS 02111
TELEPHONE: (617) 542-6000
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APPROXIMATE DATE OF COMMENCEMENT OF PROPOSED SALE TO THE PUBLIC: As soon as practicable after this Registration Statement becomes effective and certain other conditions under the Merger Agreement are met or waived.

If the securities being registered on this Form are being offered in connection with the formation of a holding company and there is compliance with General Instruction G, check the following box. []

If this Form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. []

If this Form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. []

CALCULATION OF REGISTRATION FEE

TITLE OF EACH CLASS OF SECURITIES TO BE REGISTERED	AMOUNT TO BE REGISTERED(1)	PROPOSED MAXIMUM OFFERING PRICE PER SHARE(2)	PROPOSED MAXIMUM AGGREGATE OFFERING PRICE(2)	AMOUNT OF REGISTRATION FEE
Common Stock, no par value per share.....	12,061,400 shares	\$13.66	\$164,758,724	\$43,497

- (1.) Based upon the estimated maximum number of shares of common stock of the Registrant issuable in the merger described herein in respect of outstanding (a) shares of Applied Science and Technology, Inc. common stock and (b) options to acquire Applied Science and Technology, Inc. common stock.
- (2.) Estimated solely for purposes of calculating the registration fee pursuant to Rules 457(c) and 457(f) under the Securities Act of 1933, as amended, and based upon the average of the high and low prices of Applied Science and Technology, Inc.'s common stock as reported on the Nasdaq National Market on November 6, 2000.

THE REGISTRANT HEREBY AMENDS THIS REGISTRATION STATEMENT ON SUCH DATE OR DATES AS MAY BE NECESSARY TO DELAY ITS EFFECTIVE DATE UNTIL THE REGISTRANT SHALL FILE A FURTHER AMENDMENT WHICH SPECIFICALLY STATES THAT THIS REGISTRATION STATEMENT SHALL THEREAFTER BECOME EFFECTIVE IN ACCORDANCE WITH SECTION 8(a) OF THE SECURITIES ACT OF 1933 OR UNTIL THE REGISTRATION STATEMENT SHALL BECOME EFFECTIVE ON SUCH DATE AS THE COMMISSION, ACTING PURSUANT TO SAID SECTION 8(a), MAY DETERMINE.

[MKS INSTRUMENTS LOGO]

, 2000

Dear Stockholders of MKS Instruments, Inc.:

I am writing to you today about a proposed merger of Applied Science and Technology, Inc., referred to in this joint proxy statement/prospectus as "ASTeX," with MKS Instruments, Inc.

In the merger, each share of ASTeX common stock will be exchanged for 0.7669 of a share of MKS common stock. MKS expects to issue approximately 11,200,000 shares of its common stock in the merger. Upon completion of the merger, ASTeX stockholders will own approximately 30% of MKS' outstanding common stock. MKS common stock is traded on the Nasdaq National Market under the trading symbol "MKSI" and closed at a price of \$18.125 per share on November 7, 2000. MKS stockholders will continue to own their existing shares after the merger.

We cannot complete the merger unless the stockholders of MKS approve the issuance of MKS common stock to ASTeX stockholders in the merger. The board of directors of MKS has unanimously approved the merger and recommends that you approve the issuance of MKS common stock in the merger.

The accompanying joint proxy statement/prospectus provides detailed information about MKS, ASTeX and the merger. Please give all of this information your careful attention. In particular, you should carefully consider the discussion in the section entitled "Risk Factors" beginning on page 11 of the joint proxy statement/prospectus.

Your vote is very important regardless of the number of shares you own. To vote your shares, you may use the enclosed proxy card or attend the special meeting. To approve the proposal submitted to you, you must vote "FOR" the proposal by following the instructions stated on the enclosed proxy card.

Sincerely,

/s/ JOHN R. BERTUCCI

JOHN R. BERTUCCI
Chairman and Chief Executive Officer

APPLIED SCIENCE AND TECHNOLOGY, INC.
[LOGO]

A MERGER PROPOSAL -- YOUR VOTE IS VERY IMPORTANT

Dear Stockholders of Applied Science and Technology, Inc.:

The board of directors of Applied Science and Technology, Inc., referred to in this joint proxy statement/prospectus as "ASTeX," has approved a merger agreement with MKS Instruments, Inc.

We will hold our annual stockholders' meeting on _____, _____, __, 200__ at 10:00 a.m. local time at the offices of Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C., One Financial Center, Boston, Massachusetts 02111, at which we will ask you to adopt the merger agreement. If the merger agreement is adopted:

- ASTeX will become a wholly owned subsidiary of MKS; and
- You will receive 0.7669 of a share of MKS common stock in exchange for each of your shares of ASTeX common stock.

MKS' common stock is listed on the Nasdaq National Market under the symbol "MKSI." On November 7, 2000, MKS common stock closed at \$18.125 per share.

At our annual meeting, we will also ask you to elect directors and ratify the selection of our auditors. The directors will serve until the completion of the proposed merger with MKS or, if earlier, until the expiration of their term as directors.

PLEASE CAREFULLY CONSIDER ALL OF THE INFORMATION IN THIS JOINT PROXY STATEMENT/PROSPECTUS REGARDING ASTEX, MKS AND THE MERGER, INCLUDING IN PARTICULAR THE DISCUSSION IN THE SECTION CALLED "RISK FACTORS" STARTING ON PAGE 11.

Sincerely,

/s/ RICHARD S. POST

RICHARD S. POST
Chairman of the Board and
Chief Executive Officer

NEITHER THE SECURITIES AND EXCHANGE COMMISSION NOR ANY STATE SECURITIES COMMISSION HAS APPROVED OR DISAPPROVED OF THE MERGER OR THE SECURITIES OF MKS TO BE ISSUED IN THE MERGER, OR DETERMINED IF THIS JOINT PROXY STATEMENT/PROSPECTUS IS ACCURATE OR COMPLETE. ANY REPRESENTATION TO THE CONTRARY IS A CRIMINAL OFFENSE.

This joint proxy statement/prospectus is dated _____, 200_, and was first mailed to MKS and ASTeX stockholders on or about _____, 200_.

SOURCES OF ADDITIONAL INFORMATION

This joint proxy statement/prospectus incorporates important business and financial information about MKS and ASTeX that is not included or delivered with this document. This information is available without charge to you upon oral or written request. Requests for MKS information should be made to Investor Relations, MKS Instruments, Inc., Six Shattuck Road, Andover, Massachusetts 01810, telephone: (978) 975-2350. Requests for ASTeX information should be made to Investor Relations, Applied Science and Technology, Inc., 90 Industrial Way, Wilmington, Massachusetts 01887, telephone: (978) 284-4000.

To obtain timely information of the requested materials prior to the special meeting of MKS and the annual meeting of ASTeX stockholders, you must request them no later than _____, 200_, which is five days prior to the meetings.

Also see "Where You Can Find More Information" on page 103 of this joint proxy statement/prospectus.

MKS has supplied all information contained in this joint proxy statement/prospectus relating to MKS, and ASTeX has supplied all information contained in this joint proxy statement/prospectus relating to ASTeX.

MKS INSTRUMENTS, INC.
SIX SHATTUCK ROAD
ANDOVER, MASSACHUSETTS 01810
(978) 975-2350

NOTICE OF SPECIAL MEETING OF STOCKHOLDERS

TO BE HELD ON _____, _____, 200_

We will hold a special meeting of the stockholders of MKS at 10:00 a.m., local time, on _____, _____, 200_, at the offices of Hale and Dorr LLP, 60 State Street, Boston, Massachusetts 02109.

At the meeting, you will consider and vote on a proposal to approve the issuance of MKS common stock to the stockholders of ASTeX in the merger of ASTeX with a wholly owned subsidiary of MKS. Under the merger agreement, each outstanding share of ASTeX common stock will convert into the right to receive 0.7669 of a share of MKS common stock.

We will transact no other business at the special meeting, except business which may be properly brought before the special meeting or any adjournment or postponement of the special meeting.

Only holders of record of shares of MKS common stock at the close of business on _____, 200_, the record date for the special meeting, are entitled to notice of, and to vote at, the special meeting and any adjournment or postponement of the special meeting.

Your vote is important. Whether or not you plan to attend the special meeting, please complete, sign and date the enclosed proxy and return it promptly in the enclosed postage-paid envelope. You may vote in person at the special meeting, even if you have returned a proxy.

By Order of the Board of Directors

RICHARD S. CHUTE,
Clerk

Andover, Massachusetts
_____, 200_

APPLIED SCIENCE AND TECHNOLOGY, INC.
90 INDUSTRIAL WAY
WILMINGTON, MASSACHUSETTS 01887
(978) 284-4000

NOTICE OF ANNUAL MEETING OF STOCKHOLDERS

_____, 200_

I am pleased to give you notice of and cordially invite you to attend, either in person or by proxy, the annual meeting of the stockholders of Applied Science and Technology, Inc., which will be held on _____, _____, 200_, at 10:00 a.m., local time, at the offices of Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C., One Financial Center, Boston, Massachusetts 02111, and at any adjournment or adjournments thereof. The purposes of the annual meeting are:

1. To consider and vote on a proposal to adopt a merger agreement dated as of October 2, 2000 among ASTeX, MKS and an MKS subsidiary. The merger agreement provides that the MKS subsidiary will be merged with and into ASTeX. In the merger, each stockholder of ASTeX will receive 0.7669 of a share of MKS common stock in exchange for each outstanding share of common stock of ASTeX owned prior to the effective time of the merger. The merger agreement is attached as Annex A to the enclosed joint proxy statement/prospectus;

2. To elect two (2) members of the board of directors to serve until the earlier of the completion of the merger or the expiration of a three (3) year term;

3. To consider and act upon a proposal to ratify the appointment of KPMG LLP as independent auditors for ASTeX for the fiscal year ending July 1, 2001; and

4. To transact any other business which properly comes before the annual meeting.

Only stockholders of record at the close of business on _____, 200_ will receive notice of and be able to vote at the annual meeting.

The enclosed joint proxy statement/prospectus describes the merger agreement, the proposed merger and the actions to be taken in connection with the merger. The holders of a majority of the outstanding shares of ASTeX common stock entitled to vote must be present or represented by proxy at the annual meeting in order to constitute a quorum for the transaction of business. It is important that your shares are represented at the annual meeting regardless of the number of shares you hold. Whether or not you are able to be at the annual meeting in person, please sign and return promptly the enclosed proxy card in the enclosed, postage-paid envelope. You may revoke your proxy in the manner described in the enclosed joint proxy statement/prospectus at any time before it is voted at the annual meeting.

Please do not send any stock certificates with your proxy cards.

This notice, and the enclosed proxy card and joint proxy statement/prospectus, are sent to you by order of ASTeX's board of directors.

JOHN M. TARRH
Secretary

TABLE OF CONTENTS

QUESTIONS AND ANSWERS ABOUT THE MERGER.....	1
SUMMARY.....	4
RISK FACTORS.....	11
Risks Relating to the Merger.....	11
Risks Relating to MKS' Business.....	13
Risks Relating to ASTeX's Business.....	17
CAUTIONARY STATEMENT CONCERNING FORWARD LOOKING STATEMENTS.....	22
SELECTED HISTORICAL CONSOLIDATED FINANCIAL DATA OF MKS.....	23
SELECTED HISTORICAL CONDENSED CONSOLIDATED FINANCIAL INFORMATION OF ASTeX.....	24
SELECTED UNAUDITED PRO FORMA CONDENSED COMBINED FINANCIAL INFORMATION.....	25
UNAUDITED COMPARATIVE PER SHARE DATA.....	27
MARKET PRICE INFORMATION.....	29
MKS Market Price Information.....	29
ASTeX Market Price Information.....	29
Recent Closing Prices.....	29
Dividends.....	30
THE ASTEX ANNUAL MEETING.....	31
Date, Time and Place of Meeting.....	31
What Will Be Voted Upon.....	31
Record Date and Outstanding Shares.....	31
Votes Required.....	31
Quorum; Abstentions and Broker Non-Votes.....	31
Voting and Revocation of Proxies.....	32
Solicitation of Proxies and Expenses.....	32
Board Recommendation.....	32
THE MKS SPECIAL MEETING.....	33
Date, Time and Place of Meeting.....	33
What Will Be Voted Upon.....	33
Record Date and Outstanding Shares.....	33
Vote Required to Approve the Issuance.....	33
Quorum; Abstentions and Broker Non-Votes.....	33
Voting and Revocation of Proxies.....	34
Solicitation of Proxies and Expenses.....	34
Board Recommendation.....	34
THE MERGER.....	35
Background of the Merger.....	35
ASTeX's Reasons For The Merger.....	38
Recommendation of ASTeX's Board of Directors.....	40
MKS' Reasons for the Merger.....	40
Recommendation of MKS' Board of Directors.....	41
Opinion of MKS' Financial Advisor -- Merrill Lynch, Pierce, Fenner & Smith Incorporated.....	41
Opinion of ASTeX's Financial Advisor -- CIBC World Markets Corp.....	47
Interests of Executive Officers and Directors of MKS in the Merger.....	52
Interests of Executive Officers and Directors of ASTeX in the Merger.....	52
Treatment of ASTeX Common Stock.....	53

Accounting Treatment of the Merger.....	53
Regulatory Approvals.....	53
Material United States Federal Income Tax Considerations.....	54
Resales of MKS Common Stock Issued in Connection with the Merger; Affiliate Agreements.....	55
No Appraisal Rights.....	55
Delisting and Deregistration of ASTeX Common Stock Following the Merger.....	55
THE MERGER AGREEMENT.....	56
General.....	56
The Exchange Ratio and Treatment of ASTeX Common Stock.....	56
Treatment of ASTeX Stock Options.....	56
Exchange of Certificates.....	56
Representations and Warranties.....	57
Covenants of MKS and ASTeX.....	58
Conditions to Obligations to Complete the Merger.....	62
Termination; Expenses and Termination Fees.....	63
Amendment.....	65
RELATED AGREEMENTS.....	66
Stockholder Agreements.....	66
Affiliate Agreements.....	66
Employment Agreements.....	66
LEGAL PROCEEDINGS.....	67
UNAUDITED PRO FORMA CONDENSED COMBINED FINANCIAL INFORMATION.....	68
MKS' PRINCIPAL STOCKHOLDERS.....	76
ASTeX's PRINCIPAL STOCKHOLDERS.....	78
COMPARISON OF STOCKHOLDER RIGHTS.....	80
ADDITIONAL PROPOSALS FOR ASTeX ANNUAL MEETING.....	91
ELECTION OF ASTeX DIRECTORS.....	91
PROPOSAL 1: COMPENSATION OF OFFICERS AND DIRECTORS.....	95
SUMMARY COMPENSATION TABLE.....	95
COMPLIANCE WITH SECTION 16(a) OF THE SECURITIES EXCHANGE ACT OF 1934.....	102
DIVIDEND POLICY.....	102
PROPOSAL 2: RATIFICATION OF AUDITORS.....	102
STOCKHOLDER PROPOSALS.....	102
LEGAL MATTERS.....	103
EXPERTS.....	103
WHERE YOU CAN FIND MORE INFORMATION.....	103
INDEX TO FINANCIAL STATEMENTS.....	F-1
ANNEXES	
Annex A Agreement and Plan of Merger.....	A-1
Annex B-1 Opinion of MKS' Financial Advisor, Merrill Lynch, Pierce, Fenner & Smith Incorporated.....	B-1
Annex B-2 Opinion of ASTeX's Financial Advisor, CIBC World Markets Corp.....	B-2
Annex C-1 ASTeX Stockholder Agreement.....	C-1
Annex C-2 MKS Stockholder Agreement.....	C-2

QUESTIONS AND ANSWERS ABOUT THE MERGER

Q: WHY DO THE COMPANIES PROPOSE TO MERGE?

A: MKS and ASTeX believe that the merger will provide several benefits to both companies, including:

- a good strategic fit between the companies;
- the opportunity to take advantage of an expanded and geographically diverse customer base;
- the opportunity to become a one-stop solution leader for reactive gas sources and power supplies; and
- the opportunity to gain cost savings by combining infrastructure, supply chain management and research and development investments.

Q: ARE THERE ANY POTENTIAL DISADVANTAGES TO THE PROPOSED MERGER?

A: MKS has identified a number of potential negative factors that could materialize as a result of the merger, including the risk that the potential benefits sought in the merger might not be realized and the potential adverse effect of the public announcement of the merger on MKS' business, employees and customers.

ASTeX also has identified a number of potential disadvantages to the merger, including:

- the risk that the value to be received by ASTeX stockholders in the merger could decline significantly from that determined as of the date of the merger agreement due to the fixed exchange ratio used in the merger;
- the risk that potential benefits sought to be achieved in the merger might not be fully realized;
- the risk that ASTeX's management and technical personnel might not continue with MKS after the merger and the loss of control over future operations of ASTeX after the merger; and
- the impact of the loss of ASTeX's status as an independent company on its stockholders and employees.

Q: WHAT WILL ASTEX STOCKHOLDERS RECEIVE IN THE MERGER?

A: If the merger is completed, ASTeX stockholders will receive 0.7669 of a share of MKS common stock for each share of ASTeX common stock that they own and cash, without interest, for any fractional shares.

Q: WHEN DO YOU EXPECT TO COMPLETE THE MERGER OF MKS AND ASTEX?

A: We expect to complete the merger by the end of December 2000, but neither MKS nor ASTeX can predict the exact timing.

Q: WHO MUST APPROVE THE MERGER?

A: In addition to the approvals of the board of directors of MKS and ASTeX, which were already obtained, MKS stockholders must approve the issuance of MKS common stock in the merger and ASTeX stockholders must approve the merger agreement and the merger.

Q: WHAT VOTE OF MKS STOCKHOLDERS IS REQUIRED TO APPROVE THE ISSUANCE OF MKS COMMON STOCK IN THE MERGER?

A: The affirmative vote of the holders of at least a majority of the shares of MKS common stock present or represented by proxy at the MKS special meeting is required to approve the issuance of MKS common stock in connection with the merger. John R. Bertucci, MKS' chairman and chief executive officer and a director of ASTeX, together with members of Mr. Bertucci's family, who beneficially own a majority of all outstanding shares of MKS common stock, have agreed to vote in favor of the issuance of the MKS common stock in connection with the merger. Therefore, MKS stockholder approval is assured.

Q: WHAT VOTE OF ASTEX STOCKHOLDERS IS REQUIRED TO APPROVE THE MERGER AGREEMENT AND THE MERGER?

A: The affirmative vote of the holders of at least a majority of the outstanding shares of ASTeX common stock is required to approve the merger agreement and the merger. Richard S. Post and John M. Tarrh, two directors and executive officers of ASTeX who together own approximately 6.4% of the outstanding ASTeX common stock, have agreed to vote their shares in favor of the merger.

Q: DO THE BOARDS OF DIRECTORS OF MKS AND ASTEX RECOMMEND APPROVAL OF THE PROPOSALS?

A: Yes. For a more complete description of the recommendation of the ASTeX board of directors, see the section entitled "The Merger -- ASTeX's Reasons for the Merger; -- Recommendation of ASTeX's Board of Directors" beginning on page 40. For a more complete description of the recommendation of the MKS board of directors, see the section entitled "The Merger -- MKS' Reasons for the Merger; Recommendation of the MKS Board of Directors" beginning on page 41.

Q: WHAT DO I NEED TO DO NOW?

A: MKS and ASTeX urge you to carefully read this joint proxy statement/prospectus, including its annexes and to consider how the merger will affect you as a stockholder. You also may want to review the documents referenced under "Where You Can Find More Information" on page 103.

Q: HOW DO I VOTE?

A: You may indicate how you want to vote on your proxy card. You may also attend your stockholder meeting and vote in person instead of submitting a proxy. If you are an ASTeX stockholder and fail either to return your proxy card or to vote in person at the stockholder meeting, or if you mark your proxy "abstain," the effect will be a vote against the merger. If you fail to indicate your vote on your proxy, your proxy will be counted as a vote for all proposals submitted to you, unless your shares are held in a brokerage account.

Q: IF MY SHARES ARE HELD IN A BROKERAGE ACCOUNT, WILL MY BROKER VOTE MY SHARES FOR ME?

A: Your broker cannot vote your shares on the proposal relating to the merger agreement without instructions from you on how to vote. Therefore, it is important that you follow the directions provided by your broker regarding how to instruct your broker to vote your shares. If you are an ASTeX stockholder and fail to provide your broker with instructions, it will have the same effect as a vote against the merger.

Q: MAY I CHANGE MY VOTE AFTER I HAVE MAILED IN MY SIGNED PROXY CARD?

A: You may change your vote at any time before the vote takes place at your stockholder meeting. To change your vote, you may either submit a later dated proxy card or send a written notice stating that you would like to revoke your proxy. In addition, you may attend your stockholder meeting and vote in person. However, if you elect to vote in person at your stockholder meeting and your shares are held by a broker, bank or other nominee, you must bring to the stockholder meeting a legal proxy from the broker, bank or other nominee authorizing you to vote the shares.

Q: WHERE AND WHEN IS THE MKS STOCKHOLDER MEETING?

A: The special meeting of MKS stockholders will be held at 10:00 a.m., local time, on _____, _____, 200_, at Hale and Dorr LLP, 60 State Street, Boston, Massachusetts 02109.

Q: WHEN AND WHERE IS THE ASTEX ANNUAL MEETING?

A: The annual meeting of ASTeX stockholders will be held at 10:00 a.m., local time, on _____, _____, 200_, at Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C., One Financial Center, Boston, Massachusetts 02111.

Q: SHOULD ASTEX STOCKHOLDERS SEND IN THEIR CERTIFICATES NOW?

A: No. After MKS and ASTeX complete the merger, MKS' transfer agent will send instructions to ASTeX stockholders regarding the exchange of shares of ASTeX common stock for MKS common stock. MKS stockholders

should not submit their stock certificates at any time since their shares will not be exchanged in the merger.

Q: WHOM MAY I CONTACT WITH ANY ADDITIONAL QUESTIONS?

A: MKS stockholders may call Ronald C. Weigner, Vice President and Chief Financial Officer of MKS, at (978) 975-2350. ASTeX stockholders may call John M. Tarrh, Vice President and Treasurer of ASTeX, at (978) 284-4135.

SUMMARY

This summary highlights selected information from this joint proxy statement/prospectus and may not contain all of the information that is important to you. To understand the merger fully and for a more complete description of the legal terms of the merger, you should read carefully this entire document and the documents to which we have referred you. See "Where You Can Find More Information" on page 103. We have included page references parenthetically to direct you to a more complete description of the topics in this summary.

THE COMPANIES

MKS Instruments, Inc.
Six Shattuck Road
Andover, Massachusetts 01810
(978) 975-2350

MKS Instruments, Inc., commonly known as MKS, is a leading worldwide developer, manufacturer and supplier of instruments, components and subsystems used to measure, control and analyze gases in semiconductor manufacturing and similar industrial manufacturing processes. MKS sold products to more than 4,000 customers in 1999. In addition to semiconductors, MKS' products are used in processes to manufacture a diverse range of products, such as optical filters, fiber optic cables, flat panel displays, magnetic and optical storage media, architectural glass, solar panels and gas lasers.

Applied Science and Technology, Inc.
90 Industrial Way
Wilmington, Massachusetts 01887
(978) 284-4000

Applied Science and Technology, Inc., commonly known as ASTeX, is a worldwide leader in the design, development, manufacture and support of high performance reactive gas modules and power supplies used in semiconductor device manufacturing and medical markets, as well as etch and deposition systems for advanced semiconductor packaging, telecommunications and magnetic sensors. ASTeX's proprietary modules, delivered to semiconductor equipment OEMs, create reactive gases used to deposit and etch thin films applied during various steps in the manufacture of semiconductor devices. ASTeX's modules help manufacturers improve yields, reduce overall production costs and improve time to market. ASTeX's complete systems, delivered to end users who manufacture thin-film devices, provide proprietary etch and deposition solutions to high-growth end markets, including semiconductor packaging, telecommunications and magnetic sensors.

THE MERGER
(PAGE 35)

Upon the consummation of the merger, ASTeX will become a wholly-owned subsidiary of MKS. ASTeX stockholders will receive MKS common stock in exchange for their shares of ASTeX common stock. The merger agreement is attached to this joint proxy statement/prospectus as Annex A. We encourage you to read the merger agreement because it is the document that governs the merger.

STOCKHOLDER APPROVAL REQUIRED BY ASTeX
(PAGE 31)

Approval of the merger agreement requires the affirmative approval of the holders of at least a majority of the outstanding shares of ASTeX common stock. Dr. Richard S. Post and Mr. John M. Tarrh, two of ASTeX's directors and executive officers, held approximately 6.4% of the outstanding shares of ASTeX common stock on October 2, 2000, and have already agreed to vote their shares in favor of the merger.

STOCKHOLDER APPROVAL REQUIRED BY MKS
(PAGE 33)

The affirmative vote of the holders of at least a majority of the shares of MKS common stock present or represented by proxy at the MKS special meeting of stockholders is required to approve the issuance of MKS common stock in connection with the merger. Mr. Bertucci, MKS' chairman and chief executive officer and a director of ASTeX, together with members of Mr. Bertucci's family, who beneficially own a majority of all outstanding shares of MKS common stock, have agreed to vote in favor of the issuance of the MKS common stock in connection with the merger. Therefore, MKS stockholder approval is assured.

ASTEX BOARD RECOMMENDATION TO STOCKHOLDERS
(PAGE 32)

The ASTeX board of directors has voted unanimously (with Mr. Bertucci abstaining) to approve the merger agreement and the merger. The ASTeX board of directors believes that the merger is advisable and in the ASTeX's stockholders' best interest and recommends that the ASTeX stockholders vote FOR the proposal to approve the merger agreement and the merger.

MKS BOARD RECOMMENDATION TO STOCKHOLDERS
(PAGE 34)

The MKS board of directors has voted unanimously to approve the merger agreement and the issuance of MKS common stock in the merger. The MKS board of directors believes the issuance of MKS common stock in the merger is advisable and in the MKS stockholders' best interests and recommends that MKS stockholders vote FOR the proposal to issue MKS common stock in the merger.

WHAT HOLDERS OF ASTEX COMMON STOCK WILL RECEIVE
(PAGE 31)

Each outstanding share of ASTeX common stock will be exchanged for 0.7669 of a share of MKS common stock. We refer in this joint proxy statement/prospectus to the 0.7669 of a share of MKS common stock into which each outstanding share of ASTeX common stock will be exchanged in the merger as the exchange ratio. Based on the exchange ratio of 0.7669 and the number of shares of ASTeX common stock outstanding on October 2, 2000, a total of approximately 11,200,000 shares of MKS common stock will be issued in the merger.

MKS will not issue fractional shares of MKS common stock in connection with the merger. Instead, MKS will pay cash, without interest, for any fractional shares.

CONDITIONS TO THE MERGER
(PAGE 62)

The completion of the merger depends on the satisfaction of a number of conditions, including:

- ASTeX stockholders must have adopted the merger agreement and approved the merger;
- MKS stockholders must have approved the issuance of MKS common stock in connection with the merger;
- the listing on the Nasdaq National Market of MKS common stock that will be issued to ASTeX stockholders in the merger must have been approved;
- all waiting periods under applicable antitrust laws must have expired or been terminated;
- the receipt of a legal opinion regarding the treatment of the merger as a "reorganization" under section 368(a) of the Internal Revenue Code;

- the registration statement on Form S-4 of which this joint proxy statement/prospectus is a part must have become effective and not be the subject of a stop order, and no proceedings seeking a stop order shall have been threatened or initiated;
- MKS and ASTeX shall each have received a letter from their respective independent certified public accountants attesting to the qualification of the merger for "pooling-of-interests" treatment; and
- other customary conditions specified in the merger agreement.

The party entitled to assert any condition to the merger may waive the condition.

NO SOLICITATION BY ASTeX
(PAGE 60)

Subject to applicable fiduciary duties of the ASTeX board of directors, ASTeX has agreed that neither it nor any of its subsidiaries will:

- solicit, initiate or encourage any proposal from a third party that might lead to an alternative transaction;
- enter into discussions or negotiations concerning, or provide any non-public information to a third party relating to, an alternative transaction; or
- agree to recommend an alternative transaction to the ASTeX stockholders; provided that, if ASTeX complies with these requirements, ASTeX may, before the agreement is adopted by the stockholders of ASTeX, furnish information to, or enter into discussions or negotiations with, a third party relating to an unsolicited bona fide written acquisition proposal or recommend to the ASTeX stockholders an unsolicited bona fide written acquisition proposal, if the ASTeX Board of Directors:

-- believe that the third party's acquisition proposal would result in a more favorable transaction than the proposed merger,

-- determine in good faith after consultation with outside legal counsel that furnishing the information, entering into the discussions, or recommending the proposal is necessary for the Board of Directors to fulfill its fiduciary duties, and

-- comply with other requirements in the merger agreement.

ASTeX has also agreed to cause each of its officers, directors, employees, financial advisors, representatives and agents not to take any of these actions.

TERMINATION OF THE MERGER AGREEMENT
(PAGE 63)

MKS and ASTeX can mutually agree to terminate the merger agreement without completing the merger if:

- the merger is not completed by March 31, 2001;
- ASTeX stockholders do not approve the merger at a stockholders meeting convened for that purpose;
- MKS stockholders do not approve the issuance of the MKS common stock to be issued in connection with the merger at a stockholders meeting convened for that purpose;
- any order permanently restraining, enjoining or otherwise prohibiting consummation of the merger shall become final or non-appealable after the parties have used their commercially reasonable efforts to have such order removed, repealed or overturned; or
- the other party breaches any material representation, warranty or covenant in the merger agreement and fails to cure the breach within 30 days of receiving notice of the breach.

In addition, MKS and ASTeX can each terminate the merger agreement under certain conditions set forth in the merger agreement and described in this joint proxy statement/prospectus below.

TERMINATION FEES AND EXPENSES
(PAGE 63)

MKS and ASTeX, generally, will bear their own expenses related to the merger. However, under some circumstances set forth in the merger agreement, ASTeX or MKS may be required to reimburse the other up to a maximum of \$500,000 for expenses related to the merger.

ASTeX is obligated to pay MKS a termination fee of \$9,075,000 if MKS terminates the merger agreement under the circumstances set forth in the merger agreement and described below in this joint proxy statement/prospectus.

STOCK OPTIONS
(PAGE 56)

In connection with the merger agreement, MKS will assume all options, whether vested or unvested, to purchase ASTeX common stock, issued under ASTeX's stock option plans. Each option to purchase shares of ASTeX common stock outstanding immediately prior to the closing date will be considered an option to acquire, on the same terms, 0.7669 of a share of MKS common stock, with the option exercise price to be adjusted accordingly.

OPINION OF MKS FINANCIAL ADVISOR
(PAGE 41)

In connection with the merger, Merrill Lynch, Pierce, Fenner & Smith Incorporated, MKS' financial advisor, rendered a written opinion, dated September 30, 2000, to the MKS board of directors as to the fairness, from a financial point of view, to MKS of the exchange ratio in the merger. The full text of the written opinion of Merrill Lynch is attached to this document as Annex B-1. MKS encourages its stockholders to read the opinion carefully in its entirety to understand the procedures followed, assumptions made, matters considered and limitations on the review undertaken by Merrill Lynch in providing its opinion. The opinion of Merrill Lynch is directed to the MKS board of directors and does not constitute a recommendation to any stockholder with respect to any matter relating to the merger.

OPINION OF ASTEX FINANCIAL ADVISOR
(PAGE 47)

In connection with the merger, the ASTeX board received an opinion from ASTeX's financial advisor, CIBC World Markets Corp., as to the fairness, from a financial point of view, of the exchange ratio provided for in the merger. ASTeX has attached the full text of CIBC World Markets' written opinion, dated October 2, 2000, as Annex B-2 to this joint proxy statement/prospectus. ASTeX encourages its stockholders to read this opinion carefully in its entirety for a description of the assumptions made, matters considered and limitations on the review undertaken. CIBC World Markets' opinion is addressed to the ASTeX board and relates only to the fairness of the exchange ratio from a financial point of view. The opinion does not address any other aspect of the proposed merger and does not constitute a recommendation to any stockholder as to any matters relating to the proposed merger.

INTERESTS OF EXECUTIVE OFFICERS AND
DIRECTORS OF ASTeX IN THE MERGER
(PAGE 52)

In considering the recommendation of the ASTeX board of directors, ASTeX stockholders should be aware of the interests that ASTeX executive officers and directors have in the merger. These include:

- Robert R. Anderson and Hans-Jochen Kahl, current directors of ASTeX, will become directors of MKS;
- executive officers of ASTeX will receive severance benefits under pre-existing employment arrangements, if their employment terminates under certain conditions;
- at the closing of the merger, 563,900 stock options held by the ASTeX executive officers and directors will be assumed by MKS, and each option to purchase a share of ASTeX common stock will be converted into an option to purchase 0.7669 of a share of MKS common stock;
- as of October 12, 2000, the executive officers and directors of ASTeX held 1,149,651 shares of ASTeX common stock;
- as of October 12, 2000, the executive officers and directors of ASTeX (other than Mr. Bertucci) owned 33,805 shares of MKS common stock;
- ASTeX officers and directors have customary rights to indemnification against specified liabilities;
- seven ASTeX executive officers have entered into employment agreements with MKS, which will become effective upon the closing of the merger; and
- of the 563,900 options held by the ASTeX executive officers and directors, up to 136,000 will accelerate as a result of the merger.

In considering the fairness of the merger to ASTeX stockholders, the ASTeX board of directors took into account these interests. Some of these interests are different from, or in addition to, the interests of ASTeX stockholders generally in the merger.

INTERESTS OF EXECUTIVE OFFICERS AND
DIRECTORS OF MKS IN THE MERGER
(PAGE 52)

John R. Bertucci, chairman and chief executive officer of MKS, also serves as a director of ASTeX. Mr. Bertucci owns 22,500 shares of ASTeX common stock and options to purchase 44,000 shares of ASTeX common stock. In addition, MKS owns 52,500 shares of ASTeX common stock. In considering the fairness of the merger to the MKS stockholders, the MKS board of directors took into account Mr. Bertucci's interests. Some of these interests are different from, or in addition to, the interests of MKS stockholders generally in the issuance of MKS common stock in the merger.

ACCOUNTING TREATMENT
(PAGE 53)

MKS expects to account for the merger using the "pooling-of-interests" method.

MATERIAL UNITED STATES FEDERAL INCOME TAX
CONSIDERATIONS
(PAGE 54)

We have structured the merger in order to qualify as a reorganization under the Internal Revenue Code. It is our intention that no gain or loss will generally be recognized by ASTeX stockholders for federal income tax purposes on the exchange of shares of ASTeX common stock solely for shares of MKS common stock.

ASTeX stockholders, however, will recognize gain for federal income tax purposes on any cash received in lieu of fractional shares.

Tax matters are very complicated, and the tax consequences of the merger to the ASTeX stockholders will depend on the facts of each ASTeX stockholder's own situation. Each ASTeX stockholder should consult his, her or its tax advisor for a full understanding of the tax consequences of the merger.

MKS AND ASTeX STOCKHOLDERS HAVE NO APPRAISAL RIGHTS
(PAGE 55)

Under applicable law, neither MKS nor ASTeX stockholders have appraisal rights with respect to the merger.

HOW THE RIGHTS OF ASTeX STOCKHOLDERS WILL DIFFER AS MKS STOCKHOLDERS
(PAGE 80)

The rights of ASTeX stockholders as stockholders of MKS, a Massachusetts corporation, after the merger will be governed by MKS' corporate charter and by-laws. Those rights differ from the rights of ASTeX stockholders under Delaware law and ASTeX's corporate charter and by-laws.

FORWARD-LOOKING STATEMENTS MAY PROVE INACCURATE
(PAGE 22)

MKS and ASTeX have made forward-looking statements in this document and in documents that are incorporated in this document by reference that are subject to risks and uncertainties. Forward-looking statements include the information concerning possible or assumed future results of operations of MKS, including the anticipated cost savings and revenue enhancements from the merger. Also, when MKS and ASTeX use words such as "believes," "expects," "anticipates," "plans" or similar expressions, MKS and ASTeX are making forward-looking statements. Stockholders should note that many factors could affect the future financial results of MKS and ASTeX, and could cause these results to differ materially from those expressed in MKS' and ASTeX's forward-looking statements. These factors include the following:

- the risk that the process of integrating MKS and ASTeX may disrupt the business activities of MKS and affect employee morale, thus affecting MKS' ability to retain key employees;
- the risk that if the merger's anticipated benefits do not meet the expectations of financial or industry analysts, the market price of MKS common stock may decline;
- the risk that the failure to complete the merger may result in ASTeX paying termination fees to MKS and cause ASTeX to nevertheless incur legal, financial advisory and accounting fees, all of which may dilute the value of ASTeX's stock and decrease its market price;
- the risk that the merger may cause ASTeX to lose key personnel which could materially affect ASTeX's business and require ASTeX to incur substantial costs to recruit replacements for lost personnel;
- the risk that customers of MKS and ASTeX may terminate their relationship with MKS or ASTeX as a result of concerns over products and services to be provided following the merger; and
- all of the risks listed under "Risk Factors" in this document.

MKS PRICE INFORMATION
(PAGE 29)

Shares of MKS common stock are quoted on the Nasdaq National Market. On September 29, 2000, the last full trading day prior to the public announcement of the proposed merger, MKS common stock closed at \$27.375 per share. On November 7, 2000, MKS common stock closed at \$18.125 per share.

ASTEX PRICE INFORMATION
(PAGE 29)

Shares of ASTeX common stock are also quoted on the Nasdaq National Market. On September 29, 2000, the last full trading day prior to the public announcement of the proposed merger, ASTeX common stock closed at \$14.750 per share. On November 7, 2000, ASTeX common stock closed at \$13.875 per share.

RISK FACTORS

You should carefully consider the following risk factors before you decide whether to vote to approve the proposals submitted to you. You should also consider the other information in this document.

RISKS RELATING TO THE MERGER

MKS' STOCK PRICE IS VOLATILE AND THE VALUE OF THE MKS COMMON STOCK ISSUED IN THE MERGER WILL DEPEND ON ITS MARKET PRICE AT THE TIME OF THE MERGER. NO ADJUSTMENT TO THE EXCHANGE RATIO WILL BE MADE AS A RESULT OF CHANGES IN THE MARKET PRICE OF MKS' COMMON STOCK.

The market price of MKS common stock, like that of the shares of many other high technology companies, has been and may continue to be volatile. For example, from October 1, 1999 to September 30, 2000, MKS common stock traded as high as \$62.25 per share and as low as \$16.8125 per share. Since the announcement of the proposed merger, MKS' stock price has declined from \$27.375 on September 29, 2000 to \$18.125 per share on November 7, 2000.

At the closing of the merger, holders of ASTeX common stock will exchange each of their shares of ASTeX common stock for 0.7669 of a share of MKS common stock. This exchange ratio will not be adjusted for changes in the market price of MKS' common stock or of ASTeX common stock. In addition, neither MKS nor ASTeX may terminate or renegotiate the merger agreement, and ASTeX may not rescind the vote of its stockholders, solely because of changes in the market price of MKS common stock or of ASTeX common stock. Any reduction in MKS' common stock price will result in ASTeX stockholders receiving less value in the merger at closing. ASTeX stockholders will not know the exact value of MKS common stock to be issued to them in the merger at the time of the annual meeting of ASTeX stockholders.

THE COMPLEX PROCESS OF INTEGRATING MKS AND ASTEX MAY DISRUPT THE BUSINESS ACTIVITIES OF MKS AND AFFECT EMPLOYEE MORALE, THUS AFFECTING MKS' ABILITY TO RETAIN KEY EMPLOYEES.

Integrating the operations and personnel of MKS and ASTeX will be a complex process, and it is uncertain that the integration will be completed rapidly or will achieve the anticipated benefits of the merger. The successful integration of MKS and ASTeX will require, among other things, integration of their finance, human resources and sales and marketing groups and coordination of research and development efforts. The diversion of the attention of MKS' management and any difficulties encountered in the process of combining the companies could cause the disruption of the business activities of MKS. Further, the process of combining MKS and ASTeX could negatively affect employee morale and the ability of MKS to retain some of its key employees after the merger.

IF THE MERGER'S BENEFITS DO NOT MEET THE EXPECTATIONS OF FINANCIAL OR INDUSTRY ANALYSTS, THE MARKET PRICE OF MKS COMMON STOCK MAY DECLINE.

The market price of MKS common stock may decline as a result of the merger if:

- MKS does not achieve the perceived benefits of the merger as rapidly as, or to the extent, anticipated by financial or industry analysts; or
- the effect of the merger on MKS' financial results is not consistent with the expectations of financial or industry analysts.

FAILURE TO COMPLETE THE MERGER MAY RESULT IN ASTEX PAYING TERMINATION FEES TO MKS. THIS FAILURE MAY ALSO DILUTE THE VALUE OF ASTEX'S STOCK, DECREASE ITS MARKET PRICE AND CAUSE ASTEX TO NEVERTHELESS INCUR LEGAL AND ACCOUNTING FEES.

If the merger is not completed, ASTeX may be subject to a number of material risks, including:

- MKS may require ASTeX to pay a termination fee of \$9,075,000 or reimburse MKS for expenses of up to \$500,000, under the circumstances described in the agreement;

- the market price of ASTeX common stock may decline to the extent that the current market price of ASTeX common stock reflects a market assumption that the merger will be completed; and
- ASTeX's costs related to the merger, such as its legal and accounting fees, must be paid even if the merger is not completed.

If the merger is terminated and the ASTeX board of directors seeks another merger or business combination, ASTeX stockholders cannot be certain that ASTeX will be able to find a partner willing to pay an equivalent or more attractive price than the price MKS will pay in the merger.

SOME OF THE OFFICERS AND DIRECTORS OF ASTEX HAVE CONFLICTS OF INTEREST THAT MAY HAVE INFLUENCED THEM TO SUPPORT OR APPROVE THE MERGER.

ASTeX's officers and directors may have been influenced to approve the merger because of the following arrangements that provide them with interests in the merger that are different from, or in addition to, the interests of ASTeX stockholders in the merger, including the following:

- as of October 12, 2000, the executive officers and directors of ASTeX owned stock options to purchase an aggregate of 563,900 shares of ASTeX common stock and owned 1,149,651 shares of ASTeX common stock;
- several officers of ASTeX are entitled to benefits, including severance packages, under their pre-existing employment agreements with ASTeX if their employment is terminated upon ASTeX's change of control, such as in the merger;
- MKS has entered into employment agreements with seven executive officers of ASTeX which take effect only upon completion of the merger; and
- MKS has agreed to indemnify present and former ASTeX officers and directors against liability arising out of their service as officers or directors. MKS will maintain officers' and directors' liability insurance to cover against this liability for the next six years.

ASTeX stockholders should read more about these interests under "The Merger -- Interests of Executive Officers and Directors of ASTeX in the Merger" on page 52.

The ASTeX board of directors was aware of and took into account these arrangements when it approved the merger. It is possible that these arrangements may have influenced these directors and officers to support or recommend the merger.

THE MERGER MAY CAUSE ASTEX TO LOSE KEY PERSONNEL WHICH COULD MATERIALLY AFFECT ASTEX'S BUSINESS AND REQUIRE ASTEX TO INCUR SUBSTANTIAL COSTS TO RECRUIT REPLACEMENTS FOR LOST PERSONNEL.

As a result of ASTeX's change in ownership, current and prospective ASTeX employees may experience uncertainty about their future roles with MKS. This uncertainty may adversely affect ASTeX's ability to attract and retain key management, sales, marketing and technical personnel. Any failure to attract and retain key personnel could have a material adverse effect on the business of ASTeX and MKS.

CUSTOMERS OF MKS AND ASTEX MAY TERMINATE THEIR RELATIONSHIP WITH MKS OR ASTEX AS A RESULT OF CONCERNS OVER PRODUCTS AND SERVICES TO BE PROVIDED FOLLOWING THE MERGER.

The announcement and closing of the merger could cause customers and potential customers of MKS and ASTeX to cancel orders or to fail to place new orders. In particular, customers could be concerned about future products and services or the quality of customer service during the period of integration of ASTeX and MKS. The loss of customers or the failure to attract new customers could have a material adverse effect on the future revenues and competitive position of MKS and ASTeX.

MKS AND ASTEX ARE SUBJECT TO PENDING LITIGATION AND MAY BE REQUIRED TO EXPEND SUBSTANTIAL FINANCIAL AND MANAGEMENT RESOURCES TO DEFEND THEIR RESPECTIVE INTERESTS.

Upon consummation of the merger, MKS will assume responsibility for, and any potential liability arising from, an action filed against MKS, ASTeX and each ASTeX director on October 3, 2000 by an ASTeX stockholder as a purported class action alleging that the defendants breached their fiduciary duties to ASTeX's stockholders in connection with the merger, including a claim that the price offered by MKS for the ASTeX common stock in the merger is inadequate. ASTeX and MKS believe that the suit is without merit and intend to vigorously defend against the claims; however, ASTeX and MKS can give no assurance as to the ultimate outcome of the suit. In addition, this litigation, whether or not decided in favor of MKS, ASTeX and ASTeX's directors, may be costly because of the expense of litigation and the attendant diversion of employee and management resources from the day to day operation of the business. The prospect of an award of substantial financial damages, however likely or unlikely, also must be considered. An adverse determination in a class action suit could result in injunctive relief or the payment of money damages, subjecting MKS, ASTeX and ASTeX's directors to significant liabilities.

RISKS RELATING TO MKS' BUSINESS

MKS' BUSINESS DEPENDS SUBSTANTIALLY ON CAPITAL SPENDING IN THE SEMICONDUCTOR INDUSTRY WHICH IS CHARACTERIZED BY PERIODIC FLUCTUATIONS THAT MAY CAUSE A REDUCTION IN DEMAND FOR MKS' PRODUCTS.

MKS estimates that approximately 66% of its sales during 1999 and 76% of its sales in the first six months of 2000 were to semiconductor capital equipment manufacturers and semiconductor device manufacturers, and it expects that sales to such customers will continue to account for a substantial majority of its sales. MKS' business depends upon the capital expenditures of semiconductor device manufacturers, which in turn depend upon the demand for semiconductors. Periodic reductions in demand for the products manufactured by semiconductor capital equipment manufacturers and semiconductor device manufacturers may adversely affect MKS' business, financial condition and results of operations. Historically, the semiconductor market has been highly cyclical and has experienced periods of overcapacity, resulting in significantly reduced demand for capital equipment. For example, in 1996 and 1998, the semiconductor capital equipment industry experienced significant declines, which caused a number of MKS customers to reduce their orders. MKS cannot be certain that semiconductor downturns will not recur. A decline in the level of orders as a result of any future downturn or slowdown in the semiconductor capital equipment industry could have a material adverse effect on MKS' business, financial condition and results of operations.

MKS' QUARTERLY OPERATING RESULTS HAVE VARIED, AND ARE LIKELY TO CONTINUE TO VARY SIGNIFICANTLY. THIS MAY RESULT IN VOLATILITY IN THE MARKET PRICE FOR MKS' SHARES.

A substantial portion of MKS' shipments occur shortly after an order is received and therefore MKS operates with a low level of backlog. As a result, a decrease in demand for MKS' products from one or more customers could occur with limited advance notice and could have a material adverse effect on MKS' results of operations in any particular period.

A significant percentage of MKS' expenses are relatively fixed and based in part on expectations of future net sales. The inability to adjust spending quickly enough to compensate for any shortfall would magnify the adverse impact of a shortfall in net sales on MKS' results of operations. Factors that could cause fluctuations in MKS' net sales include:

- the timing of the receipt of orders from major customers;
- shipment delays;
- disruption in sources of supply;
- seasonal variations of capital spending by customers;
- production capacity constraints; and

- specific features requested by customers.

For example, MKS was in the process of increasing its production capacity when the semiconductor capital equipment market began to experience a significant downturn in 1996. This downturn had a material adverse effect on MKS' operating results in the second half of 1996 and the first half of 1997. After an increase in business in the latter half of 1997, the market experienced another downturn in 1998, which had a material adverse effect on MKS' 1998 and first quarter 1999 operating results. As a result of the factors discussed above, it is likely that MKS will in the future experience quarterly or annual fluctuations and that, in one or more future quarters, its operating results will fall below the expectations of public market analysts or investors. In any such event, the price of MKS' common stock could decline significantly.

THE LOSS OF NET SALES TO ANY ONE OF MKS' MAJOR CUSTOMERS WOULD LIKELY HAVE A MATERIAL ADVERSE EFFECT ON MKS.

MKS' five largest customers accounted for approximately 43% of its net sales for the first six months of 2000, 33% of its net sales in 1999 and 24% of its net sales in 1998. The loss of a major customer or any reduction in orders by these customers, including reductions due to market or competitive conditions, would likely have a material adverse effect on MKS' business, financial condition and results of operations. During the first six months of 2000 and during 1999, one customer, Applied Materials, accounted for approximately 26% and 22%, respectively, of MKS' net sales. While MKS has entered into a purchase contract with Applied Materials that expires in December 2000 unless it is extended by mutual agreement, none of MKS' significant customers, including Applied Materials, has entered into an agreement requiring it to purchase any minimum quantity of MKS' products. The demand for MKS' products from its semiconductor capital equipment customers depends in part on orders received by them from their semiconductor device manufacturer customers.

Attempts to lessen the adverse effect of any loss or reduction through the rapid addition of new customers could be difficult because prospective customers typically require lengthy qualification periods prior to placing volume orders with a new supplier. MKS' future success will continue to depend upon:

- its ability to maintain relationships with existing key customers;
- its ability to attract new customers; and
- the success of its customers in creating demand for their capital equipment products which incorporate MKS' products.

AN INABILITY TO CONVINCE SEMICONDUCTOR DEVICE MANUFACTURERS TO SPECIFY THE USE OF MKS' PRODUCTS TO MKS' CUSTOMERS, WHO ARE SEMICONDUCTOR CAPITAL EQUIPMENT MANUFACTURERS, WOULD WEAKEN MKS' COMPETITIVE POSITION.

The markets for MKS' products are highly competitive. Its competitive success often depends upon factors outside of its control. For example, in some cases, particularly with respect to mass flow controllers, semiconductor device manufacturers may direct semiconductor capital equipment manufacturers to use a specified supplier's product in their equipment. Accordingly, for such products, MKS' success will depend in part on its ability to have semiconductor device manufacturers specify that MKS' products be used at their semiconductor fabrication facilities. In addition, MKS may encounter difficulties in changing established relationships of competitors that already have a large installed base of products within such semiconductor fabrication facilities.

IF MKS' PRODUCTS ARE NOT DESIGNED INTO SUCCESSIVE NEW GENERATIONS OF ITS CUSTOMERS' PRODUCTS, MKS WILL LOSE SIGNIFICANT NET SALES DURING THE LIFESPAN OF THOSE PRODUCTS.

New products designed by semiconductor capital equipment manufacturers typically have a lifespan of five to ten years. MKS' success depends on its products being designed into new generations of equipment for the semiconductor industry. MKS must develop products that are technologically current so that they are positioned to be chosen for use in each successive new generation of semiconductor capital equipment. If MKS products are not chosen by its customers, MKS' net sales may be reduced during the lifespan of its customers' products.

THE SEMICONDUCTOR INDUSTRY IS SUBJECT TO RAPID DEMAND SHIFTS WHICH ARE DIFFICULT TO PREDICT. AS A RESULT, MKS' INABILITY TO EXPAND ITS MANUFACTURING CAPACITY IN RESPONSE TO THESE RAPID SHIFTS MAY CAUSE A REDUCTION IN ITS MARKET SHARE.

MKS' ability to increase sales of certain products depends in part upon its ability to expand its manufacturing capacity for such products in a timely manner. If MKS is unable to expand its manufacturing capacity on a timely basis or to manage such expansion effectively, its customers could implement its competitors' products and, as a result, its market share could be reduced. Because the semiconductor industry is subject to rapid demand shifts which are difficult to foresee, MKS may not be able to increase capacity quickly enough to respond to a rapid increase in demand in the semiconductor industry. Additionally, capacity expansion could increase MKS' fixed operating expenses and if sales levels do not increase to offset the additional expense levels associated with any such expansion, its business, financial condition and results of operations could be materially adversely affected.

SALES TO FOREIGN MARKETS CONSTITUTE A SUBSTANTIAL PORTION OF MKS' NET SALES. THEREFORE, MKS' NET SALES AND RESULTS OF OPERATIONS COULD BE ADVERSELY AFFECTED BY DOWNTURNS IN ECONOMIC CONDITIONS IN COUNTRIES OUTSIDE OF THE UNITED STATES.

International sales, which include sales by MKS' foreign subsidiaries, but exclude direct export sales (which were less than 10% of MKS' total net sales), accounted for approximately 30% of net sales for the first six months of 2000, 31% of net sales in 1999 and 32% of net sales in 1998. MKS anticipates that international sales will continue to account for a significant portion of MKS' net sales. In addition, certain of MKS' key domestic customers derive a significant portion of their revenues from sales in international markets. Therefore, MKS' sales and results of operations could be adversely affected by economic slowdowns and other risks associated with international sales.

UNFAVORABLE CURRENCY EXCHANGE RATE FLUCTUATIONS MAY LEAD TO LOWER GROSS MARGINS, OR MAY CAUSE MKS TO RAISE PRICES WHICH COULD RESULT IN REDUCED SALES.

Currency exchange rate fluctuations could have an adverse effect on MKS' net sales and results of operations and MKS could experience losses with respect to its hedging activities. Unfavorable currency fluctuations could require MKS to increase prices to foreign customers which could result in lower net sales by MKS to such customers. Alternatively, if MKS does not adjust the prices for its products in response to unfavorable currency fluctuations, its results of operations could be adversely affected. In addition, sales made by MKS' foreign subsidiaries are denominated in the currency of the country in which these products are sold and the currency it receives in payment for such sales could be less valuable at the time of receipt as a result of exchange rate fluctuations. MKS enters into forward exchange contracts and local currency purchased options to reduce currency exposure arising from intercompany sales of inventory. However, MKS cannot be certain that its efforts will be adequate to protect it against significant currency fluctuations or that such efforts will not expose it to additional exchange rate risks.

COMPETITION FOR PERSONNEL IN THE SEMICONDUCTOR AND INDUSTRIAL MANUFACTURING INDUSTRIES IS INTENSE.

MKS' success depends to a large extent upon the efforts and abilities of a number of key employees and officers, particularly those with expertise in the semiconductor manufacturing and similar industrial manufacturing industries. The loss of key employees or officers could have a material adverse effect on MKS' business, financial condition and results of operations. MKS believes that its future success will depend in part on its ability to attract and retain highly skilled technical, financial, managerial and marketing personnel. Competition for such personnel is intense, and MKS cannot be certain that it will be successful in attracting and retaining such personnel.

MKS' PROPRIETARY TECHNOLOGY IS IMPORTANT TO THE CONTINUED SUCCESS OF ITS BUSINESS. MKS' FAILURE TO PROTECT THIS PROPRIETARY TECHNOLOGY MAY SIGNIFICANTLY IMPAIR MKS' COMPETITIVE POSITION.

As of October 17, 2000, MKS owns 54 U.S. patents and 52 foreign patents and has 23 pending U.S. patent applications and 92 pending foreign patent applications. Although MKS seeks to protect its intellectual property rights through patents, copyrights, trade secrets and other measures, it cannot be certain that:

- MKS will be able to protect its technology adequately;
- competitors will not be able to develop similar technology independently;
- any of MKS' pending patent applications will be issued;
- intellectual property laws will protect MKS' intellectual property rights; or
- third parties will not assert that MKS' products infringe patent, copyright or trade secrets of such parties.

PROTECTION OF MKS' INTELLECTUAL PROPERTY RIGHTS MAY RESULT IN COSTLY LITIGATION.

Litigation may be necessary in order to enforce MKS' patents, copyrights or other intellectual property rights, to protect its trade secrets, to determine the validity and scope of the proprietary rights of others or to defend against claims of infringement. Such litigation could result in substantial costs and diversion of resources and could have a material adverse effect on MKS' business, financial condition and results of operations.

THE MARKET PRICE OF MKS' COMMON STOCK HAS FLUCTUATED AND MAY CONTINUE TO FLUCTUATE FOR REASONS OVER WHICH MKS HAS NO CONTROL.

The stock market has from time to time experienced, and is likely to continue to experience, extreme price and volume fluctuations. Recently, prices of securities of technology companies have been especially volatile and have often fluctuated for reasons that are unrelated to the operating performance of the companies. The market price of shares of MKS' common stock has fluctuated greatly since its initial public offering and could continue to fluctuate due to a variety of factors. In the past, companies that have experienced volatility in the market price of their stock have been the objects of securities class action litigation. If MKS were the object of securities class action litigation, it could result in substantial costs and a diversion of MKS' management's attention and resources.

ONE STOCKHOLDER, ALONG WITH MEMBERS OF HIS FAMILY, WILL CONTINUE TO HAVE A SUBSTANTIAL INTEREST IN MKS.

Upon consummation of the proposed merger, John R. Bertucci, chairman and chief executive officer of MKS, and members of his family will, in the aggregate, beneficially own approximately 44% of MKS' outstanding common stock. As a result, these stockholders, acting together, will be able to exert substantial influence over actions of MKS.

SOME PROVISIONS OF MKS' ARTICLES OF ORGANIZATION, MKS' BY-LAWS AND MASSACHUSETTS LAW COULD DISCOURAGE POTENTIAL ACQUISITION PROPOSALS AND COULD DELAY OR PREVENT A CHANGE IN CONTROL OF MKS.

Anti-takeover provisions could diminish the opportunities for stockholders to participate in tender offers, including tender offers at a price above the then current market value of the common stock. Such provisions may also inhibit increases in the market price of the common stock that could result from takeover attempts. For example, while MKS has no present plans to issue any preferred stock, MKS' board of directors, without further stockholder approval, may issue preferred stock that could have the effect of delaying, deterring or preventing a change in control of MKS. The issuance of preferred stock could adversely affect the voting power of the holders of MKS' common stock, including the loss of voting control to others. In addition, MKS' By-Laws provide for a classified board of directors consisting of three classes. The classified board could also have the effect of delaying, deterring or preventing a change in control of MKS.

RISKS RELATING TO ASTEX'S BUSINESS

SEMICONDUCTOR INDUSTRY BUSINESS CYCLES HAVE A LARGE EFFECT ON ASTEX'S OPERATING RESULTS.

ASTeX's business depends heavily upon capital expenditures by manufacturers of semiconductors. The semiconductor industry is highly cyclical, with periods of capacity shortage and periods of excess capacity. In periods of excess capacity, the industry sharply cuts purchases of capital equipment, including ASTeX's products. Thus, a semiconductor industry downturn or slowdown substantially reduces ASTeX's revenues and operating results and could hurt ASTeX's financial condition. During portions of 1998 and 1999, excess capacity in the semiconductor industry caused semiconductor manufacturers to sharply cut their capital spending. The excess supply was caused primarily by a period of over-investment in the industry, as well as by cyclical demand factors. The shift in demand to low-priced personal computers and currency devaluations in Asia further reduced profits of semiconductor manufacturers. The downturn in capital spending reduced ASTeX's sales during these periods, resulting in significant losses. ASTeX expects that it will continue to depend significantly on the semiconductor capital equipment industry for the foreseeable future.

ASTEX'S OPERATING RESULTS OFTEN HAVE LARGE CHANGES FROM QUARTER TO QUARTER.

Sharp swings in demand cause large changes in ASTeX's quarter-to-quarter results. A number of factors contribute to these sharp changes in demand. For instance, ASTeX's OEM customers keep inventories of ASTeX's products and may stop buying from it during periods of weak demand for their products until they have reduced their inventories. Other factors which cause changes in ASTeX's quarter-to-quarter results include:

- changes in or cancellation of ASTeX's customers' product plans and programs;
- delays in, or cancellation of, significant system purchases by customers;
- changes in the mix of ASTeX's products and their gross margins;
- delays in the development, introduction and production of ASTeX's products;
- new product introductions by competitors and competitive pricing pressures;
- the time required for it to adjust ASTeX's operating expenses to respond to changes in sales;
- the timing of ASTeX's acquisitions and their effect on ASTeX's financial results;
- component shortages resulting in manufacturing delays; and
- pressure by customers to reduce prices, shorten delivery times and extend payment terms.

ASTEX DEPENDS ON A FEW CUSTOMERS FOR THE MAJORITY OF ITS REVENUES.

A few customers account for a large part of ASTeX's revenues. Sales to ASTeX's ten largest customers accounted for 76% of revenues in fiscal year 2000, 76% of revenues in fiscal year 1999, and 72% of revenues in fiscal year 1998. Sales to ASTeX's largest customer, Applied Materials, accounted for approximately 50% of revenues in fiscal year 2000, 45% of revenues in fiscal year 1999, and 40% of revenues in fiscal year 1998. ASTeX expects that sales to Applied Materials will continue to be a large part of ASTeX's revenues in the future. ASTeX's customers may cancel orders with few penalties, including orders entered into under long-term supply agreements with it. If Applied Materials or another major customer reduces orders for any reason, ASTeX's revenues, operating results, and financial condition will be hurt.

ASTEX IS SUBJECT TO LENGTHY SALES AND PRODUCT ACCEPTANCE CYCLES.

ASTeX sells the majority of its products to OEMs that incorporate ASTeX's products into the equipment they sell. OEMs consider using ASTeX's products when their products are being developed. ASTeX must make a significant capital investment to develop products for its OEM customers well before their products are introduced and before it can be sure that it will recover its capital investment through sales to the OEMs in significant volume. ASTeX is also at risk during the development phase that ASTeX's

product may fail to meet its customers' technical or cost requirements and may be replaced by a competitive product or alternate technology solution. If that happens, ASTeX may be unable to recover ASTeX's development costs. If ASTeX's customers fail to introduce their products in a timely manner or the market does not accept their products, ASTeX's business and ASTeX's financial results would be hurt. During any quarter, ASTeX is subject to a significant change in ASTeX's operating results due to the timing of systems sales. During any quarter, a significant portion of ASTeX's revenue may be derived from the sale of a relatively small number of systems. ASTeX's systems range in price from \$250,000 to \$3.0 million. Also, sales cycles for larger systems orders can be much longer than sales cycles for components. Any new systems introduced by ASTeX may not achieve a significant degree of market acceptance or, once accepted, may fail to sell well for any significant period.

ASTEX IS GROWING AND MAY BE UNABLE TO MANAGE GROWTH EFFECTIVELY.

ASTeX has been experiencing a period of growth and expansion. This growth and expansion is placing significant demands on ASTeX's management and ASTeX's operating systems. ASTeX needs to continue to improve and expand ASTeX's management, operational and financial systems, procedures and controls, including accounting and other internal management systems, quality control, delivery and service capabilities. In addition, ASTeX will need to continue to attract and retain additional management, research and development and manufacturing personnel to handle possible future growth. In order to manage ASTeX's growth, ASTeX may also need to spend significant amounts of cash to:

- fund increases in expenses;
- take advantage of unanticipated opportunities, such as special marketing opportunities or the development of new products; or
- otherwise respond to unanticipated developments or competitive pressures.

ASTEX MAY HAVE DIFFICULTY MANAGING CYCLES OF GROWTH AND DOWNTURNS.

ASTeX has recently had a cycle of rapid growth followed by a downturn. These expansions and contractions strain ASTeX's management, manufacturing, financial and other resources. In an expansion, ASTeX's systems, procedures, controls and existing space may not be adequate and ASTeX may face difficulties in hiring and training needed personnel. In a contraction, it may be costly to maintain current levels of personnel and overhead. If ASTeX fails to manage growth or downturns effectively, ASTeX's future financial condition, revenues and operating results could be hurt. ASTeX's severe business cycles exacerbate the difficulties of attracting and retaining highly qualified personnel who are vital to ASTeX's success.

ASTEX IS HIGHLY RELIANT ON KEY MANAGEMENT.

ASTeX's success depends to a significant degree upon the continued contributions of ASTeX's key management, engineering, sales and marketing, customer support, finance and manufacturing personnel. The loss of any of these key personnel, who would be extremely difficult to replace, could harm ASTeX's business and operating results. During downturns in ASTeX's industry, ASTeX has often experienced significant employee attrition, and ASTeX may experience further attrition in the event of a future downturn. Although ASTeX has employment and noncompetition agreements with key members of ASTeX's senior management team, these individuals or other key employees may nevertheless leave the company. ASTeX does not have key person life insurance on any of ASTeX's executives. Competition for management in ASTeX's industry is intense, and ASTeX may not be successful in attracting and retaining key management personnel.

ASTEX'S MARKETS ARE VERY COMPETITIVE AND COMPETING TECHNOLOGIES MAY RENDER SOME OR ALL OF ASTEX'S PRODUCTS OR FUTURE PRODUCTS NONCOMPETITIVE.

The markets for ASTeX's products are very competitive. Many of ASTeX's current and potential competitors have much greater resources than ASTeX has. A number of established semiconductor equipment manufacturers, including some of ASTeX's significant customers, have expended significant

resources in developing improved reactive gas systems and components. ASTeX may not be successful in selling ASTeX's products to ASTeX's customers, regardless of the performance or the price of ASTeX's products. ASTeX's competitors may develop superior or lower priced products. Moreover, ASTeX's customers' own markets are highly competitive. ASTeX's customers buy its products only when they are successful in selling their own products. Consequently, if ASTeX's customers fail to compete effectively, ASTeX's sales could be hurt.

RAPID TECHNOLOGY CHANGE MAY MAKE ASTEX'S PRODUCTS OBSOLETE.

Technology changes rapidly in the markets ASTeX serves. ASTeX's success will depend upon ASTeX's ability to anticipate these changes, enhance ASTeX's existing products and develop new products to meet customer requirements and achieve market acceptance. ASTeX may not be able to do those things correctly or soon enough. If ASTeX fails in these efforts, ASTeX's products will become obsolete, which will hurt ASTeX's operating results and financial position.

ASTEX MUST ACHIEVE DESIGN WINS TO RETAIN ASTEX'S EXISTING OEM CUSTOMERS AND TO OBTAIN NEW OEM CUSTOMERS.

The constantly changing nature of semiconductor fabrication technology requires OEMs to continually design new systems. ASTeX often must work with these manufacturers early in their design cycles to modify ASTeX's equipment to meet the requirements of the new systems. Manufacturers typically choose one or two vendors to provide the products for use with the early system shipments. Selection as one of these vendors is called a design win. ASTeX must achieve these design wins in order to retain existing customers and to obtain new customers. Once a manufacturer chooses a supplier of modules or systems, it is likely to retain that supplier for an extended period of time. ASTeX's sales and growth could experience material and prolonged adverse effects if ASTeX fails to achieve design wins. In addition, design wins do not always result in substantial sales or profits. ASTeX believes that OEMs often select their suppliers based on factors such as long-term relationships. Accordingly, ASTeX may have difficulty achieving design wins from OEMs who are not currently customers. In addition, ASTeX must compete for design wins for new systems and products of ASTeX's existing customers, including those with whom ASTeX has had long-term relationships.

DEVELOPMENT OF NEW PRODUCTS IS RISKY AND ASTEX MAY NOT BE SUCCESSFUL IN ANTICIPATING MARKET TRENDS.

ASTeX expects to spend a significant amount of time and resources developing new products and refining existing products and systems. In light of the long product development cycles inherent in ASTeX's industry, these expenditures will be made well in advance of the prospect of deriving revenue from the sale of new systems. ASTeX's ability to commercially introduce and successfully market new products is subject to a wide variety of challenges during this development cycle, including start-up bugs, design defects and other matters that could delay introduction of these systems. In addition, since ASTeX's customers are not obligated by long-term contracts to purchase ASTeX's products, ASTeX's anticipated product orders may not materialize, or orders that do materialize may be cancelled. As a result, if ASTeX does not achieve market acceptance of new products, ASTeX may not be able to realize sufficient sales in order to recoup research and development expenditures. ASTeX may also divert sales and marketing resources from ASTeX's current products in order to successfully launch and promote ASTeX's new products. This diversion of resources could have a further negative effect on sales of ASTeX's current products. The success of ASTeX's product development efforts depends on ASTeX's ability to anticipate market trends and the price, performance and functionality requirements of semiconductor device and equipment manufacturers. In order to anticipate these trends and ensure that critical development projects proceed in a coordinated manner, ASTeX must continue to collaborate closely with ASTeX's largest customers. ASTeX's relationships with these and other customers provide it with access to valuable information regarding trends in the semiconductor device industry, which enables it to better plan ASTeX's product development activities. If ASTeX's current relationships with ASTeX's large customers are impaired, or if ASTeX is unable to develop similar collaborative relationships with important customers in the future, ASTeX's long-term ability to produce commercially successful products will be impaired. ASTeX's industry is characterized by the need for continual investment in research

and development as well as customer service and support. As a result of ASTeX's need to maintain ASTeX's spending levels in these areas, ASTeX's operating results could be materially harmed if ASTeX's revenues fall below expectations. In addition, because of ASTeX's emphasis on research and development and technological innovation, ASTeX's operating costs may increase further in the future. ASTeX expects its level of research and development expenses to increase in absolute dollar terms for at least the next several years.

ASTEX CONDUCTS MANUFACTURING AT ONLY A FEW SITES.

ASTeX conducts the majority of its manufacturing at its facilities in Wilmington, Massachusetts, Colorado Springs, Colorado, and Berlin, Germany. Future natural or other uncontrollable occurrences at any of ASTeX's manufacturing facilities that negatively impact ASTeX's manufacturing processes may not be fully covered by insurance and could have a material adverse effect on ASTeX's operations and results of operations.

ECONOMIC PROBLEMS IN ASIA MAY HURT ASTEX'S SALES.

Asia is an important region for the markets ASTeX serves and has accounted for a large part of ASTeX's revenues. In recent years, Asia has experienced serious economic problems including currency devaluations, debt defaults, lack of liquidity and recessions. ASTeX's revenues depend upon the capital expenditures of semiconductor manufacturers, many of whom have operations and customers in Asia. Serious economic problems in Asia would likely result in a significant decrease in the sale of equipment to the semiconductor industry. Economic difficulties in this region could also damage the economies of the U.S. and Europe and ultimately the domestic demand for ASTeX's products. Therefore, weak economic conditions in Asia would likely negatively impact ASTeX's future financial condition, revenues and operating results.

ASTEX'S DEPENDENCE ON SOLE AND LIMITED SOURCE SUPPLIERS COULD AFFECT ITS ABILITY TO MANUFACTURE PRODUCTS AND SYSTEMS.

ASTeX relies on sole and limited source suppliers for a few of its components and subassemblies that are critical to the manufacturing of ASTeX's products. This reliance involves several risks, including the following:

- the potential inability to obtain an adequate supply of required components;
- reduced control over pricing and timing of delivery of components; and
- the potential inability of its suppliers to develop technologically advanced products to support ASTeX's growth and development of new systems.

ASTeX believes that in time ASTeX could obtain and qualify alternative sources for most sole and limited source parts. Seeking alternative sources of the parts could require ASTeX to redesign its systems, resulting in increased costs and likely shipping delays. ASTeX may be unable to redesign its systems, which could result in further costs and shipping delays. These increased costs would decrease ASTeX's profit margins if it could not pass the costs to its customers. Further, shipping delays could damage ASTeX's relationships with current and potential customers and have a material adverse effect on ASTeX's business and results of operations.

ASTEX'S DEPENDENCE UPON INTERNATIONAL SALES AND NON-U.S. SUPPLIERS INVOLVES SIGNIFICANT RISK.

ASTeX does business worldwide, both directly and through sales to United States-based OEMs, who sell their products internationally. International sales accounted for 20% of revenues in fiscal year 2000, 20% of revenues in fiscal year 1999, and 23% of revenues in fiscal year 1998. International sales will continue to account for a significant percentage of ASTeX's revenues. In addition, ASTeX relies upon non-U.S. suppliers for certain components. As a result, a major part of ASTeX's revenues and operating results is subject to the risks associated with international sales. International sales and ASTeX's relationships with suppliers may be hurt by many factors, including:

- changes in policy or applicable U.S. or foreign laws which result in burdensome government controls, tariffs, restrictions, embargoes or export license requirements;

- political and economic instability in ASTeX's target international markets;
- difficulties of staffing and managing ASTeX's international operations or representatives;
- shipping delays;
- less favorable foreign intellectual property laws, which make it harder to protect ASTeX's technology from appropriation by competitors;
- longer payment cycles common in foreign markets;
- difficulties collecting ASTeX's accounts receivable because of the distance and different legal rules; and
- potential additional U.S. and foreign taxes which increase the amount of taxes ASTeX has to pay.

ASTEX MAY INCUR FOREIGN CURRENCY EXCHANGE RATE LOSSES.

ASTeX's foreign sales are typically made in U.S. dollars. A strengthening in the dollar relative to the currencies of those countries where ASTeX does business would increase the prices of ASTeX's products as stated in those currencies and hurt ASTeX's sales in those countries. If ASTeX lowers its prices to reflect a change in exchange rates, ASTeX's profitability in those markets will go down. In the past, there have been significant fluctuations in the exchange rates between the dollar and the currencies in those countries in which ASTeX does business. ASTeX has not historically tried to reduce its exposure to exchange rate fluctuations by using hedging transactions. However, ASTeX may choose to do so in the future. It may not be able to do so successfully. Accordingly, ASTeX may experience economic loss and a negative impact on earnings and equity as a result of foreign currency exchange rate fluctuations.

PATENTS AND PROPRIETARY INFORMATION MAY NOT BE ADEQUATE TO PROTECT ASTEX'S BUSINESS.

ASTeX relies on ASTeX's patent and trade secret rights to protect ASTeX's proprietary technology. As of October 12, 2000, ASTeX owns 31 U.S. patents and two foreign patents, and has 26 pending U.S. patent applications and 15 pending foreign applications in various stages of prosecution. The earliest of ASTeX's key patents expires in 2007. ASTeX owns the commercial rights to proprietary technology developed under various U.S. government contracts and grants, including federally funded research contracts. The U.S. government also has certain rights to such proprietary technology developed under these contracts and grants. ASTeX also has joint development agreements with industrial and commercial partners which may result in sole or joint ownership rights to proprietary technology developed under those agreements. However, ASTeX cannot be sure that additional patent applications will be filed, that patents will issue from these applications or that any of ASTeX's patents will withstand challenges by others. ASTeX's patents may not provide it with meaningful protection from competitors, including those who may pursue patents which may block ASTeX's use of its proprietary technology. In addition, ASTeX relies upon unpatented trade secrets and seeks to protect them, in part, through confidentiality agreements with employees, consultants and ASTeX's customers and potential customers. If these agreements are breached, or if ASTeX's trade secrets become known to or are independently developed by competitors ASTeX may not have adequate remedies for such breach. If a competitor's products infringed ASTeX's patents, ASTeX may sue to enforce its rights in an infringement action. These suits are costly and would divert funds and management and technical resources from ASTeX's operations. Furthermore, ASTeX cannot be certain that ASTeX's products or processes will not infringe any patents or other intellectual property rights of others. If they do infringe the rights of others, ASTeX may not be able to obtain a license from the intellectual property owner on commercially reasonable terms or at all. ASTeX's efforts to protect ASTeX's intellectual property may be less effective in some foreign countries where intellectual property rights are not as well protected as in the United States. Currently, a significant portion of ASTeX's revenue is derived from sales in foreign countries, including certain countries in Asia, such as Taiwan, Korea and Japan. The laws of some foreign countries do not protect ASTeX's proprietary rights to as great an extent as do the laws of the United States, and many U.S. companies have encountered substantial problems in protecting their proprietary rights against infringement in such countries, some of which are countries in which ASTeX has sold and continues to sell products. There is a risk that ASTeX's means of protecting its proprietary rights may not be adequate in these countries. For example, ASTeX's competitors in these countries may independently develop similar technology or duplicate ASTeX's systems. If ASTeX fails

to adequately protect ASTeX's intellectual property in these countries, it would be easier for ASTeX's competitors to sell competing products in those countries.

ASTEX IS SUBJECT TO GOVERNMENTAL REGULATIONS.

ASTeX is subject to federal, state, local, and foreign regulations, including environmental regulations and regulations relating to the design and operation of ASTeX's power supply products. ASTeX must ensure that these systems meet certain safety standards, many of which vary across the countries in which ASTeX's systems are used. For example, the European Union has published directives specifically relating to power supplies. ASTeX must comply with these directives in order to ship ASTeX's systems into countries that are members of the European Union. ASTeX believes it is in compliance with current applicable regulations, directives and standards and have obtained all necessary permits, approvals, and authorizations to conduct ASTeX's business. However, compliance with future regulations, directives and standards could require it to modify or redesign certain systems, make capital expenditures or incur substantial costs. If ASTeX does not comply with current or future regulations, directives and standards:

- ASTeX could be subject to fines;
- ASTeX's production could be suspended; or
- ASTeX could be prohibited from offering particular systems in specified markets.

CAUTIONARY STATEMENT CONCERNING FORWARD-LOOKING STATEMENTS.

MKS and ASTeX believe this joint proxy statement/prospectus contains "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995. These statements are subject to risks and uncertainties and are based on the beliefs and assumptions of management of MKS and ASTeX of uncertainties, based on information currently available to each company's management. When we used words such as "believes," "expects," "anticipates," "intends," "plans," "estimates," "should," "likely" or similar expressions, we are making forward-looking statements. Forward-looking statements include the information concerning possible or assumed future results of operations of MKS or ASTeX set forth under:

"Summary," "Risk Factors," "Selected Unaudited Pro Forma Condensed Combined Financial Information," "The Merger -- Background of the Merger," "The Merger -- ASTeX's Reasons for the Merger," "The Merger -- Recommendation of the ASTeX board of directors," "The Merger -- MKS' Reasons for the Merger," "The Merger -- Recommendation of the MKS board of directors," "The Merger -- Opinion of MKS' Financial Advisor," "The Merger -- Opinion of ASTeX's Financial Advisor."

Forward-looking statements are not guarantees of performance. They involve risks, uncertainties and assumptions. The future results and stockholder values of MKS or ASTeX may differ materially from those expressed in the forward-looking statements. Many of the factors that will determine these results and values are beyond MKS' ability to control or predict. Stockholders are cautioned not to put undue reliance on any forward-looking statements. For those statements, MKS and ASTeX claim the protection of the safe harbor for forward-looking statements contained in the Private Securities Litigation Reform Act of 1995.

The factors discussed under "Risk Factors" that may affect future performance and the accuracy of forward-looking statements is illustrative, but by no means exhaustive. Accordingly, all forward-looking statements should be evaluated with the understanding of their inherent uncertainty.

SELECTED HISTORICAL CONSOLIDATED FINANCIAL DATA OF MKS

The following table presents selected historical consolidated financial data of MKS. The following selected financial data as of December 31, 1998 and 1999 and for the years ended December 31, 1997, 1998 and 1999 have been derived from MKS financial statements, incorporated by reference in this joint proxy statement/prospectus, which have been audited by PricewaterhouseCoopers LLP, independent accountants, as indicated in their report. The following selected financial data as of December 31, 1995, 1996 and 1997 and for the years ended December 31, 1995 and 1996 have been derived from MKS financial statements, not included in or incorporated by reference into this joint proxy statement/prospectus, which have been audited by PricewaterhouseCoopers LLP. The consolidated statement of income data for the six-month periods ended June 30, 1999 and 2000 and the consolidated balance sheet data at June 30, 2000 are unaudited. In the opinion of MKS' management, all necessary adjustments for a fair statement (consisting of only normal recurring adjustments), have been included in the unaudited interim results when read in conjunction with the audited financial statements and the notes thereto incorporated by reference in this joint proxy statement/prospectus. The data should be read in conjunction with the Consolidated Financial Statements, including the Notes thereto, incorporated by reference in this joint proxy statement/prospectus.

	YEAR ENDED DECEMBER 31,					SIX MONTHS ENDED JUNE 30,	
	1995	1996	1997	1998	1999	1999	2000
(IN THOUSANDS, EXCEPT PER SHARE DATA)							
STATEMENT OF INCOME DATA:							
Net Sales.....	\$157,164	\$170,862	\$188,080	\$139,763	\$187,083	\$82,119	\$143,257
Gross profit.....	69,461	68,854	80,474	55,979	79,855	34,012	66,045
Income from operations....	24,106	16,068	23,963	9,135	27,611	9,448	32,488
Net income.....	\$ 21,658	\$ 12,503	\$ 20,290	\$ 7,186	\$ 24,037	\$10,705	\$ 20,617
HISTORICAL NET INCOME PER SHARE							
Basic.....	\$ 1.20	\$ 0.69	\$ 1.12	\$ 0.40	\$ 1.05	\$ 0.51	\$ 0.83
Diluted.....	\$ 1.20	\$ 0.69	\$ 1.10	\$ 0.38	\$ 1.00	\$ 0.48	\$ 0.79
PRO FORMA STATEMENT OF INCOME DATA (UNAUDITED)(1):							
Pro forma net income.....	\$ 13,821	\$ 8,248	\$ 13,806	\$ 5,044	\$ 18,412	\$ 5,956	
Pro forma net income per share:							
Basic.....	\$ 0.77	\$ 0.46	\$ 0.76	\$ 0.28	\$ 0.81	\$ 0.28	
Diluted.....	\$ 0.77	\$ 0.46	\$ 0.76	\$ 0.27	\$ 0.77	\$ 0.27	
(IN THOUSANDS)							
	AS OF DECEMBER 31,					AS OF JUNE 30,	
	1995	1996	1997	1998	1999	2000	
BALANCE SHEET DATA:							
Cash and cash equivalents....	\$ 3,650	\$ 3,815	\$ 2,511	\$11,188	\$ 35,714	\$ 44,485	
Working capital.....	32,202	22,404	30,321	31,493	87,088	109,286	
Total assets.....	104,511	95,000	106,536	96,232	174,605	218,210	
Short-term obligations.....	15,192	16,124	13,852	12,819	20,828	24,188	
Long-term obligations, less current portion.....	20,462	18,899	15,624	13,786	5,662	5,096	
Stockholders' equity.....	48,392	45,498	52,848	54,826	119,169	154,261	

(1) Data is computed on the same basis as Note 2 of Notes to MKS' consolidated financial statements for the year ended December 31, 1999, which are incorporated by reference in this joint proxy statement/prospectus. The historical net income per share data of MKS does not include provisions for federal income taxes prior to April 4, 1999 because MKS was treated as an S corporation for federal and certain state income tax purposes. The pro forma statement of income data presents net income and net income per share data as if MKS had been subject to income taxes as a C corporation during the periods presented. No pro forma presentation is necessary for the six months ended June 30, 2000 because MKS was subject to income taxes as a C corporation for the entire period.

SELECTED HISTORICAL CONDENSED CONSOLIDATED
FINANCIAL INFORMATION OF ASTeX
(IN THOUSANDS, EXCEPT PER SHARE DATA)

Please read the following selected consolidated financial data of ASTeX in conjunction with ASTeX's consolidated financial statements and accompanying notes included elsewhere in this document. The statement of operations data for the years ended June 27, 1998, June 26, 1999 and July 1, 2000, and the balance sheet data at June 26, 1999 and July 1, 2000 are derived from ASTeX's audited consolidated financial statements incorporated by reference into this joint proxy statement/prospectus. The statement of operations data for the years ended June 29, 1996 and June 28, 1997 and the balance sheet data at June 29, 1996, June 28, 1997 and June 27, 1998 are derived from ASTeX's audited financial statements not included in or incorporated by reference into this joint proxy statement/prospectus.

	YEAR ENDED				
	JUNE 29, 1996	JUNE 28, 1997	JUNE 27, 1998	JUNE 26, 1999	JULY 1, 2000
	(IN THOUSANDS, EXCEPT PER SHARE DATA)				
STATEMENT OF INCOME DATA:					
Net Sales.....	\$39,135	\$47,967	\$83,436	\$78,209	\$139,897
Gross profit.....	15,771	17,410	28,449	22,654	55,021
Income (loss) from operations.....	(6,079)	1,659	5,909	(2,574)	19,356
Net income (loss).....	\$(7,298)	\$ 938	\$ 4,021	\$(1,251)	\$ 14,026
HISTORICAL NET INCOME					
(LOSS) PER SHARE:					
Basic.....	\$ (1.16)	\$ 0.14	\$ 0.50	\$ (0.13)	\$ 1.14
Diluted.....	\$ (1.16)	\$ 0.14	\$ 0.47	\$ (0.13)	\$ 1.09

	AS OF				
	JUNE 29, 1996	JUNE 28, 1997	JUNE 27, 1998	JUNE 26, 1999	JULY 1, 2000
	(IN THOUSANDS)				
BALANCE SHEET DATA:					
Cash and cash equivalents.....	\$ 5,182	\$3,246	\$7,687	\$31,775	\$78,407
Working capital.....	19,217	16,956	28,570	52,279	126,109
Total assets.....	34,361	39,327	51,293	80,535	188,576
Long-term obligations, less current portion.....	6,170	6,369	--	--	8,210
Stockholders' equity.....	21,296	23,489	43,801	67,721	159,143

SELECTED UNAUDITED PRO FORMA CONDENSED
COMBINED FINANCIAL INFORMATION

On October 2, 2000, MKS agreed to acquire ASTeX. In the merger, MKS will issue 0.7669 of a share of MKS common stock for each outstanding share of ASTeX common stock. Based on the number of ASTeX shares outstanding on October 2, 2000, MKS will issue approximately 11,200,000 shares to complete the merger, representing approximately 30% of MKS' then outstanding shares. In addition, MKS will assume all ASTeX stock options outstanding as of the date of the merger.

The following table presents selected unaudited pro forma combined financial data of MKS and ASTeX. The data has been prepared giving effect to the merger under the "pooling of interests" method of accounting. This information should be read in conjunction with the unaudited pro forma financial statements and related notes. The selected unaudited pro forma combined financial data is presented for illustrative purposes only and is not necessarily indicative of the operating results or financial position that would have been achieved had the merger been consummated as of the dates indicated or that may be achieved in the future.

Since the fiscal years of MKS and ASTeX differ, the periods combined for purposes of the pro forma combined financial data are as follows, giving effect to the merger as if it had occurred at the beginning of each period presented:

MKS ---	ASTeX -----
Fiscal year ended December 31, 1997	Fiscal year ended June 28, 1997
Fiscal year ended December 31, 1998	Fiscal year ended June 27, 1998
Fiscal year ended December 31, 1999	Fiscal year ended June 26, 1999
Six months ended June 30, 1999 and 2000	Six months ended June 26, 1999 and July 1, 2000

	YEAR ENDED DECEMBER 31,			SIX MONTHS ENDED JUNE 30,	
	1997	1998	1999	1999	2000

	(IN THOUSANDS, EXCEPT PER SHARE DATA)				
PRO FORMA STATEMENT OF INCOME DATA:					
Net sales.....	\$236,047	\$223,199	\$265,292	\$131,374	\$221,486
Gross profit.....	97,884	84,428	102,509	50,992	96,906
Income from operations.....	25,622	15,044	25,037	13,313	43,552
Net income.....	\$ 21,228	\$ 11,207	\$ 22,786	\$ 13,371	\$ 28,853
PRO FORMA NET INCOME PER SHARE:					
Basic.....	\$ 0.92	\$ 0.46	\$ 0.76	\$ 0.46	\$ 0.83
	=====	=====	=====	=====	=====
Diluted.....	\$ 0.90	\$ 0.44	\$ 0.73	\$ 0.44	\$ 0.79
	=====	=====	=====	=====	=====
PRO FORMA STATEMENT OF INCOME DATA ASSUMING C CORPORATION TAXES(1):					
Pro forma net income from above....	\$ 21,228	\$ 11,207	\$ 22,786	\$ 13,371	
Pro forma adjustment for MKS tax provision assuming C corporation tax.....	6,484	2,142	5,625	4,749	
	-----	-----	-----	-----	
Pro forma net income.....	\$ 14,744	\$ 9,065	\$ 17,161	\$ 8,622	
PRO FORMA NET INCOME PER SHARE:					
Basic.....	\$ 0.64	\$ 0.37	\$ 0.57	\$ 0.30	
	=====	=====	=====	=====	
Diluted.....	\$ 0.63	\$ 0.36	\$ 0.55	\$ 0.29	
	=====	=====	=====	=====	

AS OF
 JUNE 30, 2000

 (IN THOUSANDS)

BALANCE SHEET DATA:

Cash and cash equivalents.....	\$122,892
Working capital.....	227,895
Total assets.....	406,786
Short-term obligations.....	25,617
Long-term obligations, less current portion.....	13,306
Stockholders' equity.....	305,904

 (1) The historical net income per share data of MKS does not include provisions for federal income taxes prior to April 4, 1999 because MKS was treated as an S corporation for federal and certain state income tax purposes. The pro forma statement of income data presents net income and net income per share data as if MKS had been subject to income taxes as a C corporation during the periods presented. No pro forma presentation is necessary for the six months ended June 30, 2000 because MKS was subject to income taxes as a C corporation for the entire period.

UNAUDITED COMPARATIVE PER SHARE DATA

The following tables present (a) the basic and diluted net income (loss) per share and book value per share data for each of MKS and ASTeX on a historical basis, (b) the historical and pro forma assuming C corporation taxes for MKS basic and diluted net income per share and book value per share for the combined company on a pro forma basis and (c) the historical and pro forma assuming C corporation taxes for MKS basic and diluted net income per share and book value per share for ASTeX on an equivalent pro forma combined basis. Under ASTeX equivalent pro forma combined below, ASTeX and MKS show the effect of the merger from the perspective of an owner of shares of ASTeX common stock. ASTeX and MKS computed the information set out under that caption by multiplying the corresponding pro forma financial data by the common stock exchange ratio of 0.7669. The unaudited pro forma combined financial data are not necessarily indicative of the operating results that would have been achieved had the transaction been in effect as of the beginning of the periods and should not be construed as representative of future operations.

	YEAR ENDED DECEMBER 31,			SIX MONTHS ENDED JUNE 30,	
	1997	1998	1999	1999	2000
MKS -- HISTORICAL:					
Basic net income per share.....	\$1.12	\$0.40	\$1.05	\$0.51	\$0.83
Diluted net income.....	\$1.10	\$0.38	\$1.00	\$0.48	\$0.79
Book value(1).....	\$2.93	\$3.04	\$4.84	\$4.37	\$6.15

	FISCAL YEAR ENDED		
	JUNE 27, 1998	JUNE 26, 1999	JULY 1, 2000
ASTeX -- HISTORICAL:			
Basic net income (loss) per share.....	\$0.50	\$(0.13)	\$ 1.14
Diluted net income.....	\$0.47	\$(0.13)	\$ 1.09
Book value(1).....	\$5.09	\$ 5.93	\$11.05

	YEAR ENDED DECEMBER 31,			SIX MONTHS ENDED JUNE 30,	
	1997	1998	1999	1999	2000
PRO FORMA COMBINED -- PER COMBINED COMPANIES SHARE(2):					
Basic net income per share.....	\$0.92	\$0.46	\$0.76	\$0.46	\$0.83
Diluted net income.....	\$0.90	\$0.44	\$0.73	\$0.44	\$0.79
Book value(1).....					\$8.47

	YEAR ENDED DECEMBER 31,			SIX MONTHS ENDED JUNE 30,	
	1997	1998	1999	1999	2000
EQUIVALENT PRO FORMA COMBINED -- PER ASTeX SHARE(3):					
Basic net income per share.....	\$0.71	\$0.35	\$0.58	\$0.35	\$0.64
Diluted net income.....	\$0.69	\$0.34	\$0.56	\$0.34	\$0.61
Book value.....					\$6.49

	YEAR ENDED DECEMBER 31,			SIX MONTHS ENDED JUNE 30,	
	1997	1998	1999	1999	2000
PRO FORMA COMBINED -- PER COMBINED COMPANIES PRO FORMA SHARE ASSUMING C CORPORATION TAXES FOR MKS(2)(4):					
Pro forma basic net income per share.....	\$0.64	\$0.37	\$0.57		\$0.30
Pro forma diluted net income.....	\$0.63	\$0.36	\$0.55		\$0.29

	YEAR ENDED DECEMBER 31,			SIX MONTHS
	1997	1998	1999	ENDED JUNE 30, 1999
EQUIVALENT PRO FORMA COMBINED -- PER ASTeX SHARE				
ASSUMING C CORPORATION TAXES FOR MKS(3)(4):				
Pro forma basic net income per share.....	\$0.49	\$0.28	\$0.44	\$0.23
Pro forma diluted net income.....	\$0.48	\$0.28	\$0.42	\$0.22

- (1) Historical book value per share is computed by dividing stockholders' equity by the number of shares of common stock outstanding at the end of each period. Pro forma combined -- per combined companies share book value is computed by dividing pro forma stockholders' equity by the pro forma number of shares of MKS common stock which would have been outstanding had the merger been consummated as of each balance sheet date.
- (2) For the purposes of the pro forma, combined net income per share and book value per share data, MKS' historical financial data for the six month periods ended June 30, 1999 and 2000 and the three years ended December 31, 1997, 1998 and 1999 have been combined with ASTeX's financial data for the six month periods ended June 26, 1999 and July 1, 2000 and for the fiscal years ended June 28, 1997, June 27, 1998 and June 26, 1999, respectively.
- (3) ASTeX equivalent pro forma combined amounts are calculated by multiplying the pro forma combined per share amounts by the exchange ratio of 0.7669 of a share of MKS common stock for each share of ASTeX common stock.
- (4) The historical net income per share data of MKS does not include provisions for federal income taxes prior to April 4, 1999 because MKS was treated as an S corporation for federal and certain state income tax purposes. The pro forma combined -- per combined companies share presents basic and diluted net income per share data as if MKS had been subject to income taxes as a C corporation during the periods presented. No pro forma presentation is necessary for the six months ended June 30, 2000 because MKS was subject to income taxes as a C corporation for the entire period.

MARKET PRICE INFORMATION

MKS MARKET PRICE INFORMATION

MKS common stock has traded on the Nasdaq National Market under the symbol "MKSI" since March 30, 1999.

The table below sets forth the range of high and low prices of MKS common stock as reported on the Nasdaq National Market since March 30, 1999, the date of MKS' initial public offering.

	HIGH -----	LOW -----
FISCAL 1999		
Quarter ended March 31, 1999.....	\$14.500	\$ 13.375
Quarter ended June 30, 1999.....	19.750	11.875
Quarter ended September 30, 1999.....	22.500	17.750
Quarter ended December 31, 1999.....	36.500	19.250
FISCAL 2000		
Quarter ended March 31, 2000.....	62.250	30.500
Quarter ended June 30, 2000.....	57.000	31.875
Quarter ended September 30, 2000.....	40.750	16.8125
Quarter ending December 31, 2000 (through November 7, 2000).....	25.8125	16.6875

As of October 31, 2000 MKS had 73 record holders of its common stock.

ASTEX MARKET PRICE INFORMATION

ASTeX common stock has traded on the Nasdaq National Market under the symbol "ASTX" since November 10, 1993.

The table below sets forth the range of high and low closing prices of ASTeX common stock as reported on the Nasdaq National Market since the beginning of its fiscal year ended June 27, 1998.

	HIGH -----	LOW -----
FISCAL 1999 (ended June 26, 1999)		
Quarter ended September 26, 1998.....	\$ 8.125	\$ 3.875
Quarter ended December 26, 1998.....	11.000	3.125
Quarter ended March 27, 1999.....	14.500	9.875
Quarter ended June 26, 1999.....	21.375	12.500
FISCAL 2000 (ended July 1, 2000)		
Quarter ended September 25, 1999.....	23.125	16.688
Quarter ended December 25, 1999.....	31.250	19.875
Quarter ended March 25, 2000.....	45.000	29.750
Quarter ended July 1, 2000.....	35.500	17.375
FISCAL 2001 (ending June 30, 2001)		
Quarter ended September 30, 2000.....	24.875	12.625
Quarter ending December 30, 2000 (through November 7, 2000).....	17.937	13.187

As of November 7, 2000 ASTeX had 190 record holders of its common stock.

RECENT CLOSING PRICES

The following table sets forth the closing prices per share of MKS common stock and ASTeX common stock as reported on the Nasdaq National Market on September 29, 2000, the last full trading day prior to the public announcement that MKS and ASTeX had entered into the merger agreement, and November 7, 2000,

the last full trading day for which closing prices were available at the time of the printing of this joint proxy statement/prospectus. This table also sets forth the equivalent price per share of ASTeX common stock on those dates. The equivalent price per share is equal to the closing price of a share of MKS common stock on that date multiplied by 0.7669, the exchange ratio in the merger.

DATE - - - - -	MKS COMMON STOCK -----	ASTeX COMMON STOCK -----	EQUIVALENT PER SHARE PRICE -----
September 29, 2000.....	\$27.375	\$ 14.75	\$20.99
November 7, 2000.....	\$18.125	\$13.875	\$13.90

ASTeX and MKS believe that ASTeX common stock presently trades on the basis of the value of MKS common stock expected to be issued in exchange for the ASTeX common stock in the merger, discounted primarily for the uncertainties associated with the merger.

ASTeX stockholders are advised to obtain current market quotations for MKS common stock and ASTeX common stock. No assurance can be given as to the market prices of MKS common stock or ASTeX common stock at any time before completing the merger or as to the market price of MKS common stock at any time after the merger. Because the exchange ratio is fixed, the exchange ratio will not be adjusted to compensate ASTeX stockholders for decreases in the market price of MKS common stock which could occur before the merger becomes effective. In the event the market price of MKS common stock decreases or increases prior to completing the merger, the value of the MKS common stock to be received in the merger in exchange for ASTeX common stock would correspondingly decrease or increase.

DIVIDENDS

On September 19, 2000, MKS made a cash payment in the aggregate amount of \$1,594,143, pursuant to its obligations under the Tax Indemnification and S Corporation Distribution Agreement, entered into by and among MKS and the stockholders of MKS prior to MKS' initial public offering. Other than that payment, MKS has not declared or paid cash dividends on MKS common stock. MKS currently intends to retain earnings, if any, to support its growth strategy and does not anticipate paying cash dividends in the foreseeable future. Payment of future dividends, if any, will be at the discretion of the MKS board of directors after taking into account various factors, including MKS' financial condition, operating results, current and anticipated cash needs and plans for expansion.

ASTeX has never paid cash dividends on its capital stock and does not intend to pay any cash dividends on its common stock in the foreseeable future. If the merger does not occur, ASTeX currently intends to retain earnings, if any, to support its operations. Payment of future dividends, if any, will be at the discretion of ASTeX's board of directors.

THE ASTEX ANNUAL MEETING

ASTeX is furnishing this document to holders of ASTeX common stock in connection with the solicitation by the ASTeX board of directors of proxies to be voted at the annual meeting to be held on _____, _____, 200_, and at any adjournment of the meeting.

ASTeX will pay all of its expenses in connection with solicitation of the joint proxy statement/prospectus. Officers, directors and regular employees of ASTeX, who will receive no additional compensation for their services, may solicit proxies by telephone or personal call. ASTeX has asked brokers and nominees who hold stock in their names to give the joint proxy statement/prospectus to their customers. This document is first being mailed to ASTeX stockholders on or about _____, 200_. This document is also furnished to ASTeX stockholders as a prospectus in connection with the issuance by MKS of shares of MKS common stock as contemplated by the merger agreement.

DATE, TIME AND PLACE OF MEETING

The annual meeting will be held on _____, _____, 200_ at 10:00 a.m., local time, at the offices of Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C., One Financial Center, Boston, Massachusetts 02111.

WHAT WILL BE VOTED UPON

At the annual meeting, stockholders of ASTeX will be asked to:

- adopt the merger agreement with MKS, under which ASTeX will become a wholly-owned subsidiary of MKS and each outstanding share of ASTeX will be converted into 0.7669 of a share of common stock of MKS;
- elect two directors of ASTeX, to serve until the earlier of the expiration of their terms or the effectiveness of the merger;
- ratify the selection of KPMG LLP as ASTeX's independent public accountants; and
- transact any other business that may properly come before the annual meeting or any postponements or adjournments of that meeting.

RECORD DATE AND OUTSTANDING SHARES

Only stockholders of record at the close of business on the _____, 200_ record date for the annual meeting are entitled to notice of, and to vote at, the annual meeting. Each holder of record of ASTeX common stock at the close of business on the record date is entitled to one vote for each share then held on each matter voted on by stockholders. At the close of business on the record date, there were 14,624,621 shares of ASTeX common stock issued and outstanding held by 183 holders of record.

VOTES REQUIRED

Under Delaware law, holders of a majority of the outstanding shares of ASTeX common stock entitled to vote at the annual meeting must vote in favor of adopting the merger agreement. In addition, nominees for election as directors at the meeting will be elected by a plurality of the votes of the shares present in person or represented by proxy at the meeting. Ratification of KPMG LLP as ASTeX's independent public accountants will require the vote of a majority of the shares of ASTeX common stock present or represented by proxy and entitled to vote at the meeting.

QUORUM; ABSTENTIONS AND BROKER NON-VOTES

The holders of a majority of the outstanding shares entitled to vote at the annual meeting must be present in person or represented by proxy to constitute a quorum for the transaction of business. Abstentions are counted for purposes of determining whether a quorum exists. If you hold your shares of ASTeX common stock through a broker, bank or other nominee, generally the nominee may only vote your ASTeX common stock in accordance with your instructions. However, if it has not timely received your instructions, the

nominee may vote on matters for which it has discretionary voting authority. Brokers generally will not have discretionary voting authority to vote on the proposal to adopt the merger agreement, and generally will have discretionary voting authority to vote on the nominees for director and the ratification of accountants. If a nominee cannot vote on a matter because it does not have discretionary voting authority, this is a "broker non-vote" on that matter. Broker non-votes are also counted as shares present or represented at the annual meeting for purposes of determining whether a quorum exists.

For purposes of the vote with respect to the merger agreement required under Delaware law, a failure to vote, a vote to abstain and a broker non-vote will each have the same legal effect as a vote against adoption of the merger agreement. As to the election of directors and the ratification of accountants, broker non-votes and, with respect to the election of directors, withholdings of authority to vote are not deemed to be present and represented and are not entitled to vote, and therefore will have no effect on the outcome of the vote.

If an ASTeX stockholder executes a proxy card without giving instructions, the shares of ASTeX common stock represented by that proxy card will be voted "FOR" adoption of the proposed merger agreement, "FOR" the nominees for directors, and "FOR" the ratification of KPMG LLP as ASTeX's independent public accountants. The board is not aware of any other matters to be voted on at the annual meeting. If any other matters properly come before the annual meeting, including a motion to adjourn the annual meeting in order to solicit additional proxies, the persons named on the proxy card will vote the shares represented by all properly executed proxies on those matters in their discretion, except that shares represented by proxies that have been voted "AGAINST" adoption of the merger agreement will not be used to vote "FOR" adjournment of the annual meeting to allow additional time to solicit additional votes "FOR" the merger agreement.

VOTING AND REVOCATION OF PROXIES

An ASTeX stockholder may revoke his, her or its proxy at any time before the proxy is exercised by one of the following means:

- sending the secretary of ASTeX a notice revoking it;
- submitting a duly executed proxy with a later date; or
- voting in person at the annual meeting.

All shares represented by each properly executed and not revoked proxy received by the secretary of ASTeX prior to the annual meeting will be voted in accordance with the instructions given on the proxy. If no instructions are indicated, the proxy will be voted to adopt the merger agreement and in favor of the director nominees.

SOLICITATION OF PROXIES AND EXPENSES

ASTeX will bear the cost of the solicitation of proxies from its stockholders. In addition to solicitation by mail, brokerage houses and other custodians, nominees and fiduciaries will send beneficial owners the proxy materials. ASTeX will, upon request, reimburse those brokerage houses and custodians for their reasonable expenses. We urge stockholders to vote proxies without delay.

BOARD RECOMMENDATION

ASTeX's board of directors, with Mr. Bertucci not participating, has unanimously approved the merger agreement and the merger and believes that the terms of the merger agreement are fair to, and that the merger is in the best interests of ASTeX and its stockholders. Therefore, ASTeX's board of directors recommends that ASTeX stockholders vote for adoption of the merger agreement.

The matters to be considered at the stockholders meeting are of great importance to the stockholders of ASTeX. Accordingly, ASTeX stockholders are urged to read and carefully consider the information presented in this document, and to complete, date, sign and promptly return the enclosed proxy card in the enclosed postage-paid envelope.

THE MKS SPECIAL MEETING

MKS is furnishing this document to holders of MKS common stock in connection with the solicitation of proxies by the MKS board of directors for use at the special meeting of MKS stockholders to be held on _____, _____, 200_, and any adjournment of the meeting.

This document is first being furnished to MKS stockholders on or about _____, 200_.

DATE, TIME AND PLACE OF MEETING

The special meeting will be held on _____, _____, 200_, at 10:00 a.m., local time, at the offices of Hale and Dorr, LLP, 60 State Street, Boston, Massachusetts 02109.

WHAT WILL BE VOTED UPON

At the special meeting, stockholders of MKS will be asked to approve the issuance of 0.7669 of a share of common stock for each outstanding share of ASTeX common stock in connection with the merger and to transact any other business that may properly come before the special meeting or any postponements or adjournments of that meeting.

RECORD DATE AND OUTSTANDING SHARES

Only stockholders of record of MKS common stock at the close of business on the _____, 200_ record date for the special meeting are entitled to notice of and to vote at the special meeting. As of the close of business on the record date, there were 25,532,257 shares of MKS common stock outstanding and entitled to vote, held of record by 73 stockholders. Each MKS stockholder is entitled to one vote for each share of MKS common stock held as of the record date.

VOTE REQUIRED TO APPROVE THE ISSUANCE

MKS stockholder approval of the issuance of MKS common stock in connection with the merger is required under the rules of the Nasdaq National Market, in which MKS' common stock is listed, because the number of shares of MKS common stock issued in the merger will exceed 20% of the number of outstanding shares immediately prior to the merger. The affirmative vote of the holders of at least a majority of the shares of MKS common stock present or represented by proxy at the special meeting is required to approve the issuance of MKS common stock in connection with the merger. John R. Bertucci, MKS' chairman and chief executive officer and a director of ASTeX, together with members of Mr. Bertucci's family, who beneficially own a majority of all outstanding shares of MKS common stock, have agreed to vote in favor of the issuance of the MKS common stock in connection with the merger. Therefore, MKS stockholder approval is assured.

QUORUM; ABSTENTIONS AND BROKER NON-VOTES

An MKS stockholder may abstain from voting on the proposal to approve the issuance of MKS common stock in connection with the merger by returning a proxy marked "ABSTAIN."

Under applicable rules, brokers who hold shares in street name for customers have the authority to vote on some routine proposals when they have not received instructions from beneficial owners. Under applicable rules, these brokers are precluded from exercising their voting discretion with respect to the approval and adoption of non-routine matters such as the proposed issuance of MKS common stock in connection with the merger. As a result, absent specific instructions from the beneficial owner of shares held in street name, brokers are not empowered to vote these shares to approve the proposed issuance of MKS common stock in connection with the merger.

Since the required vote to approve the issuance of MKS common stock in connection with the merger is based on the number of shares present or represented by proxy at the special meeting, rather than outstanding shares, abstentions and broker non-votes will have no effect on the outcome of the proposal.

VOTING AND REVOCATION OF PROXIES

The proxy accompanying this document is solicited on behalf of the MKS board of directors. MKS stockholders are requested to complete, date and sign the accompanying proxy and promptly return it in the accompanying envelope or otherwise mail it to MKS. A number of brokerage firms and banks offer telephone and Internet voting options. If an MKS stockholder's shares are registered in street name, the MKS stockholder must check the information forwarded by his, her or its bank or broker to see which options are available. Please see the accompanying proxy for more information.

All properly executed proxies received by MKS prior to the special meeting that are not revoked will be voted at the special meeting in accordance with the instructions indicated on the proxies, or, if no direction is indicated, to approve the issuance of MKS common stock in connection with the merger. MKS' board of directors does not presently intend to bring any other business before the special meeting and, as of the date of this joint proxy statement/prospectus, the board knows of no other matters to be brought before the special meeting. As to any other business that may properly come before the special meeting, however, it is intended that proxies, in the form enclosed, will be voted in accordance with the judgment of the persons voting those proxies. An MKS stockholder who has given a proxy may revoke it at any time before it is exercised at the special meeting by:

- delivering to the clerk of MKS a written notice, bearing a date later than the date of the proxy, stating that the proxy is revoked;
- signing and delivering a proxy relating to the same shares and bearing a later date than the date of the previous proxy prior to the vote at the special meeting; or
- attending the special meeting and voting in person.

However, if you as an MKS stockholder elect to vote in person at the special meeting and your shares are held by a broker, bank or other nominee, you must bring to the special meeting a legal proxy from your broker, bank or other nominee authorizing you to vote the shares.

SOLICITATION OF PROXIES AND EXPENSES

MKS will bear the cost of the solicitation of proxies from its stockholders. In addition to solicitation by mail, brokerage houses and other custodians, nominees and fiduciaries will send beneficial owners the proxy materials. MKS will, upon request, reimburse those brokerage houses and custodians for their reasonable expenses. MKS urges its stockholders to vote proxies without delay.

BOARD RECOMMENDATION

MKS' board of directors has unanimously approved the merger agreement, the merger and the issuance of MKS common stock in the merger and believes that the terms of the merger are fair to, and in the best interest of, MKS and its stockholders. Therefore, MKS' board of directors recommends that MKS stockholders vote FOR approval of the issuance of MKS common stock in connection with the merger.

The proposed merger is of great importance to the stockholders of MKS. Accordingly, MKS' stockholders are urged to read and carefully consider the information presented in this joint proxy statement/prospectus, and to complete, date, sign and promptly return the enclosed proxy card in the enclosed postage-paid envelope.

THE MERGER

This section of the joint proxy statement/prospectus describes material aspects of the proposed merger, including the merger agreement. While MKS and ASTeX believe that the description covers the material terms of the merger and the related transactions, this summary may not contain all of the information that is important to you. You should read this entire document and the other documents referred to in this joint proxy statement/prospectus carefully for a more complete understanding of the merger.

BACKGROUND OF THE MERGER

MKS and ASTeX have been familiar with each other for several years and have done business together from time to time. In addition, John R. Bertucci, the chairman of the board of directors and chief executive officer of MKS, has served on the board of directors of ASTeX since September 1994.

On July 12, 2000, Mr. Bertucci met in San Francisco during the SEMICON show with representatives of Merrill Lynch to discuss the consolidation which had been occurring in the semiconductor subsystems equipment industry.

On July 20, 2000, Merrill Lynch reviewed and discussed with MKS the relative public market analysis and strategic fit of ASTeX with MKS.

On August 2, 2000, Mr. Bertucci had a telephone discussion with Dr. Richard S. Post, chairman of the board of directors and chief executive officer of ASTeX, to set up a breakfast meeting for August 11, 2000 to discuss the consolidation in the industry.

On August 7, Dr. Post contacted Mr. Bertucci by telephone to discuss the agenda for ASTeX's August 17 Board meeting. During the conversation, Dr. Post asked Mr. Bertucci about the topics of discussion for their August 11 meeting. At that point, Mr. Bertucci indicated that an additional topic included the parties considering whether a possible merger between the two companies would be worth considering. Dr. Post and Mr. Bertucci discussed the possible benefits and risks associated with a merger and Mr. Bertucci gave Dr. Post some examples of how the relative valuations of the two companies might be determined, and what the relative valuations of the two companies might be based on those examples. Later that day, Dr. Post sent an email message to the other members of the ASTeX board of directors advising them of the interest being expressed by MKS.

On August 11, 2000, Mr. Bertucci met with Dr. Post and presented a letter to Dr. Post, indicating MKS' strong interest in pursuing a strategic transaction with ASTeX. At the meeting, Dr. Post and Mr. Bertucci reviewed the potential strategic merits of a combination of MKS and ASTeX. From August 11, 2000 through October 2, 2000, Dr. Post and Mr. Bertucci held several additional discussions relating to the businesses of MKS and ASTeX and a possible business combination between the companies.

On August 15, 2000, Mr. Bertucci and Dr. Post had a meeting and signed a confidential information agreement providing for the exchange of non-public information between the companies.

On August 17, 2000, Mr. Bertucci presented the ASTeX board of directors with MKS' written proposal for a merger of ASTeX and MKS, in which the ASTeX stockholders would receive 0.6617 of a share of MKS common stock in exchange for each ASTeX share. At the meeting, Mr. Bertucci also presented his strategic vision for MKS and the steps being taken, including the pursuit of acquisitions, to implement that strategy. Mr. Bertucci then recused himself from this meeting. The board determined that the merits of a possible business combination between the companies warranted further discussion and analysis, but that the proposed consideration of 0.6617 of a share of MKS common stock for each ASTeX share was not acceptable. The board also authorized Dr. Post to engage a financial advisor to assist ASTeX in connection with its evaluation of a possible transaction between ASTeX and MKS, and ASTeX subsequently engaged CIBC World Markets for this purpose. CIBC World Markets was retained to assist the ASTeX board of directors in evaluating the financial condition and operating results of ASTeX and MKS or any other potential acquiror; to assist the board in evaluating and negotiating the financial terms of the proposed merger with MKS; and to express its opinion, if requested by the board, as to whether or not the consideration payable in the proposed merger was fair from a financial point of view to holders of ASTeX's common stock. ASTeX selected CIBC World Markets based on CIBC World Markets' extensive experience with semiconductor equipment manufacturers and its extensive knowledge of ASTeX. Dr. Post communicated the substance of the ASTeX board's

determinations to Mr. Bertucci on August 17, 2000, at a dinner meeting of the ASTeX board of directors, which followed the ASTeX board meeting. The board asked Mr. Bertucci for his thoughts about the strategic plans and vision of an ASTeX and MKS merger. Mr. Bertucci stated that the combination of the two companies could create an enhanced growth platform for future acquisitions and for innovative product development and product integration. Mr. Bertucci indicated that the three acquisitions MKS had already made in 2000, combined with ASTeX and other potential acquisition candidates, could create the broadest global supplier of components and subsystems serving the semiconductor and thin-film markets, and fulfill the MKS "around the process, around the world" business strategy.

On August 25, 2000, ASTeX's board of directors, other than Mr. Bertucci, met with CIBC World Markets to review publicly available financial and market information regarding ASTeX, MKS and other publicly traded companies in the semiconductor capital equipment industry. ASTeX's board of directors discussed potential merger partners and the potential business synergies and benefits to ASTeX stockholders. The board of directors authorized CIBC World Markets to contact MKS and another company, which the board considered as favorable merger partners. Other companies were rejected for other reasons, primarily lack of business synergies or concerns regarding future financial performance.

In early September 2000, members of MKS management met with representatives of Merrill Lynch regarding Merrill Lynch's representation of MKS as its financial advisor in connection with a possible transaction with ASTeX. Merrill Lynch served as MKS' financial advisor in connection with the transaction.

During the week of September 4, 2000, members of ASTeX management, together with representatives of CIBC World Markets, met with members of MKS management and representatives of Merrill Lynch in order to continue their ongoing financial and business due diligence investigation of MKS. From September 6, 2000 through the execution of the definitive merger agreement, ASTeX's financial advisor continued to conduct financial due diligence on MKS and MKS' financial advisor conducted financial due diligence on ASTeX. On September 7, 2000, MKS publicly announced its acquisition of D.I.P. Inc. After this announcement, the strategic fit of D.I.P. with the MKS and ASTeX combination was extensively discussed during the financial and business due diligence meetings.

On September 9, 2000, Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C., counsel for ASTeX, provided Hale and Dorr LLP, counsel for MKS, with a draft of a proposed merger agreement relating to the transaction.

From September 9, 2000 until October 2, 2000, MKS' legal advisors conducted legal due diligence on ASTeX, and ASTeX's legal advisors conducted legal due diligence on MKS.

On September 13, 2000, the MKS board of directors met by conference call in which Mr. Bertucci updated the board on the status of MKS' discussions with ASTeX. In addition, Hale and Dorr provided Mintz Levin with a revised draft of the proposed merger agreement. This draft included a proposed option permitting MKS to purchase up to 19.9% of ASTeX's common stock in the event that the transaction were terminated for specified circumstances including ASTeX's acceptance of another party's offer to purchase ASTeX.

Throughout September 2000, members of ASTeX management, together with ASTeX's financial advisor, met with members of MKS management, together with MKS' financial advisor, to discuss the valuation of ASTeX and MKS and the proposed exchange ratio. During this period, ASTeX management regularly consulted with the ASTeX board of directors and continued to consider other possible merger candidates.

On September 18, 2000, Mr. Bertucci contacted Dr. Post to present MKS' revised proposal. Under the revised MKS proposal, the stockholders of ASTeX would receive 0.7669 of a share of MKS common stock in exchange for each of their shares of ASTeX common stock. A meeting of the ASTeX board of directors was called for the morning of September 19, 2000 in order to discuss the revised terms of the proposed transaction.

On the morning of September 19, 2000, members of MKS management met with the ASTeX board of directors and management at ASTeX. MKS management presented to the ASTeX board of directors and management an overview of MKS, its strategic plan, including integration of acquisitions, and a preliminary overview of the proposed organizational structure of an MKS and ASTeX combination. On September 19, 2000, after the MKS presentation, the ASTeX board of directors, other than Mr. Bertucci, who had recused

himself, held a special meeting. At this meeting, representatives from Mintz Levin described the terms and conditions of the merger agreement in the form in which it then stood and the status of the negotiations with Hale and Dorr to date regarding the agreement. Also at this meeting, the board discussed with CIBC World Markets various valuation methodologies which would be utilized in connection with CIBC World Markets' evaluation of the proposed exchange ratio. The board, with ASTeX's management and advisors, discussed the terms of the proposed merger at length, with particular attention given to the proposed exchange ratio, a proposed option to MKS to acquire 19.9% of ASTeX's common stock and the proposed termination fee. The board instructed the officers of ASTeX and Mintz Levin to continue to negotiate the terms of the merger agreement. The ASTeX board also received an update from CIBC World Markets as to whether the other company which ASTeX had requested that CIBC World Markets contact regarding a possible merger with ASTeX had indicated any interest. CIBC World Markets informed the ASTeX board that the other company did not indicate any interest in a possible transaction at that time. After extensive discussions, the board reaffirmed its earlier conclusion that a merger with MKS would provide the best operating synergies. ASTeX has not received any inquiries of interest from any other company since the announcement of the proposed merger or during any time in the prior 12 months.

Also on September 19, 2000, the MKS board of directors met by conference call to discuss the status of the negotiations with ASTeX. The board instructed the officers of MKS to continue to pursue negotiations with ASTeX.

On September 20, 2000, representatives of Mintz Levin and Hale and Dorr met at the offices of Hale and Dorr to continue negotiating the terms of the merger agreement, including the following:

- termination rights under the merger agreement;
- the conditions upon which a termination fee would be payable;
- whether an option would be granted by ASTeX to MKS under the merger agreement; and
- the representations, warranties and covenants of both parties.

From September 20, 2000 through September 22, 2000, representatives of Mintz Levin and Hale and Dorr continued to negotiate the terms and conditions of the merger agreement and, from September 20, 2000 through September 30, 2000, management of ASTeX and MKS met frequently to discuss various business issues, including integration of the companies' businesses following the merger. On September 22, 2000, Hale and Dorr provided Mintz Levin with a revised merger agreement, which reflected agreement by the parties on the significant remaining issues, and the removal of the proposed option.

From September 22, 2000 through September 29, 2000, the parties continued to resolve final issues on the merger agreement, which was presented to the boards of directors of ASTeX and MKS at their respective meetings on September 30, 2000.

On September 27, 2000, the MKS board of directors met by conference call to discuss the status of the ASTeX transaction. After the discussion, the board voted to meet on September 30 to continue its discussions of the ASTeX transaction.

Also on September 27, 2000, ASTeX's board of directors met with ASTeX's management and legal and financial advisors to discuss the status of the proposed transaction.

On September 30, 2000, ASTeX's board of directors, other than Mr. Bertucci, who had recused himself, held a special meeting, at which representatives of Mintz Levin and CIBC World Markets outlined the terms of the merger agreement in its final form, copies of which had been provided to the board of directors in advance of the meeting. CIBC World Markets then reviewed with the ASTeX board its financial presentation concerning the proposed merger, as more fully described below under the caption "-- Opinion of ASTeX's Financial Advisor -- CIBC World Markets Corp.," copies of which had been provided to the board of directors in advance of the meeting. At this meeting, CIBC World Markets also rendered to the board an oral opinion, which opinion was confirmed by delivery of a written opinion dated October 2, 2000, the date of the merger agreement, to the effect that, as of the date of the opinion and based on and subject to the matters described in the opinion, the exchange ratio was fair, from a financial point of view, to the holders of ASTeX common stock. After discussion, during which each of the board members expressed his views regarding the proposed merger, the ASTeX board determined that the proposed merger was advisable, approved the merger

agreement in the form in which it had been presented at the meeting, and resolved to present the merger agreement for approval by the ASTeX stockholders at a stockholder meeting to be called for that purpose.

Also on September 30, 2000, at a special meeting of MKS' board of directors, MKS' board discussed with its legal and financial advisors the status of the negotiations with respect to the merger agreement. Merrill Lynch then reviewed its financial analysis of the exchange ratio in connection with the proposed transaction. After discussion, the MKS board approved the terms of the proposed transaction, approved the merger agreement in the form in which it had been presented at the meeting and resolved to present the issuance of shares of MKS common stock in connection with the merger for approval by the MKS stockholders at a special meeting to be called for that purpose.

ASTeX and MKS entered into the merger agreement as of October 2, 2000. The companies issued a joint press release announcing the agreement on the morning of October 2, 2000.

ASTEX'S REASONS FOR THE MERGER

ASTeX's board of directors unanimously approved (with Mr. Bertucci abstaining) the terms of the merger and determined that the terms of the merger agreement are fair to, and in the best interests of, ASTeX and its stockholders. Accordingly, ASTeX's board has approved the merger agreement and the consummation of the merger and recommends that ASTeX stockholders vote FOR approval of the merger agreement and the merger. In reaching its decision, ASTeX's board of directors consulted with ASTeX's management and legal and financial advisors, and considered the following material factors:

- THE STRATEGIC FIT BETWEEN THE PRODUCTS OFFERED BY MKS AND THOSE OFFERED BY ASTeX. Management of ASTeX believes that adding the primary products offered by ASTeX, including reactive gas generators, radio frequency and microwave power sources, to the products already offered by MKS will allow the combined company to offer a comprehensive product range to its OEM and end-user customers in the semiconductor and other advanced thin-film manufacturing market.
- THE ABILITY OF THE COMBINED ENTITY TO TAKE ADVANTAGE OF A LARGER AND MORE GEOGRAPHICALLY DIVERSE CUSTOMER BASE. MKS has greater global penetration of its sales force, customers and installed systems, particularly in Asia, than does ASTeX, which management of ASTeX expects will enable the combined company to make additional international sales.
- THE EXISTING RELATIONSHIP BETWEEN ASTeX AND MKS, WHICH MANAGEMENT OF ASTeX BELIEVES WOULD HELP TO MINIMIZE ANY DIFFICULTIES IN INTEGRATING THE TWO COMPANIES. Management of ASTeX has become familiar with the corporate culture and practices of MKS through the two companies' participation in similar industries and through Mr. Bertucci's involvement with the ASTeX board of directors. Accordingly, the companies already have a foundation for the integration of the companies following the merger.
- THE ABILITY OF THE COMBINED ENTITY TO GROW THROUGH FUTURE ACQUISITIONS. Management of ASTeX has in the past considered acquisitions of other companies but has been unable to effect these transactions due to its smaller financial resources and market capitalization as contrasted to several other companies. Management of ASTeX believes that MKS may have the ability to acquire companies which ASTeX would be less likely to acquire on a stand-alone basis.
- THE PREMIUM OVER ASTeX'S STOCK PRICE REPRESENTED BY THE PROPOSED CONSIDERATION ON THE TRADING DAY PRIOR TO ANNOUNCEMENT OF THE TRANSACTION. The proposed consideration in the merger represented a premium of approximately 42% over the closing price on September 29, 2000, the last trading day prior to the announcement of the merger agreement.
- THE ABILITY OF ASTeX STOCKHOLDERS TO PARTICIPATE IN THE POTENTIAL FOR GROWTH OF THE COMBINED COMPANY FOLLOWING THE MERGER. ASTeX stockholders will be able to retain their equity interest in the form of the MKS common stock which they will receive in the merger, and thereby participate in the potential growth of their investment following the merger.

In the course of deliberations, the ASTeX board reviewed with ASTeX management and its legal and financial advisors a number of additional factors relevant to the merger, including the following:

- historical information concerning MKS' and ASTeX's respective businesses, financial performance and condition, operations, management and competitive position, including public reports concerning results of operations during the most recent fiscal year and fiscal quarter for each company filed with the SEC;
- ASTeX management's view of the financial condition, results of operations and businesses of MKS and ASTeX before and after giving effect to the merger based on management due diligence and the existing relationship between the companies;
- current financial market conditions and historical market prices, volatility and trading information with respect to MKS common stock and ASTeX common stock;
- the terms of the merger agreement, including the parties' respective representations, warranties and covenants, the conditions to the parties' respective obligations, and the expected tax-free treatment of the exchange of ASTeX common stock for MKS common stock to ASTeX's stockholders;
- ASTeX management's view as to the potential for other third parties to enter into strategic relationships with or to acquire ASTeX;
- the financial presentation of CIBC World Markets, including CIBC World Markets' opinion to the ASTeX board as to the fairness, from a financial point of view and as of the date of the opinion, of the exchange ratio, as described below under the caption "-- Opinion of ASTeX's Financial Advisor;" and
- the impact of the merger on ASTeX's employees and customers.

ASTeX's board of directors also considered the provisions of the merger agreement regarding ASTeX's rights to consider and negotiate other strategic transaction proposals, as well as the possible effects of the provisions regarding termination fees. ASTeX's board of directors considered various alternatives to the merger, including remaining as an independent company and seeking other strategic partners. ASTeX's board of directors believed that these factors, including its review of the terms of the merger agreement, supported the ASTeX board's recommendation of the merger, when viewed together with the risks and potential benefits of the merger.

ASTeX's board of directors also identified and considered a variety of potentially negative factors in its deliberations concerning the merger, including but not limited to:

- the risk that the potential benefits sought in the merger might not be fully realized;
- the possibility that the merger might not be completed and the potential adverse effect of the public announcement of the merger on
 - ASTeX's significant customers and other key relationships;
 - ASTeX's ability to attract and retain key management, marketing and technical personnel; and
 - ASTeX's overall competitive position;
- the risk that despite the efforts of the combined company, key technical and management personnel might choose not to remain employed by the combined company; and
- the other risks described under "Risk Factors" starting on page 11 of this joint proxy statement/prospectus.

ASTeX's board of directors believed that these risks were outweighed by the potential benefits of the merger. The above discussion is not exhaustive of all factors considered by ASTeX's board of directors. Each member of ASTeX's board may have considered different factors, and ASTeX's board evaluated these factors as a whole and did not quantify or otherwise assign relative weights to factors considered.

RECOMMENDATION OF ASTEX'S BOARD OF DIRECTORS

After careful consideration, the ASTeX's board of directors has determined the merger to be fair to ASTeX stockholders and in ASTeX's stockholders best interests and declared the merger advisable. ASTeX's board of directors approved the merger agreement and recommends the adoption of the merger agreement by the ASTeX stockholders. This recommendation by the ASTeX board of directors was unanimous, except that Mr. Bertucci recused himself from all board meetings and related informal board discussions relating to the proposed merger and did not vote on the proposed merger. In considering the recommendation of the ASTeX board of directors with respect to the merger agreement, ASTeX stockholders should be aware that some directors and officers of ASTeX have interests in the merger that are different from, or are in addition to, the interests of ASTeX stockholders generally in the merger. Please see the section entitled "-- Interests of Executive Officers and Directors of ASTeX in the Merger" on page 52 of this joint proxy statement/prospectus.

MKS' REASONS FOR THE MERGER

The MKS board of directors unanimously concluded that the merger was fair to, and in the best interest of, MKS and its stockholders. Accordingly, MKS' board recommends that MKS stockholders vote FOR the issuance of 0.7669 of a share of MKS common stock for each share of ASTeX common stock to be acquired in connection with the merger.

The decision of the board of directors was based on several potential benefits of the merger that it believes will contribute to MKS' success. These potential benefits include:

- positioning MKS to become a one-stop supplier of instruments, components and subsystems to measure, control and analyze gases in semiconductor manufacturing and similar industrial manufacturing processes as well as to provide reactive gas sources and power supplies;
- strengthening MKS' competitive position by enhancing MKS' critical mass, combining MKS' and ASTeX's complementary core technologies and building upon MKS' global infrastructure;
- creating numerous cross-selling opportunities and associated revenue growth since MKS and ASTeX have complementary product offerings;
- enhancing MKS' financial position, increasing MKS' cash position and enhancing MKS' ability to complete future acquisitions;
- the acquisition of ASTeX is expected to be accretive to MKS' earnings;
- realizing potential cost savings as a result of combining the two companies' infrastructure, manufacturing system, supply chain management and research and development investments; and
- enhanced growth platform as a result of the depth of the combined management team and the combined technology, complementary core competencies, and strong geographical and cultural fit.

The MKS board of directors reviewed a number of factors in evaluating the merger, including but not limited to the following:

- historical information concerning MKS' and ASTeX's respective business focus, financial performance and condition, operations, technology and management;
- MKS management's view of the financial condition, results of operations and business of MKS and ASTeX before and after giving effect to the merger and the determination by the MKS board of directors of the merger's effect on stockholder value;
- current financial market conditions and historical stock market prices, volatility and trading information;
- the consideration MKS will pay in the merger in light of comparable merger transactions;
- the terms of the merger agreement;
- the impact of the merger on MKS' customers and employees;
- results of the due diligence investigation conducted by MKS' management, accountants and counsel; and

- the expectation that the merger will be accounted for as a pooling of interests transaction for accounting purposes.

During the course of its deliberations concerning the merger, the MKS board also identified and considered a variety of potentially negative factors that could materialize as a result of the merger, including the following:

- the risk that the potential benefits sought in the merger might not be fully realized;
- the possibility that the merger might not be completed, even if approved by the MKS and ASTeX stockholders;
- the effect of the public announcement of the merger on MKS' and ASTeX's business, including employees and customers;
- the risks associated with obtaining the necessary approvals required to complete the merger; and
- other applicable risks described in this joint proxy statement/prospectus under "Risk Factors" on page 11.

The MKS board concluded that these factors were outweighed by the potential benefits to be gained by the merger. In view of the wide variety of factors, both positive and negative, considered by the MKS board, the directors did not find it practical to, and did not, quantify or otherwise assign relative weights to the specific factors discussed above.

RECOMMENDATIONS OF MKS' BOARD OF DIRECTORS

After careful consideration, the MKS board of directors has determined the issuance of MKS common stock in the merger to be fair to MKS stockholders and in their best interest and declared the issuance advisable. MKS' board of directors unanimously approved the issuance of MKS common stock in connection with the merger and recommends approval of the issuance by MKS stockholders.

OPINION OF MKS' FINANCIAL ADVISOR -- MERRILL LYNCH, PIERCE, FENNER & SMITH INCORPORATED

MKS retained Merrill Lynch, Pierce, Fenner & Smith Incorporated to act as its financial advisor in connection with the proposed merger. On September 30, 2000, Merrill Lynch delivered to the MKS board of directors an oral opinion, subsequently confirmed by delivery of a written opinion dated September 30, 2000, to the effect that, as of that date, and based upon and subject to the factors and assumptions set forth in the opinion, the exchange ratio was fair, from a financial point of view, to MKS.

THE FULL TEXT OF MERRILL LYNCH'S OPINION, DATED SEPTEMBER 30, 2000, WHICH SETS FORTH THE ASSUMPTIONS MADE, MATTERS CONSIDERED, AND QUALIFICATIONS AND LIMITATIONS ON THE REVIEW UNDERTAKEN BY MERRILL LYNCH, IS ATTACHED AS ANNEX B-2 TO THIS DOCUMENT AND IS INCORPORATED INTO THIS DOCUMENT BY REFERENCE. THE SUMMARY OF MERRILL LYNCH'S OPINION SET FORTH BELOW IS QUALIFIED IN ITS ENTIRETY BY REFERENCE TO THE FULL TEXT OF THE OPINION. MKS STOCKHOLDERS ARE URGED TO READ THE OPINION CAREFULLY IN ITS ENTIRETY.

MERRILL LYNCH'S OPINION WAS DELIVERED TO THE MKS BOARD OF DIRECTORS FOR ITS INFORMATION, IS DIRECTED ONLY TO THE FAIRNESS, FROM A FINANCIAL POINT OF VIEW, OF THE EXCHANGE RATIO TO MKS, DOES NOT ADDRESS ANY OTHER ASPECT OF THE MERGER, INCLUDING THE MERITS OF THE UNDERLYING DECISION BY MKS TO ENGAGE IN THE MERGER, AND DOES NOT CONSTITUTE A RECOMMENDATION TO ANY MKS STOCKHOLDER AS TO HOW THE STOCKHOLDER SHOULD VOTE AS TO ANY MATTER RELATING TO THE MERGER.

In preparing its opinion to the MKS board of directors, Merrill Lynch performed a variety of financial and comparative analyses, including those described below. The summary set forth below does not purport to be a complete description of the analyses underlying Merrill Lynch's opinion or the presentation made by Merrill Lynch to the MKS board of directors. The preparation of a fairness opinion is a complex analytic process involving various determinations as to the most appropriate and relevant methods of financial analysis and the application of those methods to the particular circumstances and, therefore, a fairness opinion is not readily susceptible to partial analysis or summary description. In arriving at its opinion, Merrill Lynch did not

attribute any particular weight to any analysis or factor considered by it, but rather made qualitative judgments as to the significance and relevance of each analysis and factor. Accordingly, Merrill Lynch believes that its analyses must be considered as a whole and that selecting portions of its analyses and factors, or focusing on information presented in tabular format, without considering all of the analyses and factors or the narrative description of the analyses, would create a misleading or incomplete view of the process underlying its opinion.

In performing its analyses, Merrill Lynch made numerous assumptions with respect to industry performance, general business, economic, market and financial conditions and other matters, many of which are beyond the control of Merrill Lynch, MKS or ASTeX. Any estimates contained in the analyses performed by Merrill Lynch are not necessarily indicative of actual values or future results, which may be significantly more or less favorable than suggested by such analyses. Additionally, estimates of the value of businesses or securities do not purport to be appraisals or to reflect the prices at which such businesses or securities might actually be sold. Accordingly, such analyses and estimates are inherently subject to substantial uncertainty. In addition, as described above, Merrill Lynch's opinion was among several factors taken into consideration by the MKS board of directors in making its determination to approve the merger agreement and the merger. Consequently, Merrill Lynch's analyses should not be viewed as determinative of the decision of the MKS board of directors or MKS' management with respect to the fairness of the exchange ratio set forth in the merger agreement.

In arriving at its opinion, Merrill Lynch, among other things, did the following:

- reviewed publicly available business and financial information relating to MKS and ASTeX that Merrill Lynch deemed to be relevant;
- reviewed information, including financial forecasts, relating to the business, earnings, cash flows, assets, liabilities and prospects of MKS and ASTeX furnished to or discussed with Merrill Lynch by MKS and ASTeX;
- conducted discussions with members of senior management and representatives of MKS and ASTeX concerning the matters described above, as well as their respective businesses and prospects both before and after giving effect to the merger;
- reviewed the market prices and valuation multiples for MKS' common stock and ASTeX's common stock and compared them with those of publicly traded companies that Merrill Lynch deemed to be relevant;
- reviewed the results of operations of MKS and ASTeX and compared them with those of publicly traded companies that Merrill Lynch deemed to be relevant;
- compared the proposed financial terms of the merger with the financial terms of other transactions that Merrill Lynch deemed to be relevant;
- participated in discussions and negotiations among representatives of MKS and ASTeX and their respective financial and legal advisors;
- reviewed the potential pro forma impact of the merger;
- reviewed a draft dated September 26, 2000 of the merger agreement; and
- reviewed other financial studies and analyses and took into account other matters as Merrill Lynch deemed necessary, including Merrill Lynch's assessment of general economic, market and monetary conditions.

In preparing its opinion, Merrill Lynch assumed and relied on the accuracy and completeness of all information supplied or otherwise made available to Merrill Lynch, discussed with or reviewed by Merrill Lynch or publicly available, and has not assumed any responsibility for independently verifying such information and Merrill Lynch has not undertaken an independent evaluation or appraisal of any of the assets or liabilities of MKS or ASTeX, and was not furnished with any evaluations or appraisals. In addition, Merrill Lynch did not assume any obligation to conduct, nor did it conduct, any physical inspection of the properties

or facilities of MKS or ASTeX. Merrill Lynch was not provided with internal financial forecasts for MKS or ASTeX, but Merrill Lynch did utilize in its analysis publicly available financial forecasts for MKS and ASTeX which were reviewed and discussed with the managements and representatives of MKS and ASTeX, as the case may be, and was advised, and assumed, that such forecasts reflect reasonable estimates and judgments as to the expected future financial performance of MKS and ASTeX. Merrill Lynch further assumed that the merger will be accounted for as a pooling of interests under generally accepted accounting principles and that it will qualify as a tax-free reorganization for United States federal income tax purposes. Merrill Lynch also assumed that the final form of the Merger Agreement would be substantially similar to the last draft reviewed by Merrill Lynch.

Merrill Lynch's opinion is necessarily based upon market, economic and other conditions as they existed on, and on the information made available to Merrill Lynch as of, the date of the opinion. Merrill Lynch did not express any opinion as to the prices at which the MKS common stock will trade subsequent to the merger. Although Merrill Lynch evaluated the fairness, from a financial point of view, of the exchange ratio, Merrill Lynch was not requested to, and did not, recommend the specific consideration payable in the merger, which consideration was determined through negotiations between MKS and ASTeX and approved by the MKS board of directors. No other limitation was imposed on Merrill Lynch with respect to the investigations made or procedures followed by Merrill Lynch in rendering its opinion.

FINANCIAL ANALYSIS. The following is a summary of the material analyses performed by Merrill Lynch in connection with its opinion to the MKS board of directors dated September 30, 2000. SOME OF THE FINANCIAL ANALYSES SUMMARIZED BELOW INCLUDE INFORMATION PRESENTED IN TABULAR FORMAT. IN ORDER TO UNDERSTAND FULLY MERRILL LYNCH'S FINANCIAL ANALYSES, THE TABLES MUST BE READ TOGETHER WITH THE TEXT OF THE SUMMARY. THE TABLES ALONE DO NOT CONSTITUTE A COMPLETE DESCRIPTION OF THE FINANCIAL ANALYSES. CONSIDERING THE DATA SET FORTH BELOW WITHOUT CONSIDERING THE FULL NARRATIVE DESCRIPTION OF THE FINANCIAL ANALYSES, INCLUDING THE METHODOLOGIES AND ASSUMPTIONS UNDERLYING THE ANALYSES, COULD CREATE A MISLEADING OR INCOMPLETE VIEW OF MERRILL LYNCH'S FINANCIAL ANALYSES.

SELECTED COMPANIES ANALYSIS

Merrill Lynch compared financial, operating and stock market data of MKS and ASTeX to corresponding data of the following publicly traded semiconductor capital equipment companies:

- Advanced Energy Industries Inc.
- ATMI Inc.
- Cognex Corp.
- Coherent Inc.
- CoorsTek Inc.
- Cymer Inc.
- Helix Technology Corp.

Merrill Lynch reviewed enterprise value, calculated as equity market value, plus total debt, preferred stock and minority investments, less cash and cash equivalents, of the selected companies as a multiple of revenue, earnings before interest and taxes, commonly referred to as EBIT, and price-to-earnings for the last twelve months, commonly referred to as LTM, and estimated calendar years 2000 and 2001. All multiples were based on closing stock prices on September 28, 2000. Estimated financial data for the selected companies were based on publicly available research analysts' estimates. Estimated financial data for MKS and ASTeX were based on publicly available research analysts' estimates, which were reviewed and discussed with the managements and representatives of MKS and ASTeX, as the case may be. Merrill Lynch then applied a range of selected multiples for the selected companies to corresponding data of MKS and ASTeX. This analysis indicated an implied equity reference range for ASTeX of approximately \$21.02 to \$40.32 per share and an implied equity reference range for MKS of approximately \$26.76 to \$40.63 per share.

None of the selected companies is identical to MKS or ASTeX. Accordingly, an analysis of the results of the Selected Companies Analysis involves complex considerations of the selected companies and other factors that could affect the public trading value of MKS, ASTeX and the selected companies.

RELATIVE COMPARABLE COMPANIES ANALYSIS. Merrill Lynch compared the implied per share equity reference ranges for MKS and ASTeX described above in order to derive an implied exchange ratio reference range for MKS and ASTeX. This analysis indicated an implied exchange ratio reference range of approximately 0.5252x to 1.1891x.

DISCOUNTED CASH FLOW ANALYSIS

MKS. Merrill Lynch estimated the present value of the stand-alone, unlevered, after-tax free cash flows that MKS could produce over the calendar years 2000 through 2004 based on publicly available research analysts' estimates. Ranges of terminal values were derived using selected multiples of estimated calendar year 2004 earnings before interest, taxes, depreciation and amortization, commonly referred to as EBITDA. The free cash flows and terminal values were then discounted to present value. This analysis indicated an implied equity reference range for MKS of approximately \$28.24 to \$40.39 per share.

ASTEX. Merrill Lynch estimated the present value of the stand-alone, unlevered, after-tax free cash flows that ASTeX could produce over the calendar years 2000 through 2004 based on publicly available research analysts' estimates. Ranges of terminal values were derived using selected multiples of estimated calendar year 2004 EBITDA. The free cash flows and terminal values were then discounted to present value. This analysis indicated an implied equity reference range for ASTeX of approximately \$26.95 to \$36.73 per share.

RELATIVE DISCOUNTED CASH FLOW ANALYSIS. Merrill Lynch compared the implied per share equity reference ranges for MKS and ASTeX described above in order to derive an implied exchange ratio reference range for MKS and ASTeX. This analysis indicated an implied exchange ratio range of approximately 0.6673x to 1.3007x.

SELECTED MERGER AND ACQUISITION ANALYSIS

Using publicly available information, Merrill Lynch analyzed, among other things, the purchase prices and implied transaction multiples paid or proposed to be paid in the following selected transactions in the semiconductor capital equipment industry. Merrill Lynch also analyzed the premiums to the targets' one-day and one-month average closing stock prices paid or proposed to be paid in such transactions:

ACQUIROR -----	TARGET -----
- Mattson Technology Inc.	- CFM Technologies Inc.
- Mattson Technology Inc.	- STEAG Electronic Systems GmbH
- Veeco Instruments Inc.	- CVC Inc.
- Veeco Instruments Inc.	- Monarch Labs, Inc.
- Applied Materials Inc.	- Etec Systems Inc.
- Advantest Corp.	- Asia Electronics Holding Co. Inc.
- Oerlikon Buhrle USA Inc.	- Plasma Therm Inc.
- Cerprobe Corp.	- Oz Technologies Inc.
- ATMI Inc.	- MST Analytics Enterprises Inc.
- Veeco Instruments Inc.	- Ion Technologies Inc.
- Micro Component Technology, Inc.	- Aseco Corporation
- Photronics Inc.	- Align Rite International Inc.
- Brooks Automation, Inc.	- AutoSimulations Inc.
- Photon Dynamics, Inc.	- CR Technology
- Brooks Automation, Inc.	- Jenoptik Infab
- BOC Edwards	- FSI International Inc.
- ATMI Inc.	- Delatech Inc.
- Applied Materials, Inc.	- Obsidian, Inc.
- ATMI Inc.	- Advanced Chemical Systems International, Inc.

ACQUIROR

- Amkor Technology Inc.
- Applied Materials, Inc.
- Silicon Valley Group
- Air Products and Chemicals Inc.
- Electro Scientific Industries Inc.
- FSI International Inc.
- STEAG Electronic Systems GmbH
- Electro Scientific Industries, Inc.
- FEI Co.
- PRI Automation Inc.
- SpeedFam International, Inc.
- Applied Materials, Inc.
- Asyst Technologies, Inc.
- US Filter Corp.
- Advanced Energy Industries Inc.
- Ultratech Stepper Inc.
- Helix Technology Corp.
- ADE Corp.
- ATMI Inc.
- Veeco Instruments Inc.
- Aetrium Inc.
- Danaher Corp.
- Robotic Vision Systems Inc.
- PRI Automation Inc.
- Electro Scientific Industries Inc.
- Silicon Valley Group
- Eaton Corporation
- Electro Scientific Industries Inc.
- ATMI Inc.
- Novellus Systems Inc.
- ATMI Inc.
- Lam Research Corp.
- Electroglas Inc.
- Veeco Instruments Inc.
- KLA Instruments Corp.

TARGET

- Anam Semiconductor, Inc.
- Watkins-Johnson Company (HD Plasma CVD Division)
- Watkins-Johnson Company (Semiconductor Equipment Group)
- Hanyang Technology (Majority Stake)
- MicroVision Inc.
- YieldUP International Corporation
- AG Associates Inc.
- Testec Corp.
- Micrion Corp.
- Promis Systems Corp., Ltd
- Integrated Process Equipment Corp.
- Consilium Inc.
- Hine Design Incorporated
- Unit Instruments, Inc.
- RF Power Products Inc.
- Integrated Solutions Inc.
- Granville-Phillips Co.
- PhaseShift Technology Inc.
- NOW Technologies Inc.
- Digital Instruments Inc.
- WEB Technology Inc.
- Pacific Scientific Co.
- Vanguard Automation Inc.
- Equipe Technologies, Inc.
- Applied Intelligent Systems
- Tinsley Laboratories Inc.
- Fusion Systems Corp.
- Chip Star, Inc.
- Lawrence Semiconductor Laboratories
- Thin Film Battery Inc.
- Advanced Delivery & Chemical Systems
- OnTrack Systems Inc.
- Knights Technology
- Wyko Corp.
- Tencor Instruments

Merrill Lynch reviewed enterprise values of the selected transactions as multiples of LTM revenues and reviewed equity values of the selected transactions as multiples of LTM net income. Merrill Lynch then applied a range of selected multiples derived from the selected transactions to LTM revenues and net income for ASTeX. All multiples for the selected transactions were based on financial information available at the time of the announcement of the relevant transaction. This analysis indicated the following implied equity reference ranges for ASTeX:

LTM Transaction Revenue Multiple	\$28.27 to \$31.19
LTM Transaction Price-To-Earnings Multiple	\$27.03 to \$32.48

Merrill Lynch also reviewed the percentage premium paid or proposed to be paid by the acquiror relative to the target's average price per share for the one-day and one-month period prior to the public announcement

of the proposed transaction. Merrill Lynch then applied a selected range of premiums for the selected transactions to the closing price per share of ASTeX on September 28, 2000 and the average closing price for the one-month period ending September 28, 2000. This analysis indicated the following implied equity reference ranges for ASTeX:

One-Day Premium	\$20.13 to \$21.99
One-Month Premium	\$23.04 to \$24.77

No company or transaction used in the Selected Merger and Acquisition Analysis is identical to MKS, ASTeX or the proposed merger. Accordingly, an analysis of the results of the Selected Merger and Acquisition Analysis involves complex considerations of the companies involved and the transactions and other factors that could affect the acquisition value of the companies and ASTeX.

RELATIVE CONTRIBUTION ANALYSIS

Using estimated financial data for MKS and ASTeX, Merrill Lynch analyzed the relative contributions of MKS and ASTeX to the combined company's revenue, gross profit, operating income and net income for calendar years 2000 and 2001. This analysis indicated the following:

	MKS	ASTEX
	---	-----
REVENUE		
2000	66%	34%
2001	68%	32%
GROSS PROFIT		
2000	69%	31%
2001	69%	31%
OPERATING INCOME		
2000	74%	26%
2001	72%	28%
NET INCOME		
2000	71%	29%
2001	69%	31%

Based on the exchange ratio of 0.7669x in the merger, current ASTeX stockholders would own approximately 30% and current stockholders of MKS would own approximately 70% of the combined company following the merger.

PRO FORMA MERGER ANALYSIS

Merrill Lynch analyzed the potential pro forma effect of the merger on MKS' estimated earnings per share, commonly referred to as EPS, based on publicly available research analysts' estimates of EPS and net income, which were reviewed and discussed with the managements and representatives of MKS and ASTeX. Based on the exchange ratio of 0.7669x in the merger, this analysis indicated that the proposed merger would be accretive to MKS' EPS in calendar year 2001. The actual results achieved by the combined company may vary from projected results and the variations may be material.

OTHER FACTORS

In the course of preparing its opinion, Merrill Lynch also reviewed and considered other information and data, including the following:

- the trading characteristics of MKS and ASTeX;
- historical market prices for MKS common stock and ASTeX common stock; and
- the relative exchange ratio of MKS and ASTeX over the last twelve months.

MISCELLANEOUS

Pursuant to the terms of Merrill Lynch's engagement, MKS has agreed to pay Merrill Lynch for its financial advisory services in connection with the merger a fee equal to 1.0% of the aggregate purchase price paid in the merger, payable in cash upon the closing of the merger. The aggregate fee payable to Merrill Lynch will be approximately \$3.0 million. MKS also has agreed to reimburse Merrill Lynch for reasonable out-of-pocket expenses incurred by Merrill Lynch in performing its services and to indemnify Merrill Lynch and related persons and entities against liabilities, including liabilities under the federal securities laws, arising out of Merrill Lynch's engagement.

MKS retained Merrill Lynch based upon Merrill Lynch's experience and expertise. Merrill Lynch is an internationally recognized investment banking and advisory firm. Merrill Lynch, as part of its investment banking business, is regularly engaged in the valuation of businesses and securities in connection with mergers and acquisitions, negotiated underwritings, competitive biddings, secondary distributions of listed and unlisted securities, private placements and valuations for corporate and other purposes.

In the ordinary course of business, Merrill Lynch and its affiliates may actively trade in the securities of MKS and ASTeX for their own accounts and for the accounts of customers and, accordingly, may at any time hold a long or short position in such securities.

OPINION OF ASTeX'S FINANCIAL ADVISOR -- CIBC WORLD MARKETS CORP.

ASTeX engaged CIBC World Markets to act as its exclusive financial advisor in connection with the merger. In connection with this engagement, ASTeX requested that CIBC World Markets evaluate the fairness, from a financial point of view, to the holders of ASTeX common stock of the exchange ratio provided for in the merger. On September 30, 2000, at a meeting of the ASTeX board held to evaluate the merger, CIBC World Markets rendered an oral opinion, which opinion was confirmed by delivery of a written opinion dated October 2, 2000, the date of the merger agreement, to the effect that, as of the date of the opinion and based on and subject to the matters described in the opinion, the exchange ratio was fair, from a financial point of view, to the holders of ASTeX common stock.

The full text of CIBC World Markets' written opinion dated October 2, 2000, which describes the assumptions made, matters considered and limitations on the review undertaken, is attached to the back of this joint proxy statement/prospectus as Annex B-2. CIBC World Markets' opinion is addressed to the ASTeX board and relates only to the fairness of the exchange ratio from a financial point of view. The opinion does not address any other aspect of the merger and does not constitute a recommendation to any stockholder as to any matters relating to the merger. The summary of CIBC World Markets' opinion described below is qualified in its entirety by reference to the full text of its opinion. Holders of ASTeX common stock are urged to read the opinion carefully in its entirety.

In arriving at its opinion, CIBC World Markets:

- reviewed the merger agreement;
- reviewed audited financial statements of ASTeX for the fiscal years ended June 27, 1998, June 26, 1999 and July 1, 2000, and audited financial statements of MKS for the fiscal years ended December 31, 1997, December 31, 1998 and December 31, 1999;
- reviewed unaudited financial statements of ASTeX for the two-month period ended August 31, 2000 and unaudited financial statements of MKS for the fiscal quarters ended March 31, 2000 and June 30, 2000 and the two-month period ended August 31, 2000;
- reviewed and discussed with the managements of ASTeX and MKS publicly available financial forecasts relating to ASTeX and MKS and other financial and business information relating to ASTeX and MKS;
- reviewed historical market prices and trading volume for ASTeX common stock and MKS common stock;

- held discussions with the senior managements of ASTeX and MKS with respect to the businesses and prospects for future growth of ASTeX and MKS;
- reviewed and analyzed publicly available financial data for companies CIBC World Markets deemed comparable to ASTeX and MKS;
- reviewed and analyzed publicly available information for transactions that CIBC World Markets deemed comparable to the merger;
- performed discounted cash flow analyses of ASTeX and MKS using assumptions of future performance provided to or discussed with CIBC World Markets by the managements of ASTeX and MKS;
- reviewed public information concerning ASTeX and MKS; and
- performed other analyses and reviewed other information as CIBC World Markets deemed appropriate.

In rendering its opinion, CIBC World Markets relied on and assumed, without independent verification or investigation, the accuracy and completeness of all of the financial and other information that ASTeX, MKS and their employees, representatives and affiliates provided to CIBC World Markets. With respect to publicly available forecasts relating to ASTeX and MKS which CIBC World Markets reviewed and discussed with the managements of ASTeX and MKS, CIBC World Markets assumed, at the direction of the managements of ASTeX and MKS, without independent verification or investigation, that the forecasts were prepared on bases reflecting reasonable estimates and judgments as to the future financial condition and operating results of ASTeX and MKS. CIBC World Markets also assumed, with ASTeX's consent, that the merger would be treated as a tax-free reorganization for federal income tax purposes and as a pooling of interests in accordance with generally accepted accounting principles. In addition, CIBC World Markets assumed with ASTeX's consent that, in the course of obtaining the necessary regulatory or third party approvals for the merger, no limitations, restrictions or conditions will be imposed that would have a material adverse effect on ASTeX, MKS or the contemplated benefits to ASTeX of the merger.

CIBC World Markets did not make or obtain any independent evaluations or appraisals of the assets or liabilities of ASTeX, MKS or affiliated entities. In connection with CIBC World Markets' engagement, CIBC World Markets was not requested to, and CIBC World Markets did not, solicit generally third party indications of interest in the acquisition of all or a part of ASTeX, although it did approach one other potential merger candidate on behalf of ASTeX, at ASTeX's request. CIBC World Markets expressed no opinion as to ASTeX's or MKS' underlying valuation, future performance or long-term viability, or the price at which MKS common stock would trade upon or after announcement or consummation of the merger. CIBC World Markets' opinion was necessarily based on the information available to CIBC World Markets and general economic, financial and stock market conditions and circumstances as they existed and could be evaluated by CIBC World Markets as of the date of its opinion. Although subsequent developments may affect its opinion, CIBC World Markets does not have any obligation to update, revise or reaffirm its opinion. ASTeX imposed no other instructions or limitations on CIBC World Markets with respect to the investigations made or the procedures followed by it in rendering its opinion.

This summary is not a complete description of CIBC World Markets' opinion to the ASTeX board or the financial analyses performed and factors considered by CIBC World Markets in connection with its opinion. The preparation of a fairness opinion is a complex analytical process involving various determinations as to the most appropriate and relevant methods of financial analysis and the application of those methods to the particular circumstances and, therefore, a fairness opinion is not readily susceptible to summary description. CIBC World Markets believes that its analyses and this summary must be considered as a whole and that selecting portions of its analyses and factors or focusing on information presented in tabular format, without considering all analyses and factors or the narrative description of the analyses, could create a misleading or incomplete view of the processes underlying CIBC World Markets' analyses and opinion.

In performing its analyses, CIBC World Markets considered industry performance, general business, economic, market and financial conditions and other matters existing as of the date of its opinion, many of

which are beyond ASTeX's and MKS' control. No company, transaction or business used in the analyses as a comparison is identical to ASTeX, MKS or the merger, and an evaluation of the results of those analyses is not entirely mathematical. Rather, the analyses involve complex considerations and judgments concerning financial and operating characteristics and other factors that could affect the acquisition, public trading or other values of the companies, business segments or transactions analyzed.

The estimates contained in CIBC World Markets' analysis and the ranges of valuations resulting from any particular analysis are not necessarily indicative of actual values or future results, which may be significantly more or less favorable than those suggested by its analyses. In addition, analyses relating to the value of businesses or securities do not necessarily purport to be appraisals or to reflect the prices at which businesses or securities actually may be sold. Accordingly, CIBC World Markets' analyses and estimates are inherently subject to substantial uncertainty.

The type and amount of consideration payable in the merger was determined through negotiation between ASTeX and MKS and the decision to enter into the merger was solely that of the ASTeX board. CIBC World Markets' opinion and financial analyses were only one of many factors considered by the ASTeX board in its evaluation of the merger and should not be viewed as determinative of the views of the ASTeX board or management with respect to the merger or the exchange ratio provided for in the merger.

The following is a summary of the material financial analyses underlying CIBC World Markets' opinion to the ASTeX board in connection with the merger. The financial analyses summarized below include information presented in tabular format. In order to fully understand CIBC World Markets' financial analyses, the tables must be read together with the text of each summary. The tables alone do not constitute a complete description of the financial analyses. Considering the data in the tables below without considering the full narrative description of the financial analyses, including the methodologies and assumptions underlying the analyses, could create a misleading or incomplete view of CIBC World Markets' financial analyses.

Implied Exchange Ratio Analysis.

Using the results derived for ASTeX and MKS from the "Selected Companies Analysis," "Selected Precedent Transactions Analysis," "Discounted Cash Flow Analysis" and "Contribution Analysis" described below, CIBC World Markets calculated an implied exchange ratio reference range for each analysis. CIBC World Markets then compared the implied exchange ratio reference range derived from each analysis to the exchange ratio provided for in the merger. This analysis indicated the following approximate implied exchange ratio reference ranges, as compared to the exchange ratio in the merger of 0.7669x:

	IMPLIED EXCHANGE RATIO RANGE -----
Selected Companies Analysis	0.6217x - 0.9797x
Selected Precedent Transactions Analysis	0.6389x - 0.9544x
Discounted Cash Flow Analysis	0.6592x - 1.0616x
Contribution Analysis	0.7008x - 0.8390x

The "Selected Companies Analysis," "Selected Precedent Transactions Analysis," "Discounted Cash Flow Analysis" and "Contribution Analysis" performed by CIBC World Markets for purposes of its "Implied Exchange Ratio Analysis" are described below:

Selected Companies Analysis. CIBC World Markets compared financial and stock market information for ASTeX, MKS and the following four selected publicly held companies in the semiconductor capital equipment industry:

- Advanced Energy Industries Inc.
- CoorsTek, Inc.
- Cymer, Inc.
- Helix Technology Corporation

CIBC World Markets reviewed equity market values as a multiple of estimated calendar years 2000 and 2001 earnings per share, commonly referred to as EPS. All multiples were based on closing stock prices on September 28, 2000. Estimated financial data for the selected companies were based on publicly available research analysts' estimates. Estimated financial data for ASTeX and MKS were based on publicly available research analysts' estimates and discussions with ASTeX and MKS managements. CIBC World Markets then applied a range of selected multiples derived from the selected companies of estimated calendar years 2000 and 2001 EPS to corresponding financial data of ASTeX and MKS in order to derive implied equity reference ranges for ASTeX and MKS. This analysis indicated an implied equity reference range for ASTeX of approximately \$17.37 to \$21.80 per share and an implied equity reference range for MKS of approximately \$22.25 to \$27.93 per share.

Selected Precedent Transactions Analysis. CIBC World Markets reviewed the purchase prices and implied transaction multiples in the following 28 selected transactions in the semiconductor capital equipment industry:

ACQUIROR

TARGET

- GaSonic International Corporation	Gamma Precision Technology, Inc.
- Mattson Technology, Inc.	STEAG Electronic System AG
- Mattson Technology, Inc.	CFM Technologies, Inc.
- MKS	Telvac Engineering Ltd.
- MKS	Compact Instruments
- inTest Corporation	Temptronic Corporation
- Credence Systems Corporation	TMT, Inc.
- Zygo Corporation	Firefly Technologies, Inc.
- Veeco Instruments, Inc.	CVC, Inc.
- Applied Materials, Inc.	Etec Systems, Inc.
- Oerlikon-Buhrle, GmbH	Plasma-Therm, Inc.
- Cerprobe Corporation	Oz Technologies, Inc.
- ATMI, Inc.	MST Analytics, Inc.
- Micro Component Technology, Inc.	Aseco Corporation
- Photronics, Inc.	Align-Rite International, Inc.
- Align-Rite International, Inc.	Harris Corporation
- STEAG Electronics Systems GmbH	AG Associates, Inc.
- FEI Company	Micrion Corporation
- PRI Automation, Inc.	Promis Systems Corporation Ltd.
- SpeedFam International, Inc.	Integrated Process Equipment Corp.
- Lumonics, Inc.	General Scanning, Inc.
- DuPont Photomasks, Inc.	Hewlett-Packard
- Excel Technology, Inc.	Synrad, Inc.
- United States Filter Corporation	Unit Instrument, Inc.
- Advanced Energy Industries, Inc.	RF Power Products, Inc.
- Helix Technology Corporation	Granville-Phillips Company
- ADE Corporation	Phase Shift Technology, Inc.
- Veeco Instruments, Inc.	Digital Instruments, Inc.

CIBC World Markets reviewed equity purchase prices in the selected transactions as a multiple of one-year forward and two-year forward EPS. All multiples for the selected transactions were based on

publicly available information at the time of announcement of the relevant transaction. Estimated financial data for ASTeX and MKS were based on publicly available research analysts' estimates and discussions with ASTeX and MKS managements. CIBC World Markets then applied a range of selected multiples derived from the selected transactions of one-year forward and two-year forward EPS to corresponding financial data of ASTeX and MKS in order to derive implied equity reference ranges for ASTeX and MKS. This analysis indicated an implied equity reference range for ASTeX of approximately \$32.55 to \$39.79 per share and an implied equity reference range for MKS of approximately \$41.69 to \$50.95 per share.

Discounted Cash Flow Analysis. CIBC World Markets performed separate discounted cash flow analyses for each of ASTeX and MKS to estimate the present value of the unlevered, after-tax free cash flows that ASTeX and MKS each could generate over fiscal years 2001 through 2005. Estimated financial data for ASTeX and MKS were based on publicly available research analysts' estimates and discussions with ASTeX and MKS managements. CIBC World Markets calculated a range of estimated EBITDA terminal values by applying terminal value multiples ranging from 11.0x to 15.0x to ASTeX's and MKS' projected fiscal year 2005 EBITDA. The present value of the cash flows and terminal values were calculated using a discount rate of 25.0%. This analysis indicated an implied equity reference range for ASTeX of approximately \$37.13 to \$46.62 per share and an implied equity reference range for MKS of approximately \$43.92 to \$56.32 per share.

Contribution Analysis. CIBC World Markets analyzed the relative contributions of ASTeX and MKS to the combined company's latest 12 months and estimated calendar years 2000 and 2001 revenue, earnings before interest, taxes, depreciation and amortization, earnings before interest and taxes, and net income. Estimated financial data for ASTeX and MKS were based on publicly available research analysts' estimates and discussions with ASTeX and MKS managements. This analysis indicated implied selected contribution reference ranges of approximately 28.0% to 32.0% for ASTeX and approximately 68.0% to 72.0% for MKS.

Historical Exchange Ratio Analysis.

CIBC World Markets performed a historical exchange ratio analysis comparing the closing prices of ASTeX common stock and MKS common stock on September 28, 2000 and the average daily closing prices of ASTeX common stock and MKS common stock for the 30 day, 60 day, 90 day, six month and one year periods preceding September 28, 2000. This analysis yielded an implied exchange ratio range of 0.4895x to 0.7731x, as compared to the exchange ratio in the merger of 0.7669x, as indicated below:

PERIOD - - - - -	IMPLIED EXCHANGE RATIO -----
September 28, 2000	0.4929x
30 day average	0.4895x
60 day average	0.5687x
90 day average	0.5918x
six month average	0.5938x
one year average	0.7731x

Pro Forma Merger Analysis.

CIBC World Markets analyzed the potential pro forma effect of the merger on MKS' estimated EPS for fiscal years 2000 through 2003 based on publicly available research analysts' estimates of ASTeX and MKS and discussions with ASTeX and MKS managements. CIBC World Markets did not take into account for purpose of this analysis any potential cost savings or other synergies that may result from the merger. This analysis indicated that the merger could be dilutive to MKS' estimated EPS in fiscal year 2001 and accretive to MKS' estimated EPS in fiscal years 2002 and 2003. The actual results achieved by the combined company may vary from projected results and the variations may be material.

Other Factors.

In rendering its opinion, CIBC World Markets also reviewed and considered other factors, including:

- selected research analysts' reports for ASTeX and MKS, including stock price estimates of those analysts;
- the 52-week historical trading ranges for ASTeX common stock and MKS common stock; and
- the relationship between movements in ASTeX common stock and MKS common stock, movements in the common stock of selected companies in the semiconductor capital equipment industry and movements in the NASDAQ National Market Index.

Miscellaneous.

ASTeX selected CIBC World Markets as its financial advisor in connection with the merger based on CIBC World Markets' reputation, expertise and familiarity with ASTeX and its business. CIBC World Markets is an internationally recognized investment banking firm and, as a customary part of its investment banking business, is regularly engaged in valuations of businesses and securities in connection with acquisitions and mergers, underwritings, secondary distributions of securities, private placements and valuations for other purposes. CIBC World Markets has in the past provided services to ASTeX unrelated to the merger, for which services CIBC World Markets has received compensation. In the ordinary course of business, CIBC World Markets and its affiliates may actively trade the securities of ASTeX and MKS for their own account and for the accounts of customers and, accordingly, may at any time hold a long or short position in those securities.

ASTeX has agreed to pay CIBC World Markets for its financial advisory services upon consummation of the merger an aggregate fee equal to a percentage of the total consideration, including liabilities assumed, payable in the merger. It is currently estimated that the aggregate fee payable to CIBC World Markets will be approximately \$2.6 million. In addition, ASTeX has agreed to reimburse CIBC World Markets for its reasonable out-of-pocket expenses, including reasonable fees and expenses of its legal counsel, and to indemnify CIBC World Markets and related parties against liabilities, including liabilities under the federal securities laws, relating to, or arising out of, its engagement.

INTERESTS OF EXECUTIVE OFFICERS AND DIRECTORS OF MKS IN THE MERGER

In considering the recommendation of the MKS board of directors with respect to the issuance of common stock of MKS in connection with the merger, MKS stockholders should be aware that some executive officers and directors of MKS have interests in the merger that are in addition to the interests of MKS stockholders generally. The MKS board of directors was aware of these potential conflicts and considered them in approving the merger.

John R. Bertucci, chairman of the board of directors and chief executive officer of MKS, is also a director of ASTeX. Mr. Bertucci owns 22,500 shares of ASTeX common stock and options to purchase 44,000 shares of ASTeX common stock, all of which are fully vested. In addition, MKS owns 52,500 shares of ASTeX common stock.

Mr. Bertucci, his wife, and family trusts controlled by them have entered into a stockholder agreement with ASTeX relating to the proposed merger. As of the record date for the special meeting, these parties collectively owned approximately 63% of the outstanding shares of MKS common stock. In the stockholder agreement, these parties agreed to vote all of the shares of MKS common stock over which they exercise voting control in favor of the issuance of MKS common stock in connection with the merger.

INTERESTS OF EXECUTIVE OFFICERS AND DIRECTORS OF ASTeX IN THE MERGER

When ASTeX stockholders consider the recommendation of the board with respect to the merger, they should be aware that some officers and directors of ASTeX have interests in connection with the merger that are different from, or in addition to the ASTeX stockholders' interests, as summarized below. In making their

decision to recommend the merger, the board was aware of these interests and considered them among the other matters described above under "The Merger -- ASTeX's Reasons for the Merger."

Officers and directors of ASTeX who own ASTeX common stock will receive shares of MKS common stock on the same terms as all the other stockholders of ASTeX.

The members of the ASTeX board of directors and executive officers of ASTeX beneficially own 1,149,651 shares of ASTeX common stock, and accordingly are eligible to receive 881,667 shares of MKS common stock in the merger. In addition, these board members and executive officers hold options to acquire 563,900 shares of ASTeX common stock, with exercise prices ranging from \$3.875 to \$31.9375 per share, which will be assumed by MKS and be converted into options to acquire shares of MKS common stock on the same terms as all the other holders of ASTeX stock options. See "The Merger Agreement -- Treatment of ASTeX Stock Options." An aggregate of up to 173,000 of the options held by Messrs. Burg, Hurley, Post Ross, and Schuss and Ms. Maunder will accelerate and vest as result of the merger.

Seven officers of ASTeX have entered into employment agreements with MKS which take effect upon completion of the merger. See "Related Agreements - Employment Agreements" on page 66.

In addition, the executive officers and directors of ASTeX (other than Mr. Bertucci) own 33,805 shares of MKS common stock.

The merger agreement provides that MKS will indemnify ASTeX officers and directors against matters existing or occurring at or prior to the effective time of the merger. See "The Merger Agreement -- Covenants of MKS and ASTeX -- Director and Officer Indemnification" on page 61.

TREATMENT OF ASTEX COMMON STOCK

In the merger, each share of ASTeX common stock will be exchanged for 0.7669 of a share of MKS common stock.

Holders of ASTeX common stock should not send in any certificates representing ASTeX common stock. Following the effective time of the merger, holders of ASTeX common stock will receive instructions for the surrender and exchange of their stock certificates.

ACCOUNTING TREATMENT OF THE MERGER

MKS and ASTeX intend to account for the merger as a "pooling of interests" business combination. It is a condition to completion of the merger that PricewaterhouseCoopers LLP advise MKS and ASTeX that the transactions contemplated by the merger agreement can properly be accounted for as a "pooling of interests" business combination. It is also a condition to completion of the merger that KPMG LLP advise MKS and ASTeX that ASTeX is a pooling candidate for the merger. These conditions may be waived by MKS. Under the "pooling of interests" method of accounting, as of the effective time of the merger, the historical recorded assets and liabilities of ASTeX will be carried forward to those of MKS at their recorded amounts. In addition, the operating results of the combined company will include MKS' and ASTeX's operating results for the entire fiscal year in which the merger is completed, and MKS' and ASTeX's historical reported operating results for prior periods will be combined and restated as the operating results of the combined company.

REGULATORY APPROVALS

Under the Hart-Scott-Rodino Antitrust Improvements Act of 1976, MKS may not complete the acquisition of shares of ASTeX common stock in the merger until notifications have been furnished to the Federal Trade Commission and the Antitrust Division of the Department of Justice and the required waiting period has been satisfied. MKS and ASTeX each expect to file a pre-merger notification and report form with the FTC and the Antitrust Division on November 8, 2000. If the FTC and the Antitrust Division have no comment on the merger within 30 days after the filing of the pre-merger notification and report form, the applicable waiting period under the Hart-Scott-Rodino Act will have expired and the merger will be

deemed to have received antitrust approval and may be consummated, pending compliance with the other closing conditions.

At any time before the effective time of the merger, the Antitrust Division, the FTC or a private person or entity could seek under antitrust laws, among other things, to enjoin the merger and any time after the effective time of the merger, to cause MKS to divest itself, in whole or in part, of the surviving corporation of the merger or of businesses conducted by the surviving corporation of the merger. There can be no assurance that a challenge to the merger will not be made or that, if a challenge is made, MKS will prevail. The obligations of MKS and ASTeX to complete the merger are subject to the condition that any applicable waiting period under the Hart-Scott-Rodino Act shall have expired without action by the Antitrust Division or the FTC to prevent completion of the merger. See "The Merger Agreement -- Conditions to Obligations to Complete the Merger."

MATERIAL UNITED STATES FEDERAL INCOME TAX CONSIDERATIONS

The discussion below summarizes the material United States federal income tax considerations generally applicable to United States holders of ASTeX common stock who, pursuant to the merger, exchange their ASTeX common stock solely for MKS common stock. Completion of the merger is conditioned on MKS' receipt of an opinion from Hale and Dorr LLP (or Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C. if Hale and Dorr does not provide the opinion) and ASTeX's receipt of an opinion from Mintz Levin (or Hale and Dorr if Mintz Levin does not provide the opinion) to the effect that the merger will qualify for federal income tax purposes as a reorganization within the meaning of Section 368(a) of the Internal Revenue Code. ASTeX will not waive this condition without resoliciting stockholder approval. The discussion below reflects the opinions of Hale and Dorr and Mintz Levin which are included as exhibits 8.1 and 8.2 to the registration statement of which this joint proxy statement/prospectus forms a part.

The discussion below is, and the opinions of Hale and Dorr and Mintz Levin will be, based on current provisions of the Internal Revenue Code, currently applicable United States Treasury regulations promulgated thereunder, and judicial and administrative decisions and rulings. The opinions of Hale and Dorr and Mintz Levin are based on the facts, representations and assumptions set forth or referred to in the opinions, including representations contained in certificates executed by officers of MKS and ASTeX. The opinions are not binding on the Internal Revenue Service or the courts, and there can be no assurance that the Internal Revenue Service or the courts will not take a contrary view. No ruling from the Internal Revenue Service has been or will be sought. Future legislative, judicial or administrative changes or interpretations could alter or modify the statements and conclusions set forth herein, and these changes or interpretations could be retroactive and could affect the tax consequences of the merger to MKS, ASTeX and the stockholders of ASTeX.

The discussion below and the opinions of Hale and Dorr and Mintz Levin do not purport to deal with all aspects of federal income taxation that may affect particular stockholders in light of their individual circumstances, and are not intended for stockholders subject to special treatment under federal income tax law. Stockholders subject to special treatment include insurance companies, tax-exempt organizations, financial institutions, broker-dealers, foreign individuals and entities, stockholders who hold their stock as part of a hedge, appreciated financial position, straddle or conversion transaction, stockholders who do not hold their stock as capital assets and stockholders who have acquired their stock upon exercise of employee options or otherwise as compensation. In addition, the discussion below and such opinions do not consider the effect of any applicable state, local or foreign tax laws.

Holders of ASTeX common stock are urged to consult their tax advisors as to the particular tax consequences to them as a result of the merger, including the applicability and effect of any state, local or foreign tax laws, and of changes in applicable tax laws.

In the opinion of Hale and Dorr, counsel to MKS, and in the opinion of Mintz Levin, counsel to ASTeX, the merger will constitute a "reorganization" within the meaning of Section 368(a) of the Internal Revenue

Code. Accordingly, subject to the limitations and qualifications referred to herein, the following tax consequences will result:

- No gain or loss will be recognized by MKS or ASTeX solely as a result of the merger.
- No gain or loss will be recognized by the holders of ASTeX common stock upon the receipt of MKS common stock solely in exchange for ASTeX common stock in the merger, except to the extent of cash received in lieu of fractional shares.
- Cash payments received by holders of ASTeX common stock in lieu of a fractional share will be treated as capital gain (or loss) measured by the difference between the cash payment received and the portion of the tax basis in the shares of ASTeX common stock surrendered that is allocable to the fractional share. Any gain (or loss) will be long-term capital gain (or loss) if the fractional share of ASTeX common stock has been held for more than one year at the effective time of the merger.
- ASTeX stockholders' aggregate tax basis of the MKS common stock in the merger, including any fractional share of MKS common stock not actually received, will be the same as the aggregate tax basis of the ASTeX common stock surrendered in the exchange.
- The holding period of the MKS common stock received by each ASTeX stockholder in the merger will include the holding period for the ASTeX common stock surrendered in the exchange, provided that the ASTeX common stock surrendered is held as a capital asset at the effective time of the merger.

A successful Internal Revenue Service challenge to the "reorganization" status of the merger would result in an ASTeX stockholder recognizing gain or loss with respect to each share of ASTeX common stock surrendered in the merger equal to the difference between the ASTeX stockholder's basis in such share and the fair market value, as of the effective time of the merger, of the MKS common stock received in exchange. In the event of a successful challenge, an ASTeX stockholder's aggregate tax basis in the MKS common stock received would equal its fair market value, and the ASTeX stockholder's holding period for the stock would begin the day after the merger.

RESALES OF MKS COMMON STOCK ISSUED IN CONNECTION WITH THE MERGER; AFFILIATE AGREEMENTS

MKS common stock issued in connection with the merger will be freely transferable, except that shares of MKS common stock received by persons who are deemed to be "affiliates," as the term is defined by Rule 144 under the Securities Act, of ASTeX at the effective time of the merger may be resold by them only in transactions permitted by the resale provisions of Rule 145 under the Securities Act or as otherwise permitted under the Securities Act.

Each executive officer and director and those who may be an affiliate of MKS or ASTeX, respectively, has executed a written affiliate agreement providing, among other things, that the officer, director or affiliate will not offer, sell, transfer or otherwise dispose of any of their respective MKS or ASTeX common stock during the period beginning 30 days prior to the merger and ending when the merger becomes effective. The affiliate agreements further provide that the officer, director or affiliate will not offer, sell, transfer or otherwise dispose of any shares of MKS common stock once the merger becomes effective until MKS has published financial results covering at least 30 days of combined operations of MKS and ASTeX, except in compliance with the Securities Act and the related rules and regulations.

NO APPRAISAL RIGHTS

MKS stockholders and ASTeX stockholders are not entitled to exercise dissenter's or appraisal rights as a result of the merger or to demand payment for their shares under applicable law.

DELISTING AND DEREGISTRATION OF ASTeX COMMON STOCK FOLLOWING THE MERGER

If the merger is completed, ASTeX's common stock will be delisted from the Nasdaq National Market and will be deregistered under the Securities Exchange Act of 1934, as amended.

THE MERGER AGREEMENT

The following is a brief summary of the material provisions of the merger agreement, a copy of which is attached as Annex A to this joint proxy statement/prospectus and is incorporated by reference into this summary. While we believe that the summary covers the material terms of the merger agreement, this summary may not contain all of the information that is important to ASTeX and MKS stockholders. We urge all ASTeX and MKS stockholders to read the merger agreement in its entirety for a more complete description of the terms and conditions of the merger and related matters.

GENERAL

In the merger, ASTeX will become a wholly owned subsidiary of MKS. If all conditions to the merger are satisfied or waived, the merger will become effective at the time of the filing of a certificate of merger with the Secretary of State of the State of Delaware and articles of merger with the Secretary of State of the Commonwealth of Massachusetts.

THE EXCHANGE RATIO AND TREATMENT OF ASTEX COMMON STOCK

At the effective time of the merger, each issued and outstanding share of ASTeX common stock will be converted into 0.7669 of a share of MKS common stock. However, shares held in the treasury of ASTeX and shares held by MKS or any of its wholly owned subsidiaries will be canceled without conversion. MKS will adjust the exchange ratio for any stock split, reverse split, stock dividend, reorganization, recapitalization or other similar change with respect to MKS common stock occurring before the effective time.

Based on the exchange ratio of 0.7669 and the number of shares of ASTeX common stock outstanding on October 2, 2000, a total of approximately 11,200,000 shares of MKS common stock will be issued in the merger.

TREATMENT OF ASTEX STOCK OPTIONS

At the effective time of the merger, MKS will assume each outstanding option to purchase shares of ASTeX common stock, whether vested or unvested, previously granted by ASTeX under its stock option plans and convert them into options to purchase shares of MKS common stock on the same terms and conditions. The number of shares of MKS common stock issuable upon the exercise of ASTeX stock options assumed by MKS in the merger will be adjusted based on the exchange ratio of 0.7669, and rounded down to the nearest whole number.

The exercise price per share of MKS common stock issuable under each ASTeX stock option will also be adjusted by dividing (1) the aggregate exercise price for the ASTeX common stock otherwise purchasable pursuant to each ASTeX option (assuming for such purposes that such ASTeX option was fully exercisable at such time) by (2) the number of full shares of MKS common stock deemed purchasable pursuant to each such ASTeX option. The exercise price will be rounded up to the nearest whole cent.

MKS has reserved for issuance a sufficient number of shares of its common stock for delivery if an ASTeX optionholder exercises its options as described above. After the effective time of the merger, MKS will file a registration statement on Form S-8 with respect to the assumed ASTeX stock options. During the period that any options remain outstanding, MKS will use commercially reasonable efforts to maintain the effectiveness of any registration statement on Form S-8.

EXCHANGE OF CERTIFICATES

Exchange Agent; Exchange Procedures; No Further Ownership Rights. As soon as practicable after the effective time of the merger, MKS' exchange agent will mail to each record holder of ASTeX common stock a letter of transmittal and instructions for surrendering their certificates. Only those holders who properly surrender their certificates in accordance with the instructions will receive certificates representing shares of MKS common stock, cash in lieu of any fractional shares of MKS common stock, and any dividends or distributions to which they are entitled. The surrendered certificates representing shares of ASTeX common

stock will be canceled. After the effective time of the merger, under the merger agreement, each certificate representing shares of ASTeX common stock that has not been surrendered will only represent the right to receive:

- shares of MKS common stock;
- cash in lieu of any fractional shares of MKS common stock; and
- dividends or distributions.

Following the effective time of the merger, ASTeX will not register any transfers of shares of ASTeX common stock on its stock transfer books.

No Fractional Shares. MKS will not issue any fractional shares of MKS common stock in the merger. Instead, each holder of shares of ASTeX common stock exchanged in connection with the merger who would otherwise be entitled to receive a fraction of a share of MKS common stock will receive cash, without interest, in an amount equal to the product of the fractional share multiplied by the closing price per share of MKS common stock on the Nasdaq National Market on the last trading day immediately prior to the effective time of the merger. As of the effective time of the merger, MKS will deposit with its designated exchange agent the shares of MKS common stock issuable in connection with the merger and cash in an amount sufficient to cover any fractional shares.

Distributions With Respect to Unexchanged Shares. No dividends or other distributions declared or made on or after the effective time of the merger with respect to shares of MKS common stock will be paid to the holder of any unsurrendered ASTeX certificate with respect to the shares of MKS common stock that the holder is entitled to receive, and no cash payment in lieu of fractional shares will be paid to the holder until the holder surrenders its ASTeX certificate. Upon surrender of the certificate, MKS will pay to the record holder of the certificate, without interest, any dividends or distributions with respect to the shares of MKS common stock which have a record date on or after the closing date of the merger and have become payable between the effective time of the merger and the time of surrender.

Lost, Stolen or Destroyed Certificates. If any certificate representing shares of ASTeX common stock is lost, stolen or destroyed, an ASTeX stockholder must provide an appropriate affidavit of that fact to MKS. MKS may also require the ASTeX stockholder to deliver a bond as indemnity against any claim that may be made against MKS with respect to any certificates alleged to have been lost, stolen or destroyed. Only upon receipt of the affidavit, and bond, if requested, will MKS' exchange agent issue the shares of MKS common stock, any cash payable for fractional shares, and any dividends or distributions which have become payable between the effective time of the merger and the time of surrender.

Holders of ASTeX common stock should not send in their certificates until they receive a letter of transmittal from the exchange agent.

REPRESENTATIONS AND WARRANTIES

The merger agreement contains representations and warranties of MKS and ASTeX. These relate to:

- their organization, existence, good standing, corporate power and similar corporate matters;
- their capitalization;
- the authorization, execution, delivery, and performance and the enforceability of the merger agreement and related matters;
- receipt of an opinion from their respective financial advisors;
- the absence of conflicts, violations and defaults under their corporate charters and by-laws and other agreements and documents;
- required governmental and third-party consents;
- filings with the Securities and Exchange Commission;

- their respective financial statements;
- the absence of changes in their respective businesses;
- litigation;
- compliance with laws;
- the required vote of their respective stockholders;
- real property;
- environmental matters;
- accounting matters;
- tax matters;
- labor matters;
- intellectual property;
- brokers and related fees;
- their respective board recommendations regarding approval of the merger;
- assets;
- customers and suppliers;
- the absence of restrictions on business activities; and
- the accuracy of information provided in connection with this joint proxy statement/prospectus. ASTeX also provided representations relating to:
 - employee benefit plans;
 - material contracts;
 - the absence of existing discussions with third parties regarding an acquisition proposal;
 - the actions by ASTeX's board of directors making the Delaware antitakeover statute inapplicable to the merger; and
 - approval of an amendment to ASTeX's stockholders' rights plan making it inapplicable to the merger.

COVENANTS OF MKS AND ASTEX

Conduct of ASTeX's Business Prior to the Merger. Except as contemplated by the merger agreement, ASTeX has agreed that it and its subsidiaries will carry on their business in the ordinary course in substantially the same manner as previously conducted. Specifically, ASTeX has agreed that neither it nor any of its subsidiaries will, without the prior written consent of MKS:

- issue, sell, pledge, dispose of or encumber any shares of capital stock;
- amend its charter or bylaws;
- effect a stock split, combine or reclassify any of its capital stock;
- with specified exceptions, repurchase, redeem or otherwise acquire any shares of its capital stock or rights to acquire these shares;
- with specified exceptions, issue, sell, pledge or otherwise dispose of or encumber any capital stock or securities convertible into or exchangeable or exercisable for options, warrants, calls or other rights to acquire any shares of capital stock;

- transfer, lease, license, pledge, mortgage, sell or otherwise dispose of or encumber any assets or property, other than in the ordinary and usual course of business;
- incur or modify any indebtedness or guarantee indebtedness or obligations of another person;
- make any acquisition of, or investment in, assets or stock of another person or entity whether by way of merger, consolidation, tender offer, share exchange or other activity;
- with specified exceptions, enter into a transaction with respect to any merger, consolidation, liquidation or business combination, or any acquisition or disposition of all or substantially all of the assets or securities of ASTeX or any of its subsidiaries;
- adopt any stockholder rights plan or further amend the existing ASTeX stockholder rights plan;
- make any capital expenditure or other expenditures with respect to property, plant or equipment except pursuant to the ASTeX capital expenditure budget referenced in the merger agreement;
- change its accounting methods or assumptions underlying these methods except as required by generally accepted accounting principles;
- pay, discharge, settle or satisfy any claim, liability or obligation reflected in the most recent consolidated financial statements other than in the ordinary course of business consistent with past practice or in accordance with their terms as in effect on the date of the merger agreement;
- waive any material benefits of, modify in any adverse respect, fail to enforce, or consent to any matter with respect to which consent is required under, any confidentiality, standstill or similar agreements to which ASTeX or any of its subsidiaries is a party;
- modify, amend or terminate any material contract or agreement, or knowingly waive, release or assign any material rights or claims, except in the ordinary course of business consistent with past practice;
- enter into any material contract or agreement relating to the distribution, sale or marketing by third parties of ASTeX's products, or license any material intellectual property rights to or from any third party except in the ordinary course of business and consistent with past practice;
- except as required to comply with applicable law and plans or agreements existing as of October 2, 2000, and with specified exceptions, take any action with regard to any plans or agreements related to employee matters, including adopting or terminating any employee benefit plan or employment or severance arrangement, materially increasing the compensation or fringe benefits of, or paying any bonus to, any director, officer, key employee or consultant, accelerating the payment or vesting of any compensation or benefits, paying any material benefit not provided for under any benefit plan existing as of October 2, 2000, or granting any awards under any bonus, incentive, performance or other incentive plan;
- make or rescind any tax election, settle or compromise any tax liability, or amend any tax return;
- initiate, compromise or settle any material litigation or arbitration proceeding;
- fail to maintain insurance at levels substantially comparable to levels existing on October 2, 2000;
- fail to pay accounts payable and other obligations in the ordinary course of business and consistent with past practice; or
- take, or agree to take, any action which would result in ASTeX's representations and warranties being untrue or incorrect in any material respect or that would result in the conditions of the merger set forth in the merger agreement not being satisfied in a material way.

Conduct of MKS' Business Prior to the Merger. Except as contemplated by the merger agreement, MKS has agreed that it and its subsidiaries will carry on their business in the ordinary course in substantially

the same manner as previously conducted. Specifically, MKS has agreed that neither it nor any of its subsidiaries will, without the prior written consent of ASTeX:

- issue or sell shares of MKS common stock representing more than 20% of the outstanding shares of MKS common stock;
- with specified exceptions, amend its articles of organization or bylaws;
- with specified exceptions, repurchase, redeem or otherwise acquire any shares of its capital stock or rights to acquire those shares; or
- authorize, or enter into, any agreement to do anything prohibited by the above covenants.

ASTeX is Restricted from Trying to Sell to Another Party. Subject to applicable fiduciary duties of the ASTeX board of directors, ASTeX has agreed that from October 2, 2000 through the effective time of the merger or the termination of the agreement, whichever first occurs, neither it nor any of its subsidiaries will, directly or indirectly through their officers, directors, employees, financial advisors, representatives or agents:

- solicit, initiate, or encourage any proposal that could reasonably be expected to lead to an alternative transaction (as described below under "-- Termination; Expenses and Termination Fees");
- engage in discussions or negotiations concerning, or provide any information relating to, an alternative transaction; or
- agree to, or recommend, an alternative transaction to the ASTeX stockholders.

However, ASTeX and the ASTeX board of directors may, if ASTeX has not breached this covenant:

- furnish information to, or enter into discussions or negotiations with, a third party in connection with an unsolicited bona fide written proposal for an alternative transaction or recommend any unsolicited bona fide written proposal to the ASTeX stockholders if:

-- the ASTeX board of directors believes in good faith, after consultation with ASTeX's financial advisor, that the alternative transaction is reasonably capable of being completed on the terms proposed and constitutes a superior proposal to this merger, and the ASTeX board of directors determines in good faith after consultation with outside legal counsel that it take those actions in order to comply with applicable fiduciary duties to stockholders;

-- prior to furnishing information to, or entering into discussions or negotiations with a third party, that third party provides to the ASTeX board of directors an executed confidentiality agreement no less favorable than the confidentiality agreement between MKS and ASTeX; and

-- prior to recommending a superior proposal, ASTeX gives MKS at least five business days' prior notice of its intent to recommend the superior proposal in order to provide MKS an opportunity to make a counterproposal.

- comply with SEC rules regarding responses to an alternative transaction.

Information Supplied. MKS and ASTeX have agreed that the information supplied by each to be included or incorporated in this prospectus/proxy statement and the registration statement on Form S-4 to be filed with the SEC will not contain any untrue statement of material fact or omit any statement necessary to make the statements in those documents not misleading. Both further agree to cooperate in preparing this prospectus/proxy statement, with MKS and ASTeX each responsible to file this joint proxy statement/prospectus with the SEC as its preliminary proxy statement and MKS responsible to file the registration statement on Form S-4 with the SEC. In addition, MKS and ASTeX agreed to use commercially reasonable efforts to have the S-4 registration statement declared effective as promptly as practicable after the filing and to keep it effective as long as necessary to consummate the merger.

Stockholders' Meetings. MKS and ASTeX agreed to hold stockholders' meetings as promptly as practicable after the registration statement is declared effective, (i) for ASTeX stockholders to consider and vote on the adoption of the merger agreement and the approval of the merger and (ii) for MKS to consider

and vote upon the issuance of the MKS common stock to former ASTeX stockholders under the terms of the merger. The board of directors of ASTeX and MKS are obligated to recommend approval of the respective actions to be considered by the stockholders of ASTeX and MKS, as long as doing so does not violate the directors' fiduciary duties or any applicable law.

Filings; Other Actions. MKS and ASTeX have also agreed to use their respective commercially reasonable efforts:

- to obtain any governmental clearances or approvals required under the antitrust laws and federal and state securities laws before the closing of the merger;
- to cooperate in the effort to obtain any such government clearances or consents in connection with the merger;
- to obtain "comfort" letters from the parties' respective independent public accountants in connection with this joint proxy statement/prospectus; and
- to take or cause to be taken all actions, do or cause to be done all things, necessary to consummate the merger and make effective the transactions contemplated in the merger agreement.

Notification. MKS and ASTeX are obligated to keep the other apprised of the status of matters relating to the transactions contemplated by the merger agreement, including without limitation, the threat of litigation, the status of any ongoing litigation, and the existence of any communication related to the merger to or from the Federal Trade Commission, Department of Justice or any other government agency. Neither MKS nor ASTeX will be required to divest any of their respective businesses, product lines or assets where doing so could have an adverse effect on their businesses, or take any action if the Department of Justice or Federal Trade Commission authorizes its staff to move for a preliminary injunction or restraining order to enjoin the consummation of the merger.

Accounting. MKS and ASTeX have agreed not to knowingly take any action inconsistent with treatment of the merger as a "pooling-of-interests" for accounting purposes.

Stock Exchange Listing and De-listing. MKS agreed to use commercially reasonable efforts to cause the shares of MKS common stock which will be issued in the merger to become listed on the Nasdaq National Market. ASTeX agreed to use commercially reasonable efforts to remove its shares from quotation on the Nasdaq National Market and de-register those shares as soon as practicable after the effective date of the merger.

Stock Options. At the effective time of the merger, MKS will assume each outstanding option to purchase shares of ASTeX common stock, whether vested or unvested, previously granted by ASTeX under its stock option plans and convert them into options to purchase shares of MKS common stock on the same terms and conditions. See "Treatment of ASTeX Stock Options" on page 56.

Election of MKS' Board of Directors. At the effective time of the merger, MKS will enlarge the size of its board of directors to seven directors, appointing Robert R. Anderson and Hans-Jochen Kahl as new members of the MKS board of directors. For biographical information regarding Mr. Anderson and Mr. Kahl, see "Additional Proposals for the ASTeX Annual Meeting" on page 91.

Director and Officer Indemnification. The merger agreement provides that MKS will cause the surviving corporation to honor its obligations to indemnify each present and former director and officer of ASTeX against any costs or expenses pertaining to matters existing or occurring at or prior to the effective time of the merger and will not modify those obligations for a period of six years after the effective time of the merger.

CONDITIONS TO OBLIGATIONS TO COMPLETE THE MERGER

The obligations of MKS and ASTeX to effect the merger are subject to the satisfaction or waiver of the following conditions:

- the ASTeX stockholders and MKS, as the sole stockholder of the wholly owned subsidiary, must have adopted the merger agreement and approved the merger;
- the MKS stockholders must have approved the issuance of MKS common stock to former stockholders of ASTeX in connection with the merger;
- the listing on the Nasdaq National Market of MKS common stock that will be issued to ASTeX stockholders in the merger must have been approved;
- all applicable waiting periods under the Hart-Scott-Rodino Act must have expired or been terminated;
- MKS and ASTeX must have made all filings and obtained all registrations, approvals, permits, authorizations and consents required to be obtained from or filed with any governmental entity which if not obtained or filed would reasonably likely have a material adverse effect on the business of MKS;
- no court or government agency must have enacted, issued, promulgated, enforced or entered into any statute, law, ordinance, rule, regulation, judgment, decree, injunction or other order that is in effect and permanently enjoins or otherwise prohibits consummation of the merger;
- the registration statement of which this joint proxy statement/prospectus is a part must have become effective and not be the subject of a stop order and no proceedings for that purpose can be threatened or initiated;
- MKS must have received all applicable state securities and "blue sky" permits and approvals, if any, necessary to consummate the merger; and
- MKS and ASTeX shall each have received a letter from their respective independent public accountants attesting to the qualification of the merger for "pooling-of-interests" treatment.

In addition, the obligations of MKS to effect the merger are subject to the satisfaction or waiver of the following conditions:

- The representations and warranties of ASTeX in the merger agreement must be true and correct as of the closing date of the merger, except to the extent any such representation or warranty expressly speaks as of an earlier date, and MKS must have received a certificate executed on behalf of ASTeX to that effect;
- ASTeX must have performed, in all material respects, its material obligations required to be performed by it under the merger agreement at or prior to the closing date of the merger, and MKS must have received a certificate executed by an authorized officer on behalf of ASTeX to that effect;
- MKS shall have received an opinion from its counsel (or from ASTeX's counsel if MKS' counsel does not provide such an opinion) to the effect that the merger will be treated as a reorganization for federal income tax purposes under Section 368(a) of the Internal Revenue Code;
- Between the time of the execution of the merger agreement and the effective time of the merger, no event shall have occurred which has a material adverse effect on ASTeX;
- Certain employees of ASTeX must have delivered to MKS executed employment agreements in the form agreed by the parties; and
- MKS must have received copies of resignations of each of ASTeX's officers and directors, including the officers and directors of the ASTeX subsidiaries.

In addition, the obligation of ASTeX to effect the merger is subject to the satisfaction or waiver of the following conditions:

- The representations and warranties of MKS in the merger agreement must be true and correct as of the closing date of the merger, except to the extent any such representation or warranty expressly speaks as of an earlier date, and ASTeX must have received a certificate executed on behalf of MKS to that effect;
- MKS must have performed, in all material respects, their material obligations required to be performed by them under the merger agreement at or prior to the closing date of the merger, and ASTeX must have received a certificate executed by an authorized officer on behalf of MKS to that effect;
- ASTeX shall have received an opinion from its counsel (or from MKS' counsel if ASTeX's counsel does not provide such an opinion) to the effect that the merger will be treated as a reorganization for federal income tax purposes under Section 368(a) of the Internal Revenue Code; and
- Between the time of the execution of the merger agreement and the effective time of the merger, no event shall have occurred which has a material adverse effect on MKS.

TERMINATION; EXPENSES AND TERMINATION FEES

Termination

The merger agreement may be terminated and the merger abandoned at any time prior to the effective time of the merger by mutual written consent and action of the parties' respective board of directors under the following circumstances:

- by either MKS or ASTeX, if the merger is not completed by March 31, 2001;
- by either MKS or ASTeX, if the ASTeX stockholders do not approve the merger agreement and the merger at a meeting of ASTeX stockholders convened for that purpose;
- by either MKS or ASTeX, if the MKS stockholders do not approve the issuance of the MKS common stock in connection with the merger at a meeting of MKS stockholders convened for that purpose; or
- by either MKS or ASTeX, if any order permanently restraining, enjoining or otherwise prohibiting consummation of the merger shall become final or non-appealable after the parties have used their commercially reasonable efforts to have such order removed, repealed or overturned.

However, the right to terminate pursuant to the above provisions will not be available to any party that has materially breached its obligations under the agreement, which breach contributes to the failure of the merger to be consummated.

In addition, ASTeX can terminate the merger agreement if:

- MKS materially breaches any material covenant or agreement in the merger agreement that is not curable or, if curable, is not cured within 30 days of receiving notice of the breach;
- the MKS board of directors fails to recommend approval of the merger in the proxy statement to the MKS stockholders or withdraws or modifies its recommendation; or
- ASTeX receives an unsolicited offer for a superior proposal, as determined by its board of directors in consultation with its financial advisor, and the ASTeX board determines, in good faith after consultation with its legal counsel, that it must terminate the merger agreement to fulfill its fiduciary duties under applicable law.

In addition, MKS can terminate the merger agreement if:

- ASTeX materially breaches any material covenant or agreement in the merger agreement that is not curable or, if curable, is not cured within 30 days of receiving notice of the breach;

- the ASTeX board of directors fails to recommend approval of the merger in the proxy statement to the ASTeX stockholders or withdraws or modifies its recommendation;
- the ASTeX board of directors approves or recommends to the ASTeX stockholders an alternative transaction with a third party;
- an alternative transaction is announced and the ASTeX board of directors fails to recommend against acceptance of the alternative transaction or fails to reconfirm its recommendation of the merger agreement and the merger to the ASTeX stockholders within ten business days after MKS requests that it do so; or
- a third party, other than MKS or an affiliate of MKS, commences a tender offer or exchange offer for 20% or more of the outstanding common stock of ASTeX, and the ASTeX board of directors recommends that the ASTeX stockholders tender their shares in the tender or exchange offer, or fails to recommend against acceptance of such offer or takes no position on the tender or exchange offer, each within ten days after the third party commences the tender or exchange offer.

If either MKS or ASTeX terminates the merger agreement because of any of the reasons above, all obligations of the parties under the merger agreement will terminate except for the obligation to pay fees and expenses incurred by either party in connection with the merger and the requirement to maintain a confidentiality agreement, and no termination shall relieve MKS or ASTeX from liability or damages resulting from willful breach of the Agreement.

Expenses

Except as described below, MKS and ASTeX will bear their own expenses incurred in connection with the merger.

ASTeX has agreed to pay up to \$500,000 to MKS as reimbursement for its fees and expenses paid in connection with the merger upon termination:

- by MKS, where the merger is not completed by March 31, 2001 because the representations and warranties of ASTeX fail to be true and correct as of the closing date; or
- by MKS or ASTeX, where the ASTeX stockholders do not approve the merger agreement and the merger at a meeting of ASTeX stockholders convened for that purpose, provided no termination fee is otherwise payable to MKS. See "Termination; Expenses and Termination Fees" at page 63.

MKS has agreed to pay up to \$500,000 to ASTeX as reimbursement for its fees and expenses paid in connection with the merger upon termination:

- by ASTeX, where the merger is not completed by March 31, 2001 because the representations and warranties of MKS fail to be true and correct as of the closing date; or
- by MKS or ASTeX, where the MKS stockholders do not approve the issuance of MKS common stock in connection with the merger at a meeting of MKS stockholders convened for that purpose.

Termination Fees

ASTeX must pay MKS a termination fee of \$9,075,000 upon the earliest to occur of the following events:

- The termination of the merger agreement by MKS under the following circumstances:

ASTeX breaches any material covenant or agreement in the merger agreement that is not curable or, if curable, is not cured within 30 days of receiving notice of the breach;

the ASTeX board of directors fails to recommend approval of the merger in the proxy statement to the ASTeX stockholders or withdraws or modifies its recommendation;

the ASTeX board of directors approves or recommends to the ASTeX stockholders an alternative transaction with a third party; or

an alternative transaction is announced and the ASTeX board of directors fails to recommend against acceptance of the alternative transaction or fails to reconfirm its recommendation of the merger agreement and the merger to the ASTeX stockholders within ten business days after MKS requests that it do so.

- ASTeX receives an unsolicited offer for a superior proposal, as determined by its board of directors in consultation with its financial advisor, and the ASTeX board determines, in good faith after consultation with its legal counsel, that it must terminate the merger agreement to fulfill its fiduciary duties under applicable law; or
- The termination of the merger agreement by ASTeX or MKS where the ASTeX stockholders do not approve the merger agreement and the merger at a meeting of ASTeX stockholders convened for that purpose, if, prior to the termination of the agreement, a bona fide proposal for an alternative transaction with respect to ASTeX has been announced.

The merger agreement defines an alternative transaction to mean:

- an acquisition by a third party of more than 20% of the outstanding shares of ASTeX common stock by a tender offer, exchange offer, merger or similar transaction;
- an acquisition of control by a third party of more than 20% of the fair market value of all ASTeX's assets; or
- a public announcement by a third party of a proposal, plan, intention or agreement to do any of the above.

AMENDMENT

Generally, the board of directors of each of MKS and ASTeX may amend the merger agreement at any time prior to the effective time. However, after the ASTeX stockholders approve the merger agreement, any amendment will be restricted by the Delaware corporation statute. Amendments must be in writing and signed by all parties.

RELATED AGREEMENTS

STOCKHOLDER AGREEMENTS

As an inducement to MKS to enter into the merger agreement, on October 2, 2000, Richard S. Post and John M. Tarrh, who beneficially owned an aggregate of 944,088 shares of ASTeX common stock on that date, entered into a stockholder agreement with MKS. The stockholder agreement provides that Dr. Post and Mr. Tarrh each agree to vote their shares in favor of the merger agreement and the merger, and irrevocably appoint MKS as their proxy for those matters, to vote their shares accordingly. The proxy automatically terminates upon the termination of the merger agreement. The stockholder agreement terminates upon the earlier of the merger becoming effective in accordance with the terms and provisions of the merger agreement or the termination of the merger agreement.

As an inducement to ASTeX to enter into the merger agreement, on October 2, 2000, John R. Bertucci, his wife, and the trustees of trusts for the benefit Mr. Bertucci, his wife and their immediate family, who beneficially owned an aggregate of 15,997,777 shares of MKS common stock on that date, entered into a stockholder agreement with ASTeX. The stockholder agreement provides that Mr. and Mrs. Bertucci and the Bertucci family trusts agree to vote their shares in favor of issuing MKS common stock pursuant to the merger agreement, and irrevocably appoint ASTeX as his, her or its respective proxy to vote for that matter. The proxy automatically terminates upon the termination of the merger agreement. The stockholder agreement terminates upon the earlier of the merger becoming effective in accordance with the terms and provisions of the merger agreement or the termination of the merger agreement.

AFFILIATE AGREEMENTS

Each executive officer and director of, and those who may be an affiliate of, MKS or ASTeX has executed a written affiliate agreement providing, among other things, that the officer, director or affiliate will not offer, sell, transfer or otherwise dispose of any of the shares of MKS common stock or ASTeX common stock during the period beginning 30 days prior to the merger and ending when the merger becomes effective. The affiliate agreements executed by officers, directors and affiliates of ASTeX and MKS further provide that such person will not to offer, sell, transfer or otherwise dispose of any shares of MKS common stock once the merger becomes effective until MKS has published financial results covering at least 30 days of combined operations of MKS and ASTeX, except in compliance with the Securities Act and the related rules and regulations.

EMPLOYMENT AGREEMENTS

In connection with the merger, MKS entered into an employment agreement with each of Dr. Richard S. Post, John E. Ross, Stanley Burg, William S. Hurley, Jack J. Schuss, James P. O'Connor and Jill Maunder, all of whom are currently ASTeX employees. The employment agreements take effect upon the completion of the merger.

Each agreement sets the base salary for each employee, which is reviewed annually. The base salaries of each employee under the employment agreements signed with MKS are equivalent to their existing base salaries with ASTeX. In addition to a base salary, each employee is entitled, under the MKS Management Incentive Program, to a bonus equal to a percentage of his or her base salary if MKS attains specified financial goals during the year. Each employee is also entitled to standard benefits.

The term of employment for each is for 18 months with earlier termination:

- upon the death of the employee;
- at the election of MKS if the employee fails or refuses to perform the services required of him or her under the employment agreement; or
- at the election of MKS if the employee commits any acts not in MKS' best interest.

Payment by MKS upon termination depends on how employment is terminated:

- if employment is terminated by MKS without cause or by the employee for good reason within 18 months after the effective date of the merger, the employee is entitled to receive the compensation and benefits outlined in such employee's existing employment agreement with ASTeX;
- if employment is terminated by MKS without cause after the first 18 months after the effective date of the merger, the employee is entitled to receive his or her base salary for 6 months after the date of termination (12 months after termination in the case of Richard Post) and is entitled to receive certain other benefits;
- if employment is terminated by death, MKS must pay the employee's estate the compensation owed to him or her at the end of the month of his or her death; and
- if employment is terminated at the election of MKS as a result of cause or as a result of such employee's failure or refusal to perform the services required of him or her under the employment agreement, MKS must pay the employee through the last day of actual employment.

Each of the agreements contains non-competition provisions during the term of employment and for the period of one year after termination of employment. Under these provisions, the employees may not:

- engage in any competitive business or activity;
- for the 12 months subsequent to termination, work for, employ, become a partner with, or cause to be employed, any employee, officer or agent of MKS;
- for the 12 months subsequent to termination, give, sell or lease any competitive services or goods to any customer of MKS; or
- have any financial interest in or be a director, officer, stockholder, partner, employee or consultant to any competitor of MKS.

LEGAL PROCEEDINGS

On October 3, 2000, a purported class action lawsuit, Landau v. Applied Science & Technology, Inc. et al (number 18384NC), was filed by an ASTeX stockholder against ASTeX, each ASTeX director and MKS. The lawsuit alleges that the defendants breached their fiduciary duties to ASTeX's stockholders in connection with the merger, including a claim that the price offered by MKS for the ASTeX common stock in the merger is inadequate. The lawsuit was filed in the Chancery Court of the State of Delaware in and for New Castle County and seeks injunctive relief and unspecified monetary damages. ASTeX and MKS believe that the suit is without merit and intend to vigorously defend against the claims; however, ASTeX and MKS can give no assurances as to the ultimate outcome of the suit.

UNAUDITED PRO FORMA CONDENSED COMBINED FINANCIAL INFORMATION

The following unaudited pro forma condensed combined financial statements assume a business combination between MKS and ASTeX accounted for on a pooling of interests basis and are based on the respective historical financial statements and the notes thereto, which are incorporated by reference in this joint proxy statement/prospectus. The unaudited pro forma condensed combined balance sheet gives effect to the merger as if it had occurred on June 30, 2000, combining the balance sheets of MKS and ASTeX at June 30, 2000. The unaudited pro forma condensed combined statements of operations give effect to the merger as if it had occurred at the beginning of each of the periods presented combining MKS' historical results for the six months ended June 30, 2000 and 1999 and for each of the years ended December 31, 1999, 1998 and 1997 with ASTeX's historical results for the six months ended July 1, 2000 and June 26, 1999 and the twelve month periods ended June 26, 1999, June 27, 1998 and June 28, 1997, respectively.

The pro forma information is presented for illustrative purposes only and is not necessarily indicative of the operating results or financial position that would have occurred if the merger had been consummated at the beginning of the earliest period presented, nor is it necessarily indicative of future operating results or financial position.

These unaudited pro forma condensed combined financial statements are based on, and should be read in conjunction with, the historical consolidated financial statements and the related notes thereto of MKS and ASTeX, incorporated by reference in this joint proxy statement/prospectus.

UNAUDITED PRO FORMA CONDENSED
COMBINED BALANCE SHEET
AS OF JUNE 30, 2000
(IN THOUSANDS, EXCEPT PER SHARE DATA)

	HISTORICAL		PRO FORMA ADJUSTMENTS	PRO FORMA COMBINED
	MKS	ASTEX		
ASSETS				
Current assets:				
Cash and cash equivalents.....	\$ 44,485	\$ 78,407		\$122,892
Short-term investments.....	21,382	12,803		34,185
Trade and notes receivable, net...	49,635	32,963		82,598
Other receivables.....	--	240		240
Inventories.....	37,909	19,947		57,856
Deferred tax asset.....	5,196	2,409		7,605
Other current assets.....	7,869	563		8,432
	-----	-----	-----	-----
Total current assets.....	166,476	147,332		313,808
Property and equipment, net.....	33,341	26,843		60,184
Goodwill, net.....	7,928	7,852		15,780
Deferred tax asset.....	--	732		732
Other assets.....	10,465	5,817		16,282
	-----	-----	-----	-----
Total assets.....	\$218,210	\$188,576	\$ --	\$406,786
	=====	=====	=====	=====
LIABILITIES AND STOCKHOLDERS' EQUITY				
Current liabilities:				
Short-term borrowings.....	\$ 16,271	\$ --		\$ 16,271
Current portion of long-term debt.....	7,001	1,429		8,430
Current portion of capital lease obligations.....	916	--		916
Accounts payable.....	13,670	6,802		20,472
Accrued compensation.....	8,300	4,101		12,401
Accrued expenses.....	7,682	5,985	7,500	(Note 5) 21,167
Distribution payable.....	3,350	--		3,350
Accrued income taxes.....	--	1,911		1,911
Commissions payable and customer advances.....	--	995		995
	-----	-----	-----	-----
Total current liabilities.....	57,190	21,223	7,500	85,913
Long-term debt.....	3,961	8,210		12,171
Long-term portion of capital leases.....	1,135	--		1,135
Deferred tax liability.....	1,175	--		1,175
Other liabilities.....	488	--		488
Commitments and contingencies				
Stockholders' equity:				
Preferred stock, \$.01 par value...	--	--		--
Common stock.....	113	144	(144)	(Note 2) 113
Additional paid-in capital.....	99,320	147,554	144	(Note 2) 247,018
Retained earnings.....	53,783	11,902	(7,500)	(Note 5) 58,185
Shareholder receivables.....	(797)	--		(797)
Accumulated other comprehensive income (loss).....	1,842	(457)		1,385
	-----	-----	-----	-----
Total stockholders' equity.....	154,261	159,143	(7,500)	305,904
	-----	-----	-----	-----
Total liabilities and stockholders' equity.....	\$218,210	\$188,576	\$ --	\$406,786
	=====	=====	=====	=====

UNAUDITED PRO FORMA CONDENSED
COMBINED STATEMENT OF OPERATIONS
FOR THE SIX MONTHS ENDED JUNE 30, 2000
(IN THOUSANDS, EXCEPT PER SHARE DATA)

	HISTORICAL		PRO FORMA COMBINED
	MKS	ASTEX	
Net sales.....	\$143,257	\$72,135	\$215,392
Research contract revenue.....	--	123	123
Other revenue.....	--	5,971	5,971
Total net sales.....	143,257	78,229	221,486
Cost of sales and other revenue.....	77,212	47,226	124,438
Cost of research contracts.....	--	142	142
Gross profit.....	66,045	30,861	96,906
Operating expenses:			
Research and development.....	10,245	8,219	18,464
Selling, general and administrative.....	23,312	11,578	34,890
Total operating expenses.....	33,557	19,797	53,354
Income from operations.....	32,488	11,064	43,552
Interest expense.....	850	--	850
Interest income.....	1,691	1,990	3,681
Other income (expense).....	(209)	74	(135)
Income before income taxes.....	33,120	13,128	46,248
Provision for income taxes.....	12,503	4,892	17,395
Net income.....	\$ 20,617	\$ 8,236	\$ 28,853
Net income per share(Note 2):			
Basic.....	\$ 0.83	\$ 0.63	\$ 0.83
Diluted.....	\$ 0.79	\$ 0.60	\$ 0.79
Weighted average common shares outstanding:			
Basic.....	24,917	12,976	34,868
Diluted.....	26,208	13,674	36,695

UNAUDITED PRO FORMA CONDENSED
COMBINED STATEMENT OF OPERATIONS
FOR THE SIX MONTHS ENDED JUNE 30, 1999
(IN THOUSANDS, EXCEPT PER SHARE DATA)

	HISTORICAL		PRO FORMA COMBINED
	MKS	ASTEX	
Net sales.....	\$82,119	\$45,523	\$127,642
Research contract revenue.....	--	620	620
Other revenue.....	--	3,112	3,112
Total net sales.....	82,119	49,255	131,374
Cost of sales and other revenue.....	48,107	32,101	80,208
Cost of research contracts.....	--	174	174
Gross profit.....	34,012	16,980	50,992
Operating expenses:			
Research and development.....	6,272	5,177	11,449
Selling, general and administrative.....	18,292	7,175	25,467
Restructuring charge.....	--	763	763
Total operating expenses.....	24,564	13,115	37,679
Income from operations.....	9,448	3,865	13,313
Interest expense.....	684	4	688
Interest income.....	674	462	1,136
Other income (expense).....	168	(21)	147
Income before income taxes.....	9,606	4,302	13,908
Provision for income taxes.....	2,671	1,636	4,307
Non-recurring deferred tax credit.....	(3,770)	--	(3,770)
Net income.....	\$10,705	\$ 2,666	\$ 13,371
	=====	=====	=====
Net income per share (Note 2):			
Basic.....	\$ 0.51	\$ 0.26	\$ 0.46
Diluted.....	\$ 0.48	\$ 0.25	\$ 0.44
Weighted average common shares outstanding:			
Basic.....	21,060	10,190	28,875
Diluted.....	22,177	10,843	30,492
Pro forma data (Note 3):			
Pro forma net income from above.....			\$ 13,371
Pro forma adjustment for MKS income tax provision assuming C corporation tax.....			4,749
Pro forma net income.....			\$ 8,622
			=====
Pro forma net income per share:			
Basic.....			\$ 0.30
Diluted.....			\$ 0.29
Pro forma weighted average common shares outstanding:			
Basic.....			28,875
Diluted.....			30,236

UNAUDITED PRO FORMA CONDENSED
COMBINED STATEMENT OF OPERATIONS
FOR THE TWELVE MONTHS ENDED DECEMBER 31, 1999
(IN THOUSANDS, EXCEPT PER SHARE DATA)

	HISTORICAL		PRO FORMA COMBINED
	MKS	ASTEX	
Net sales.....	\$187,083	\$72,097	\$259,180
Research contract revenue.....	--	856	856
Other revenue.....	--	5,256	5,256
Total net sales.....	187,083	78,209	265,292
Cost of sales and other revenue.....	107,228	55,246	162,474
Cost of research contracts.....	--	309	309
Gross profit.....	79,855	22,654	102,509
Operating expenses:			
Research and development.....	13,230	9,745	22,975
Selling, general and administrative.....	39,014	13,223	52,237
Restructuring charge.....	--	2,260	2,260
Total operating expenses.....	52,244	25,228	77,472
Income (loss) from operations.....	27,611	(2,574)	25,037
Interest expense.....	1,346	32	1,378
Interest income.....	2,154	649	2,803
Other income (expense).....	849	56	905
Income (loss) before income taxes.....	29,268	(1,901)	27,367
Provision for income taxes.....	5,231	(650)	4,581
Net income (loss).....	\$ 24,037	\$(1,251)	\$ 22,786
	=====	=====	=====
Net income (loss) per share (Note 2):			
Basic.....	\$ 1.05	\$ (0.13)	\$ 0.76
Diluted.....	\$ 1.00	\$ (0.13)	\$ 0.73
Weighted average common shares outstanding:			
Basic.....	22,784	9,398	29,991
Diluted.....	23,954	9,398	31,161
Pro forma data (Note 3):			
Pro forma net income from above.....			\$ 22,786
Pro forma adjustment for MKS income tax provision assuming C corporation tax.....			5,625
Pro forma net income.....			\$ 17,161
			=====
Pro forma net income per share:			
Basic.....			\$ 0.57
Diluted.....			\$ 0.55
Pro forma weighted average common shares outstanding:			
Basic.....			29,991
Diluted.....			30,993

UNAUDITED PRO FORMA CONDENSED
COMBINED STATEMENT OF OPERATIONS
FOR THE TWELVE MONTHS ENDED DECEMBER 31, 1998
(IN THOUSANDS, EXCEPT PER SHARE DATA)

	HISTORICAL		PRO FORMA COMBINED
	MKS	ASTEX	
Net sales.....	\$139,763	\$77,958	\$217,721
Research contract revenue.....	--	786	786
Other revenue.....	--	4,692	4,692
Total net sales.....	139,763	83,436	223,199
Cost of sales and other revenue.....	83,784	54,564	138,348
Cost of research contracts.....	--	423	423
Gross profit.....	55,979	28,449	84,428
Operating expenses:			
Research and development.....	12,137	11,253	23,390
Selling, general and administrative.....	34,707	11,075	45,782
Acquisition related expenses.....	--	212	212
Total operating expenses.....	46,844	22,540	69,384
Income from operations.....	9,135	5,909	15,044
Interest expense.....	1,483	196	1,679
Interest income.....	296	514	810
Other income (expense).....	187	260	447
Income before income taxes.....	8,135	6,487	14,622
Provision for income taxes.....	949	2,466	3,415
Net income.....	\$ 7,186	\$ 4,021	\$ 11,207
	=====	=====	=====
Net income per share (Note 2):			
Basic.....	\$ 0.40	\$ 0.50	\$ 0.46
Diluted.....	\$ 0.38	\$ 0.47	\$ 0.44
Weighted average common shares outstanding:			
Basic.....	18,053	8,053	24,229
Diluted.....	18,720	8,529	25,261
Pro forma data (Note 3):			
Pro forma net income from above.....			\$ 11,207
Pro forma adjustment for MKS income tax provision assuming C corporation tax.....			2,142
Pro forma net income.....			\$ 9,065
			=====
Pro forma net income per share:			
Basic.....			\$ 0.37
Diluted.....			\$ 0.36
Pro forma weighted average common shares outstanding:			
Basic.....			24,229
Diluted.....			25,079

UNAUDITED PRO FORMA CONDENSED
COMBINED STATEMENT OF OPERATIONS
FOR THE TWELVE MONTHS ENDED DECEMBER 31, 1997
(IN THOUSANDS, EXCEPT PER SHARE DATA)

	HISTORICAL		PRO FORMA COMBINED
	MKS	ASTEX	
Net sales.....	\$188,080	\$43,935	\$232,015
Research contract revenue.....	--	982	982
Other revenue.....	--	3,050	3,050
Total net sales.....	188,080	47,967	236,047
Cost of sales and other revenue.....	107,606	30,053	137,659
Cost of research contracts.....	--	504	504
Gross profit.....	80,474	17,410	97,884
Operating expenses:			
Research and development.....	14,673	7,343	22,016
Selling, general and administrative.....	41,838	6,908	48,746
Acquisition related expenses.....	--	1,500	1,500
Total operating expenses.....	56,511	15,751	72,262
Income from operations.....	23,963	1,659	25,622
Interest expense.....	2,132	585	2,717
Interest income.....	271	396	667
Other income (expense).....	166	18	184
Income before income taxes.....	22,268	1,488	23,756
Provision for income taxes.....	1,978	550	2,528
Net income.....	\$ 20,290	\$ 938	\$ 21,228
Net income per share (Note 2):			
Basic.....	\$ 1.12	\$ 0.14	\$ 0.92
Diluted.....	\$ 1.10	\$ 0.14	\$ 0.90
Weighted average common shares outstanding:			
Basic.....	18,053	6,686	23,180
Diluted.....	18,388	6,777	23,585
Pro forma data (Note 3):			
Pro forma net income from above.....			\$ 21,228
Pro forma adjustment for MKS income tax provision assuming C corporation tax.....			6,484
Pro forma net income.....			\$ 14,744
Pro forma net income per share:			
Basic.....			\$ 0.64
Diluted.....			\$ 0.63
Pro forma weighted average common shares outstanding:			
Basic.....			23,180
Diluted.....			23,459

NOTES TO UNAUDITED PRO FORMA CONDENSED COMBINED FINANCIAL STATEMENTS

1. The unaudited pro forma condensed combined financial statements of MKS and ASTeX give retroactive effect to the merger which is being accounted for as a pooling of interests and, as a result, such statements are presented as if the combining companies had been combined for all periods presented. The unaudited pro forma condensed combined financial statements reflect the issuance of 0.7669 of a share of MKS common stock for each share of ASTeX common stock to effect the merger. The actual number of shares of MKS common stock to be issued will be determined at the effective date of the merger based on the exchange ratio and the number of shares of ASTeX common stock outstanding.
2. The unaudited basic net income (loss) per common share is based upon the weighted average number of MKS and ASTeX common shares outstanding for each period using an exchange ratio of 0.7669 of a share of MKS common stock for each share of ASTeX common stock. The unaudited diluted net income (loss) per common and dilutive potential common share is based upon the weighted average number of MKS and ASTeX common and dilutive common shares outstanding for each period using an exchange ratio of 0.7669 of a share of MKS common stock for each share of ASTeX common stock. The unaudited pro forma condensed combined balance sheet reflects the issuance of 11,042,000 shares of MKS common stock (no par value) in exchange for all of the shares of ASTeX common stock outstanding at July 1, 2000.
3. Prior to its initial public offering, MKS had been treated as an S corporation for federal income tax purposes. As a result, MKS paid no federal, and certain state, income tax, and all of the earnings of MKS were subject to federal, and certain state, income taxation directly at the stockholder level. MKS' S corporation status was terminated prior to the closing of its initial public offering, which occurred on April 4, 1999, at which time, MKS became subject to corporate income taxation under Subchapter C of the Internal Revenue Code and applicable state income taxation law. Pro forma statement of income data has been adjusted to include pro forma income tax provisions as if MKS had been a C corporation during the relevant periods, assuming C corporation tax rates.
4. There are no material intercompany transactions included in the unaudited pro forma condensed combined financial statements. The unaudited pro forma condensed combined financial statements do not include adjustments to conform the accounting policies of ASTeX to those followed by MKS. The nature and extent of such adjustments, if any, will be based upon further study and analysis and are not expected to be material.
5. MKS and ASTeX currently estimate that they will incur costs of approximately \$7,500,000 associated with the merger. The costs of \$7,500,000 consists primarily of advisor fees, legal and accounting services. These costs have been reflected in the unaudited pro forma combined balance sheet but have not been included in the unaudited pro forma combined statement of operations.

MKS' PRINCIPAL STOCKHOLDERS

The following table sets forth certain information regarding beneficial ownership of MKS' common stock as of October 1, 2000, and as adjusted to reflect the issuance of MKS common stock in the merger, by (1) each of MKS' directors, (2) each of MKS' executive officers, (3) each person known to MKS to own beneficially more than 5% of MKS' common stock and (4) all directors and executive officers as a group.

NAME OF BENEFICIAL OWNER	SHARES BENEFICIALLY OWNED PRIOR TO THE MERGER(1)		SHARES BENEFICIALLY OWNED AFTER THE MERGER(1)	
	NUMBER	PERCENTAGE	NUMBER	PERCENTAGE
John R. Bertucci.....	15,997,777(2)	62.7%	16,048,776(2)	43.7%
Peter R. Younger.....	46,294(3)	*	46,294	*
Ronald C. Weigner.....	154,194(4)	*	154,194	*
John J. Sullivan.....	301,010	1.2%	301,010	*
Donald K. Smith.....	40,813	*	40,813	*
William D. Stewart.....	153,600(5)	*	153,600	*
Joseph A. Maher, Jr.....	121,336(6)	*	121,336	*
Robert L. Klimm.....	0	*	0	*
Leo Berlinghieri.....	117,000(5)	*	117,000	*
Richard S. Chute.....	2,256,820(7)	8.8%	2,256,820	6.1%
Owen W. Robbins.....	25,092(5)	*	25,092	*
Robert J. Therrien.....	25,092(5)	*	25,092	*
Louis P. Valente.....	25,092(5)	*	25,092	*
other 5% stockholder				
Thomas H. Belknap.....	2,021,506(8)	7.9%	2,021,506	5.5%
All executive officers and directors as a group (13 persons).....	17,032,392(9)	65%	17,083,391	45.7%

* Denotes ownership of less than 1% of the outstanding shares of MKS common stock.

(1) Beneficial ownership is determined in accordance with the rules of the Securities and Exchange Commission, and is not necessarily indicative of beneficial ownership for any other purpose. Under these rules, beneficial ownership includes any shares as to which the individual or entity has sole or shared voting power or investment power and any shares which the individual or entity has the right to acquire within 60 days after October 1, 2000 through the exercise of any stock option, warrant or other right. However, these shares are not deemed outstanding for purposes of calculating the percentage ownership of any other person. The inclusion in this table of any shares does not constitute an admission that the named stockholder is a direct or indirect beneficial owner of the shares. Unless otherwise indicated, each person or entity named in the table has sole voting power and investment power with respect to all shares of capital stock listed as owned by the person or entity. The percentages prior to the merger are calculated based on 25,532,257 shares outstanding on October 1, 2000. The percentages after the merger are calculated on an assumed 11,158,793 shares issued in the merger, based on the number of shares of ASTeX common stock outstanding on October 1, 2000.

(2) Beneficial ownership prior to the merger includes 5,825,694 shares held directly by Mr. Bertucci, 5,959,851 shares held directly by Mr. Bertucci's family members, and 4,212,232 shares held by Bertucci family trusts for which either Mr. or Mrs. Bertucci serves as a co-trustee. In addition, beneficial ownership after the merger includes 17,255.25 shares of MKS common stock and 33,743.60 shares of common stock subject to options exercisable within 60 days from October 1, 2000 to be issued in the merger or issuable in exchange for the ASTeX common stock and options currently owned by Mr. Bertucci.

(3) Includes 594 shares held directly by Mr. Younger, 700 shares held by certain of the Younger family trusts for which Mr. Younger serves as trustee, and 45,000 shares subject to options held by Mr. Younger exercisable within 60 days of October 1, 2000.

- (4) Includes 594 shares held directly by Mr. Weigner and 153,600 shares subject to options held by Mr. Weigner exercisable within 60 days of October 1, 2000.
- (5) Consists of options exercisable within 60 days of October 1, 2000.
- (6) Includes 5,716 shares held directly by Mr. Maher and 115,620 shares subject to options held by Mr. Maher exercisable within 60 days of October 1, 2000.
- (7) Includes 2,231,728 shares held by certain of the Bertucci family trusts for which Mr. Chute serves as a co-trustee and 25,092 shares subject to options held by Mr. Chute exercisable within 60 days of October 1, 2000.
- (8) Includes 2,021,156 shares held by certain of the Bertucci family trusts for which Mr. Belknap serves as a co-trustee and 350 shares held directly by Mr. Belknap.
- (9) Includes 660,096 shares subject to options exercisable within 60 days of October 1, 2000.

ASTEX'S PRINCIPAL STOCKHOLDERS

The following table sets forth, as of November 7, 2000, certain information concerning stock ownership of ASTeX by (i) each person known by ASTeX to own of record or be the beneficial owner of more than five percent (5%) of ASTeX common stock, (ii) each of ASTeX's directors, (iii) each executive officer named in the Summary Compensation Table on page 95, and (iv) all directors and current executive officers as a group. Except as otherwise indicated, the stockholders listed in the table have sole voting and investment powers with respect to the shares indicated.

NAME AND ADDRESS OF BENEFICIAL OWNER(1)	NUMBER OF SHARES BENEFICIALLY OWNED(2)	PERCENTAGE OF CLASS(2)
Kopp Investment Advisors, Inc.(3).....	1,265,800	8.7%
Richard S. Post, Ph.D.(4).....	642,852	4.4%
John M. Tarrh(5).....	327,636	2.2%
Robert R. Anderson(6).....	95,863	*
John Bertucci(7).....	119,000	*
Michel de Beaumont(8).....	94,000	*
Hans-Jochen Kahl(9).....	39,000	*
Brian Chisholm(10).....	79,900	*
Avishay Katz, Ph.D.(11).....	31,995	*
Stanley Burg(12).....	28,800	*
Jill Maunder(13).....	9,600	*
John E. Ross(14).....	24,000	*
All Current Executive Officers and Directors as a Group (11 persons)(15).....	1,414,951	9.7%

* Less than one percent (1%) of the outstanding shares of ASTeX common stock.

- (1) The address for all officers and directors is c/o Applied Science and Technology, Inc., 90 Industrial Way, Wilmington, Massachusetts 01887. The address for Kopp Investment Advisors, Inc. is 7701 France Avenue South, Suite 500, Edina, Minnesota 55435.
- (2) Percentage ownership is based upon 14,624,621 shares of ASTeX common stock issued and outstanding on November 7, 2000. Pursuant to the rules of the Securities and Exchange Commission, shares of common stock that an individual or group has a right to acquire within 60 days from November 7, 2000 pursuant to the exercise of options or warrants are deemed to be outstanding for the purpose of computing the percentage ownership of such individual or group, but are not deemed to be outstanding for the purpose of computing the percentage of ownership of any other person shown in the table. Except as indicated in footnotes to this table, ASTeX believes that the stockholders named in this table have sole voting and investment power with respect to all shares of common stock shown to be beneficially owned by them based upon information provided to ASTeX by such stockholders.
- (3) Based solely upon a Schedule 13G/A filed in February 2000 by Kopp Investment Advisors, Inc. (KIA) on behalf of KIA, Kopp Holding Company and Leroy C. Kopp. KIA is an investment adviser that is wholly-owned by Kopp Holding Company, which is wholly-owned by Leroy C. Kopp. KIA has sole voting power as to 357,500 of such shares and sole dispositive power as to 235,000 of such shares. Leroy C. Kopp has sole voting and dispositive power as to 15,000 of such shares.
- (4) Includes 14,650 shares of common stock owned by Dr. Post's wife and 20,000 shares of common stock subject to options exercisable within 60 days of November 7, 2000 held by Dr. Post.
- (5) Includes an aggregate of 1,313 shares of common stock owned by Mr. Tarrh's wife and minor son and 6,400 shares of Common Stock subject to options exercisable within 60 days of October 10, 2000 held by Mr. Tarrh.

- (6) Includes 15,000 shares of common stock held in trust for the benefit of a child of Mr. Anderson, of which Mr. Anderson is the trustee, and 38,000 shares of common stock subject to options exercisable within 60 days of November 7, 2000 held by Mr. Anderson.
- (7) Includes 52,500 shares of common stock held by MKS, of which Mr. Bertucci is a significant shareholder, and 44,000 shares of common stock subject to options exercisable within 60 days of November 7, 2000 held by Mr. Bertucci.
- (8) Includes 50,000 shares of common stock held by various trust arrangements, of which Mr. de Beaumont is a beneficiary and 44,000 shares of common stock subject to options exercisable within 60 days of November 7, 2000 held by Mr. de Beaumont.
- (9) Includes 29,500 shares of common stock subject to options exercisable within 60 days of November 7, 2000 options held by Mr. Kahl.
- (10) Includes 69,900 shares of common stock subject to options exercisable within 60 days of November 7, 2000 held by Mr. Chisholm. Effective July 28, 2000, Mr. Chisholm is no longer an employee of ASTEX.
- (11) Includes 23,859 shares of common stock subject to options exercisable within 60 days of November 7, 2000 held by Dr. Katz. Effective June 30, 2000, Dr. Katz is no longer an employee of ASTEX.
- (12) Includes 20,400 shares of common stock subject to options exercisable within 60 days of November 7, 2000 held by Mr. Burg.
- (13) Includes 9,000 shares of common stock subject to options exercisable within 60 days of November 7, 2000 held by Ms. Maunder.
- (14) Consists of 24,000 shares of common stock subject to options exercisable within 60 days of November 7, 2000 held by Mr. Ross.
- (15) Includes an aggregate of 265,300 shares of common stock subject to options exercisable within 60 days of November 7, 2000 held by all directors and current executive officers as a group.

COMPARISON OF STOCKHOLDER RIGHTS

The rights of ASTeX stockholders are governed by ASTeX's certificate of incorporation and bylaws, each as amended, and the laws of the State of Delaware, and the rights of MKS stockholders are governed by MKS' restated articles of organization and bylaws and the laws of the Commonwealth of Massachusetts. After the merger, the ASTeX stockholders will become stockholders of MKS and accordingly their rights will be governed by MKS' articles of organization and bylaws, each as amended, and the laws of the Commonwealth of Massachusetts.

While the rights and privileges of ASTeX stockholders are, in many instances, comparable to those of the stockholders of MKS, there are some differences. The following is a summary of the material differences as of the date of this document between the rights of the ASTeX stockholders and the rights of the MKS stockholders. These differences arise from differences between the respective charters and bylaws of ASTeX and MKS and the differences between Delaware and Massachusetts law. The following discussion of these differences is only a summary of the material differences and does not purport to be a complete description of all the differences. Please consult the Delaware General Corporation Law and the Massachusetts Business Corporation Law, and the respective charters and bylaws of ASTeX and MKS for a more complete understanding of these differences.

The following paragraphs summarize certain differences between the rights of MKS stockholders and ASTeX stockholders under the restated articles of organization and bylaws of MKS and certificate of incorporation and bylaws of ASTeX, and under Massachusetts and Delaware law, as applicable.

	ASTEX (DELAWARE) -----	MKS (MASSACHUSETTS) -----
AUTHORIZED AND OUTSTANDING COMMON STOCK	ASTeX is authorized to issue 30,000,000 shares of common stock. On _____, 200_, the ASTeX record date, 14,624,621 shares of common stock were outstanding. Holders are entitled to one vote per share.	MKS is authorized to issue 50,000,000 shares of common stock. On _____, 200_, the MKS record date, 25,532,257 shares of common stock were outstanding.
AUTHORIZED AND OUTSTANDING PREFERRED STOCK	The ASTeX certificate of incorporation reserves for issuance 1,000,000 shares of preferred stock, of which 100,000 shares are designated as Series A Junior Participating Preferred Stock. On the ASTeX record date, no shares of preferred stock were outstanding.	MKS is authorized to issue 2,000,000 shares of preferred stock in one or more series. On the MKS record date, no shares of preferred stock were outstanding.
SPECIAL MEETING OF STOCKHOLDERS	Under Delaware law, a special meeting of stockholders may be called by the board of directors or any other person authorized to do so in the certificate of incorporation or the bylaws. ASTeX's bylaws authorize only the board of directors to call a special meeting of stockholders. Therefore, stockholders of ASTeX are not authorized to call special meetings of stockholders.	MKS' bylaws provide that a special meeting of stockholders may be called by the president or the board of directors. A special meeting may be called by the clerk upon written application of one or more stockholders who are entitled to vote at the meeting and hold at least a one-tenth part in the stock entitled to vote at the meeting.

ASTEX
(DELAWARE)

MKS
(MASSACHUSETTS)

ACTION BY WRITTEN CONSENT
LIEU OF A STOCKHOLDERS'
MEETING

Under Delaware law, stockholders may take action by written consent in lieu of voting at a stockholders meeting. Delaware law permits a corporation, pursuant to a provision in such corporation's certificate of incorporation, to eliminate the ability of stockholders to act by written consent. ASTeX's bylaws provide that any action by stockholders may be taken without a meeting and by unanimous written consent.

Under Massachusetts law, any action to be taken by stockholders may be taken without a meeting only by unanimous written consent and a corporation may not provide otherwise in its articles of organization or bylaws.

MKS' bylaws provide that any action by stockholders may be taken without a meeting and by written consent if all the stockholders entitled to vote on the matter consent.

RECORD DATE FOR DETERMINING
STOCKHOLDERS

The ASTeX bylaws provide that the board of directors may fix an ASTeX record date that shall not be more than sixty days, nor less than ten days, before the date of the meeting.

The MKS bylaws provide that the directors may fix a MKS record date not more than sixty days prior to the date of any stockholder meeting, the date for the payment of any dividend or the making of any distribution to stockholders or the last day on which the consent or dissent of stockholders may be effectively expressed for any purpose, as the MKS record date.

If no MKS record date is fixed and the transfer books are not closed:

The MKS record date for determining stockholders having the right to notice of or to vote at a meeting of stockholders shall be at the close of business on the day next preceding the day on which notice is given.

The MKS record date for determining stockholders for any other purpose shall be at the close of business on the day on which the board of directors acts with respect thereto.

ADVANCE NOTICE PROVISIONS
FOR BOARD NOMINATION AND
OTHER STOCKHOLDERS
BUSINESS -- ANNUAL MEETINGS

The ASTeX bylaws require that nominations of persons for election to the board of directors and the proposal of business to be considered at any meeting of stockholders must

Board nominations and other stockholder business may be brought before an annual meeting by or at the direction of the board of directors or by a stockholder. For

ASTEX
(DELAWARE)

be made by:

the board of directors, or proxy committee appointed by the board of directors, or

a stockholder who gives proper notice.

For nominations or other business to be properly brought before a stockholders meeting by a stockholder, the stockholder must have given timely notice thereof in writing to the secretary of ASTeX and such other business must otherwise be a proper matter for stockholder action. To be timely, stockholder's notice shall be delivered to the principal executive offices of ASTeX (i) in the case of an annual meeting that is called for a date that is within thirty days before or after the anniversary date of the immediately preceding annual meeting of stockholders, not less than sixty days nor more than ninety days prior to such anniversary date, and (ii) in the case of an annual meeting that is called for a date that is not within thirty days before or after the anniversary date of the immediately preceding annual meeting, not later than the close of business on the tenth day following the day on which notice of the date of the meeting was mailed or public disclosure of the date of the meeting was made, whichever occurs first

ADVANCE NOTICE PROVISIONS
FOR BOARD NOMINATION AND
OTHER STOCKHOLDERS
BUSINESS -- SPECIAL MEETINGS

Stockholder notice shall be delivered not later than the close of business on the tenth day following the day on which notice of the date of the meeting was mailed or public disclosure of the date of the meeting was made, whichever occurs first.

MKS
(MASSACHUSETTS)

business to be properly brought before an annual meeting by a stockholder, the stockholder must give timely notice thereof in writing to the clerk of MKS. To be timely, a stockholder's notice must be delivered to or mailed and received at the principal executive offices of MKS not less than sixty days nor more than ninety days prior to the meeting; provided, however, that in the event that less than forty days' notice or prior public disclosure of the date of the meeting is given or made to stockholders, notice by the stockholder to be timely must be received not later than the close of business on the tenth day following the day on which such notice of the date of the annual meeting was mailed or such public disclosure was made.

Under Massachusetts law, seven days notice is required before any stockholder meeting.

Any board nomination by a stockholder shall be made pursuant to timely notice in writing to the clerk of MKS. To be timely, a stockholder's notice shall be delivered to the principal executive offices of MKS not less than thirty

ASTEX
(DELAWARE)

MKS
(MASSACHUSETTS)

		<p>days nor more than ninety days prior to the date of the meeting; provided, however, that in the event that less than forty days' notice or prior public disclosure of the date of the meeting is given or made to stockholders, timely notice by the stockholder must be received not later than the close of business on the tenth day following the day on which such notice of the date of the meeting was mailed or such public disclosure was made.</p>
NUMBER OF DIRECTORS	<p>The ASTeX bylaws provide that the board of directors shall be determined by the board of directors; if no such determination is made, the number of directors shall be one.</p>	<p>MKS' articles of organization and bylaws provide that its board of directors shall not have less than three members, unless there are less than three stockholders.</p>
CLASSIFIED BOARD OF DIRECTORS	<p>Delaware law provides that a corporation's board of directors may be divided into various classes with staggered terms of office. ASTeX directors are classified into three classes and are elected to a term of three years and hold office until their successors are elected and qualified.</p>	<p>Massachusetts law provides that a corporation's board of directors may be divided into various classes with staggered terms of office. MKS' directors are classified into three classes and are elected to a term of three years and hold office until their successors are elected and qualified.</p>
REMOVAL OF DIRECTORS	<p>Under Delaware law, except as otherwise provided in the corporation's certificate of incorporation, a director of a corporation that has a classified board of directors may be removed only with cause. The ASTeX bylaws provide that any director or the entire board of directors may be removed by the holders of a majority of the shares then entitled to vote at an election of directors.</p>	<p>MKS' bylaws provide that a director may be removed from office, with or without cause, by the holders of a majority of the shares entitled to vote in the election of directors. A director may be removed for cause by vote of a majority of the directors then in office after reasonable notice and an opportunity to be heard.</p>
BOARD OF DIRECTOR VACANCIES	<p>ASTeX's bylaws provide that vacancies and newly created directorships may be filled by a majority of the directors then in office, even though less than a quorum, or by a sole remaining director.</p>	<p>MKS' bylaws provide that any vacancy in the board of directors may be filled by vote of a majority of the directors present at the meeting of directors at which a quorum is present.</p>

ASTEX
(DELAWARE)

MKS
(MASSACHUSETTS)

NOTICE OF SPECIAL MEETINGS
OF THE BOARD OF DIRECTORS

ASTeX's bylaws provide that special meetings of the board of directors may be called by the chairman of the board, the president, or by two or more directors on at least two days' notice to each director, if such notice is delivered personally or sent by telegram, or on at least three days' notice if sent by mail.

MKS' bylaws provide that special meetings of the board of directors may be called by the chairman of the board, president, treasurer, or two or more directors or one in the event there is only one director.

APPROVAL OF LOANS TO
OFFICERS

The ASTeX bylaws do not provide for loans to officers. Under Delaware law, a corporation may lend money to or otherwise assist any officer or other employee whenever the directors judge such a loan or assistance reasonably to be expected to benefit the corporation.

MKS' bylaws do not provide for loans to officers. Under Massachusetts law, the directors and officers who participate in a loan by the corporation to any of its officers shall be jointly and severally liable for any unpaid portions of the loan, unless a majority of disinterested shares entitled to vote for directors approve or ratify the loan as one reasonably expected to benefit the corporation.

INDEMNIFICATION

The ASTeX certificate of incorporation and bylaws provide that the directors and officers shall be indemnified to the fullest extent authorized by law against any action, proceeding or suit brought against such a person by reason of the fact that he or she is or was a director, officer, employee or agent of ASTeX or serves or served at any other enterprise as at the request of ASTeX.

Under Delaware law, such provision may not eliminate or limit director monetary liability for:

breaches of the director's duty of loyalty to the corporation or its stockholders;

acts or omissions not in good faith involving intentional misconduct or knowing violations of law;

the payment of unlawful dividends or unlawful stock repurchases or

MKS' bylaws provide that MKS will, to the extent legally permissible, indemnify any person who is or was serving as a director or officer of MKS against all liabilities and expenses, including attorneys' fees, judgments and fines incurred by him in connection with the defense of a civil or criminal proceeding, while in office or thereafter, by reason of his being or having been a director or officer. No amendment to or repeal of this provision of the MKS articles shall apply to or have any effect on the liability or alleged liability of any director for or with respect to any acts or omissions of such director occurring prior to such amendment or repeal.

Under Massachusetts law, a director is generally not exculpated from liability under provisions of the Massachusetts Business Corporation Law relating to unauthorized distributions and loans to insiders. The Massachusetts Business

ASTEX
(DELAWARE)

MKS
(MASSACHUSETTS)

redemptions; or

any transaction in which the director received an improper personal benefit.

Corporation Law provides that no indemnification may be provided with respect to any matter in which the director or officer shall have been adjudicated not to have acted in good faith in the reasonable belief that his action was:

in the best interest of the corporation; or

to the extent that such matter relates to service with respect to any employee benefit plan, in the best interests of the participants or beneficiaries of such employee benefit plan.

The Massachusetts Business Corporation Law does not explicitly address indemnifying persons against judgments in actions brought by or in the right of the corporation. The previously discussed standard applies to such cases.

STOCKHOLDER APPROVAL OF
CERTAIN BUSINESS
COMBINATIONS

Under Delaware law, "business combinations" by corporations with "interested stockholders" are subject to a moratorium of three or five years, respectively, unless specified conditions are met. The prohibited transactions include, a merger with, disposition of assets to, or the issuance of stock to, the interested stockholder, or certain transactions that have the effect of increasing the proportionate share of the outstanding securities held by the interested stockholder.

Under Delaware law, an interested stockholder may avoid the prohibition against effecting certain significant transactions with the corporation if the board of directors, prior to the time such stockholder becomes an interested stockholder, approves such transaction or the transaction by which such stockholder becomes an interested

Massachusetts law prohibits a business combination with an interested stockholder, generally defined as a person beneficially owning 5% or more of MKS' outstanding voting stock, or an interested stockholder's affiliate or associate, for a three-year period following the date that a stockholder becomes an interested stockholder.

MKS' bylaws provide that a merger or consolidation may be approved by a vote of two-thirds of the shares of the stock outstanding; however, if a merger or consolidation has been approved by a majority of the board of directors, then the corporation may authorize or approve such action by a vote of a majority of the stock outstanding.

ASTEX
(DELAWARE)

MKS
(MASSACHUSETTS)

stockholder or if at or subsequent to such time the board of directors and the stockholders approve such transaction. These provisions of Delaware law apply to a Delaware corporation unless the corporation "opts out" of the provisions in its certificate of incorporation or bylaws. ASTeX has not opted out of these provisions in its certificate of incorporation or bylaws and consequently is subject to these provisions.

PAR VALUE, DIVIDENDS AND
REPURCHASES OF SHARES

The concepts of par value, capital and surplus are retained under Delaware law. Delaware law permits a corporation to declare and pay dividends out of surplus or, if there is no surplus, out of the net profits for the fiscal year in which the dividend is declared and/or for the preceding fiscal year as long as the amount of capital of the corporation following the declaration and payment of the dividend is not less than the aggregate amount of the capital represented by the issued and outstanding stock of all classes having a preference upon the distribution of assets. In addition, Delaware law generally provides that a corporation may redeem or repurchase its shares only if such redemption or repurchase would not impair the capital of the corporation. Notwithstanding the foregoing, a Delaware corporation may redeem or repurchase shares having a preference upon the distribution of any of its assets if such shares will be retired upon acquisition, and provided that, after the reduction in capital made in connection with such retirement of shares, the corporation's remaining assets are sufficient to pay any debts not otherwise provided for.

DISSENTERS' OR APPRAISAL
RIGHTS

Under Delaware law, such rights are not available with respect to a

Under Massachusetts law, corporations generally are permitted to pay dividends as long as the action is not taken when the corporation is insolvent, does not render the corporation insolvent and does not violate the corporation's articles of organization. The directors of Massachusetts corporations may be jointly and severally liable to the corporation to the extent that the directors authorize a dividend when the corporation is insolvent or where the amount of the dividend exceeds the permissible amounts and is not repaid to the corporation.

MKS' restated articles of organization provide that dividends may be declared and paid on its common stock from funds lawfully available therefor as and when determined by the board of directors and subject to any preferential dividend rights of any then outstanding preferred stock.

Under Massachusetts law, a stockholder may, before the taking of

ASTEX
(DELAWARE)

MKS
(MASSACHUSETTS)

merger or consolidation by a corporation the shares of which are either listed on a national securities exchange or held of record by more than 2,000 stockholders if such stockholders are required to receive only shares of the surviving corporation, shares of any other corporation which are either listed on a national securities exchange or held of record by more than 2,000 holders, cash in lieu of fractional shares or a combination of the foregoing.

the vote on approval of a merger agreement, file with the corporation a written objection to the proposed merger stating that he intends to demand payment for his shares if the merger is consummated. If the shares are not voted in favor of the merger, the stockholder may have the right to demand in writing from the corporation, as it exists after the merger, within twenty days after the date of mailing to him of notice in writing that the merger has been consummated, payment for his shares and an appraisal for the value thereof.

DESCRIPTION OF COMMON STOCK

The holders of ASTeX common stock are entitled to one vote for each share held of record on all matters submitted to a vote of stockholders. Additional designations and powers, preferences and rights and qualifications, limitations or restrictions thereof of the shares shall be determined by the board of directors from time to time. All outstanding shares of common stock are fully paid and non-assessable and have a par value of \$0.01 per share.

The holders of MKS common stock are entitled to one vote for each share held of record on all matters submitted to a vote of stockholders. The voting, dividend and liquidation rights of the holders of common stock are subject to and qualified by the rights of the holders of preferred stock. All outstanding shares of common stock are fully paid and non-assessable and have no par value per share.

DESCRIPTION OF PREFERRED STOCK

Pursuant to the certificate of incorporation, the board of directors has the authority, without further action by the stockholders, to issue up to 1,000,000 shares of preferred stock, \$0.01 par value per share, in one or more series and to fix the designations, powers, preferences, privileges and relative participating, optional or special rights and the qualifications, limitations or restrictions thereof, including dividend rights, conversion rights, voting rights, terms of redemption and liquidation preferences, any or all of which may be greater than the rights of the common stock. The board, without stockholder approval, can issue preferred stock with voting, conversion or other rights that could

Pursuant to MKS' restated articles of organization, the board of directors has the authority, without further action by the stockholders, to issue up to 2,000,000 shares of preferred stock, \$0.01 par value per share, in one or more series, and in connection with the creation of any such series, by resolution or resolutions providing for the issue of the shares thereof, to determine and fix such voting powers, full or limited, or no voting powers, and such designations, preferences and relative participating, optional or other special rights, and qualifications, limitations or restrictions thereof, including without limitation thereof, dividend rights, conversion rights, redemption

ASTEX
(DELAWARE)

MKS
(MASSACHUSETTS)

adversely affect the voting power and other rights of the holders of common stock. Preferred stock could thus be issued quickly with terms calculated to delay or prevent a change in control of ASTeX or make removal of management more difficult. Additionally, the issuance of preferred stock may have the effect of decreasing the market price of the common stock, and may adversely affect the voting and other rights of the holders of common stock. As of October 23, 2000, there are no shares of preferred stock outstanding.

privileges and liquidation preferences, as shall be stated and expressed in such resolutions, all to the full extent permitted by Chapter 156B of the Massachusetts General Laws. Without limiting the generality of the foregoing, the resolutions providing for issuance of any series of preferred stock may provide that such series shall be superior or rank equally or be junior to the preferred stock of any other series to the extent permitted by law. No vote of the holders of the preferred stock or common stock shall be a prerequisite to the issuance of any shares of any series of the preferred stock authorized by and complying with the conditions of the articles of organization, the right to have such vote being expressly waived by all present and future holders of the capital stock of the corporation.

STOCKHOLDER DERIVATIVE
SUITS

Under Delaware law, a stockholder may only bring a derivative action on behalf of the corporation if the stockholder was a stockholder at the time of the transaction in question or his or her stock thereafter devolved upon him or her by operation of law.

Under Massachusetts law, a stockholder may only bring a derivative action if the stockholder owned stock in the corporation at the time of the act or omission complained of or acquired the stock by operation of law from one who was a stockholder at such time.

STOCKHOLDER RIGHTS PLAN

As described in the rights agreement dated March 4, 1998 between ASTeX and Continental Stock Transfer & Trust Company, as rights agent, each outstanding share of ASTeX Common Stock will permit the holder to purchase one one-thousandth of a share of ASTeX Series A Junior Participating Preferred Stock, par value \$0.01 per share, at a price of \$70.00 per share, subject to adjustment.

The rights are not currently exercisable but will become

ASTEX
(DELAWARE)

MKS
(MASSACHUSETTS)

exercisable upon the earlier of:

- 10 days following the public announcement that a person or group has acquired 15% or more of ASTeX's outstanding common stock, or
- 10 days following the commencement of a tender or exchange offer which, if completed, would result in the offeror owning 15% or more of the outstanding shares of ASTeX common stock.

When exercisable, each right permits its holder to buy that number of shares of a series of ASTeX's common stock equal in value to twice the right's purchase price. The acquirer who triggers the rights cannot exercise or transfer its rights.

If, after the rights are exercisable, ASTeX is involved in a merger or other business combination or if 50% or more of the assets or earning power of ASTeX and its subsidiaries are sold, each rightholder will be allowed to buy shares of the acquiring company's common stock at half their average market value upon paying the right's purchase price.

The rights will expire on December 31, 2007, unless redeemed. The ASTeX board may redeem the rights at \$.01 per right any time before the tenth day after the 15% or greater acquisition. The rights have anti-takeover effects. They can cause substantial dilution to a person or group that attempts to acquire ASTeX on terms that are not approved by the board. The rights should not interfere with any merger or other business combination that

ASTEX
(DELAWARE)

MKS
(MASSACHUSETTS)

ASTeX's board approves since
ASTeX can redeem the rights
before they become exercisable.

In connection with the merger,
ASTeX adopted an amendment to
the rights agreement which
excluded the merger from the
provisions of the agreement.

ADDITIONAL PROPOSALS FOR ASTEX ANNUAL MEETING

PROPOSAL 1: ELECTION OF ASTEX DIRECTORS

The bylaws of ASTeX provide for a board of directors which is divided into three classes. Directors constituting approximately one-third of the board of directors are elected each year for a period of three years at each ASTeX annual meeting of stockholders. At this annual meeting, ASTeX stockholders will be asked to vote to re-elect the members of Class I, Dr. Post and Mr. Anderson, to serve until the earlier of:

- the completion of the merger, and
- the expiration of a three (3) year term.

The terms of the members of Class II, Messrs. Tarrh and Kahl, are scheduled to expire in 2001, and the terms of the members of Class III, Messrs. de Beaumont and Bertucci, are scheduled to expire in 2002. Vacancies and newly created directorships resulting from any increase in the number of authorized directors may be filled by a majority vote of the directors then remaining in office. A director elected to fill a vacancy on the board of directors will be elected for a term expiring at the annual meeting when the term of a director in such Class would naturally expire. Officers are elected by and serve at the discretion of the board of directors.

Shares represented by all proxies received by the board of directors and not so marked as to withhold authority to vote for an individual director, or for all directors, will be voted (unless one or more nominees are unable or unwilling to serve) for the election of the nominees named below. The board of directors expects that each of the nominees will be available for election, but if any of them is not a candidate at the time the election occurs, it is intended that such proxy will be voted for the election of another nominee to be designated by the board of directors to fill any such vacancy.

A plurality of the shares voted affirmatively or negatively at the annual meeting is required to elect each nominee as a director.

THE BOARD OF DIRECTORS RECOMMENDS THE ELECTION OF DR. RICHARD S. POST AND MR. ROBERT R. ANDERSON AS DIRECTORS, EACH TO SERVE UNTIL THE EARLIER OF THE COMPLETION OF THE MERGER AND THE EXPIRATION OF A THREE YEAR TERM, AND PROXIES SOLICITED BY THE BOARD WILL BE VOTED IN FAVOR THEREOF UNLESS A STOCKHOLDER HAS INDICATED OTHERWISE ON THE PROXY.

BOARD OF DIRECTORS

The following table sets forth the year each director was elected a director and the age, positions and offices presently held by each director with ASTeX:

NAME	AGE	CLASS TO WHICH DIRECTOR BELONGS	YEAR FIRST BECAME A DIRECTOR	POSITION
Richard S. Post, Ph.D.*.....	57	I	1987	Chief Executive Officer and Chairman of the Board of Directors
John M. Tarrh.....	53	II	1987	Vice President, Treasurer, Secretary and Director
Robert R. Anderson*.....	62	I	1995	Director
Michel de Beaumont.....	58	III	1993	Director
John R. Bertucci.....	59	III	1994	Director
Hans-Jochen Kahl.....	61	II	1995	Director

* Nominees for election at this annual meeting.

Mr. Jordan L. Golding has served as an advisor to the board of directors since 1989.

The board of directors has appointed an executive committee, presently comprised of Dr. Post and Mr. Tarrh. The executive committee is authorized to take any action that the board of directors is authorized to act upon with the exception of the issuance of stock, the sale of all or substantially all of ASTeX's assets, or any other significant corporate transaction.

All of the directors of ASTeX who were directors during fiscal year 2000 attended at least 75% of the meetings of the board of directors and the committees on which they served during fiscal year 2000. The board of directors met five times formally, while the executive committee met informally on a number of occasions during fiscal year 2000.

The board of directors also has appointed a compensation committee, presently comprised of Mr. Kahl with Mr. Golding as an advisor, and an audit committee comprised of Mr. Bertucci and Mr. Anderson, with Mr. Golding as an advisor. The compensation committee is responsible for negotiating and approving compensation arrangements for officers, employees, consultants, and directors, including the granting of options to purchase ASTeX's common stock pursuant to any of ASTeX's stock option plans. The audit committee was established for the purposes of (i) reviewing ASTeX's financial results and recommending the selection of ASTeX's independent auditors; (ii) reviewing the effectiveness of ASTeX's accounting policies and practices, financial reporting and internal controls; and (iii) reviewing the scope of independent audit coverages and fees, and any transactions that may involve a potential conflict of interest and internal control systems. The compensation and audit committees met two and four times, respectively, during fiscal year 2000.

None of the directors or executive officers of ASTeX are related by blood, marriage, or adoption to any of ASTeX's directors or executive officers.

BACKGROUND

The following is a brief summary of the background of each director of ASTeX, as well as Mr. Golding, an advisor to the board of directors:

RICHARD S. POST, PH.D. has served as ASTeX's chief executive officer and chairman of the board since its inception in 1987, and as president from ASTeX's inception until August 2000. Prior to founding ASTeX, Dr. Post served at the Massachusetts Institute of Technology from 1981 to 1987. At MIT, Dr. Post served as a senior research scientist, in the position of head of the Mirror Confinement Division of the Plasma Fusion Center. Dr. Post earned his Ph.D. in plasma physics from Columbia University and his BS from the University of California at Berkeley. He has also completed the owner/president management program at Harvard Business School.

MR. JOHN M. TARRH served as ASTeX's vice president, treasurer and secretary, and as a director since its inception in 1987. Mr. Tarrh served as ASTeX's chief financial officer from January 1987 through November 1999. Mr. Tarrh became the manager of the Mirror Confinement Division of MIT's Plasma Fusion Center in 1986 where he was responsible for financial management, project management and administration. Prior to joining the research staff of MIT in 1978, he was the executive vice president -- operations of Magnetic Engineering Associates, a privately held, high technology company in Cambridge, Massachusetts which was owned by Sala Magnetics. Mr. Tarrh presently serves as a director of QC Optics, Inc., a publicly held designer of laser-based defect detection systems. Mr. Tarrh received his MS in electrical engineering from MIT, and he earned his BS in electrical engineering from Virginia Polytechnic Institute and State University.

MR. ROBERT R. ANDERSON has served as a director of ASTeX since October 1995. Since October 1998, Mr. Anderson has served as the chief executive officer and chairman of the board of directors of Yield Dynamics, Inc. (formerly Integral Domain Technologies, Inc.), a manufacturer of yield management software. From 1996 to 1998, Mr. Anderson served as the chief executive officer of Silicon Valley Research, Inc., a manufacturer of EDA software for integrated circuit design and manufacture. Mr. Anderson currently serves as chairman of Silicon Valley. Previously, Mr. Anderson co-founded in 1975 and served as chairman of the board of directors, chief financial officer and chief operating officer of KLA Instruments Corporation (now KLA-Tencor), the leading manufacturer of yield monitoring and process control systems for the semiconduc-

tor manufacturing industry, from which he retired in 1994. From 1970 to 1975, Mr. Anderson was chief financial officer of Computervision Corporation, which developed and marketed software for design automation and product data management. Mr. Anderson graduated from Bentley College in 1959.

MR. MICHEL DE BEAUMONT has served as a director of ASTeX since January 1993. Since 1981, Mr. de Beaumont has served as a co-founder and director of American Equities Overseas (U.K.) Ltd. of London, England, a wholly owned subsidiary of American Equities Overseas Inc. (American Equities), a private securities brokerage and corporate finance firm. From 1978 to 1981, Mr. de Beaumont served as a vice president in the London, England Office of American Securities Corp., which subsequently was the clearing house for American Equities until 1993. Mr. de Beaumont has also previously served as a vice president at Smith Barney Harris Upham and Oppenheimer & Co. Mr. de Beaumont holds degrees in advanced mathematics, physics and chemistry from the Universities of Poitiers and Paris, and a degree in business administration from the University of Paris.

MR. JOHN R. BERTUCCI has served as a director of ASTeX since September 1994. From 1974 to 1995, Mr. Bertucci was president, chief executive officer and a director of MKS. From 1995 to 1999, Mr. Bertucci was chairman, president, chief executive officer and a director of MKS and, since May 1999, Mr. Bertucci has been chairman, chief executive officer and a director of MKS. From October 1998, until its acquisition by Corning on June 12, 2000, Mr. Bertucci served as a director of IntelliSense Corporation, a privately-owned designer and manufacturer of micro-electronic machined structures. Mr. Bertucci received a MS in industrial administration and a BS in metallurgical engineering from Carnegie-Mellon University.

MR. HANS-JOCHEN KAHL has served as a director of ASTeX since October 1995. From June 1994 through September 1996, Mr. Kahl served as a consultant to Ebara, a Japanese manufacturer of industrial water pumps and vacuum process equipment for the semiconductor industry. Mr. Kahl was employed by Leybold AG, formerly Leybold-Heraeus GmbH, a leading international manufacturer of vacuum pumps and other vacuum process equipment for the semiconductor industry, from July 1983 to March 1992, where he served as a managing director and was primarily responsible for sales, marketing and strategic planning. Mr. Kahl was appointed to the board of directors of Leybold in 1987, and since November 1996, he has served as a director of Solid State Measurement, a privately held manufacturer of high precision measurement tools. Mr. Kahl served as a member of the board of directors of Compact Instrument Technology, LLC, of Woburn, Massachusetts from May 1999 until March 2000, when Compact was acquired by MKS.

MR. JORDAN L. GOLDING, a certified public accountant, has served as an advisor to ASTeX's board of directors since 1989. Mr. Golding served as a partner in KPMG LLP until his retirement in 1988, where his client responsibilities included high technology, merchandising, banking and emerging companies. After service in the U.S. Navy, he became a partner in Golding, Golding & Company, which in 1967 merged with KPMG LLP. He has served as president of the Massachusetts Society of Certified Public Accountants and was chairman of the management advisory services committee of the American Institute of Certified Public Accountants. Mr. Golding presently serves as a director of Canadian Western Bank, a publicly held commercial bank. Mr. Golding serves on the advisory board of New Balance, Inc., the privately held parent company of New Balance Athletic Shoe, Inc., and of Grand Circle Corporation, the parent company of Grand Circle Travel, Inc. and Overseas Adventure Travel, Inc., and as a consultant to other corporations. Mr. Golding earned a MBA from Harvard Business School and graduated from Harvard College.

EXECUTIVE OFFICERS

The executive officers of ASTeX as of November 7, 2000, and their ages and positions held in ASTeX are as follows:

NAME - - - - -	AGE ---	POSITION -----
Richard S. Post, Ph.D.....	57	Chief Executive Officer and Chairman of the Board of Directors
John Edward Ross.....	56	President and Chief Operating Officer
William S. Hurley.....	56	Senior Vice President and Chief Financial Officer
John M. Tarrh.....	53	Vice President, Treasurer and Secretary
Stanley M. Burg.....	60	Senior Vice President, Systems Group
Jill E. Maunder.....	44	Vice President, Human Resources
Jack J. Schuss, Ph.D.....	48	Vice President, Engineering

The following is a brief summary of the background of each executive officer or key employee of ASTeX, other than Dr. Post and Mr. Tarrh, whose backgrounds are described above:

MR. JOHN EDWARD ROSS has been ASTeX's president and chief operating officer since August 2000, its senior vice president since February 2000, its vice president, business development since January 2000 and served as a consultant to ASTeX since September 1999. From June 1998 to May 1999, Mr. Ross was the senior vice president of operations at Topaz Technologies, a company which designs and manufactures professional, wide format ink jet printing systems. From June 1993 to June 1998, Mr. Ross was the general manager and vice president of operations at Applied Magnetics Corporation, a manufacturer of read/write recording heads for computer disk drives. Mr. Ross is also a director of Life Quality Products, Inc., a privately-held company. Mr. Ross holds a B.S. in Chemistry from Hull University in Hull, England.

WILLIAM S. HURLEY has been ASTeX's senior vice president and chief financial officer since November 1999. From August 1996 to October 1999, Mr. Hurley served as vice president and chief financial officer at Cybex International, Inc., a publicly-held manufacturer of fitness equipment. From March 1992 to September 1995, Mr. Hurley was vice president-controller and chief accounting officer at Bolt, Beranek & Newman, Inc. (the former BBN Corporation). Since June 1993, Mr. Hurley has been a director of L.S. Starrett Co., a publicly-held company which produces precision measurement equipment. Mr. Hurley holds an M.B.A. in Finance from Columbia University and a B.S. in Accounting from Boston College.

MR. STANLEY M. BURG has been ASTeX's senior vice president, systems group since December 1998. From July 1995 to November 1998, he was chief executive officer of Sputtered Films, Inc., a privately-owned company involved in the design and manufacture of high performance sputtering equipment for the semiconductor and magnetic storage industries. From 1991 to 1995, Mr. Burg was group vice president of Implex PLC, a U.K. holding company comprised of wholly-owned subsidiaries in the semiconductor and memory products business.

MS. JILL E. MAUNDER has been ASTeX's vice president of human resources since February 1998. From February 1996 to February 1998, Ms. Maunder was the president of Outsourcing Solutions, Inc., a human resources consulting firm. From September 1993 to January 1996, Ms. Maunder was vice president, human resources consulting for Strategic Outsourcing, Inc., a human resources outsourcing practice. Prior to that Ms. Maunder was director, human resources for Bull HN Worldwide Information Services. Ms. Maunder holds a bachelor of arts degree in social service from the University of New Hampshire.

JACK J. SCHUSS, PH.D. has been ASTeX's vice president, engineering since February 2000. From 1997 to 2000, Dr. Schuss was the director of engineering at Raytheon RF Components, a designer and manufacturer of monolithic microwave integrated circuit components and modules for the wireless industry and in support of Raytheon Company's other businesses. From 1992 to 1997, Dr. Schuss was the engineering manager at Iridium MMA-Raytheon Co. Dr. Schuss holds a Ph.D. from Princeton University and an S.B. from Massachusetts Institute of Technology.

COMPENSATION OF OFFICERS AND DIRECTORS

EXECUTIVE OFFICERS' COMPENSATION

The following table sets forth the compensation paid to Dr. Post, ASTeX's chief executive officer and chairman of the board of directors, Mr. Ross, ASTeX's president and chief operating officer, Mr. Burg, ASTeX's senior vice president, systems group, Ms. Maunder, ASTeX's vice president, human resources, Mr. Tarrh, ASTeX's vice president, treasurer and secretary, Mr. Katz, ASTeX's former senior vice president, global customer operations, and Mr. Chisholm, ASTeX's former senior vice president and chief operating officer, during fiscal years 2000, 1999 and 1998.

SUMMARY COMPENSATION TABLE

(a) NAME AND PRINCIPAL POSITION	ANNUAL COMPENSATION			LONG TERM COMPENSATION AWARDS	
	(b) FISCAL YEAR	(c) SALARY(1)	(d) BONUS	(e) SECURITIES UNDERLYING OPTIONS	(f) ALL OTHER COMPENSATION(2)
Richard S. Post.....	2000	\$255,179	\$199,300	33,000	\$13,634
Chief Executive Officer and	1999	\$220,301	\$ 59,264	34,000	\$ 1,318
Chairman of the Board	1998	\$190,299	\$ 52,681	30,000	\$ 4,179
John Edward Ross.....	2000(3)	\$217,290	\$ 45,960	55,000	\$ --
President and Chief					
Operating Officer					
Stanley M. Burg.....	2000	\$193,671	\$ 84,869	15,000	\$58,363(4)
Senior Vice President,	1999(5)	\$102,312	\$ 40,786	70,000	\$ 1,315
Systems Group					
Jill E. Maunder.....	2000	\$138,246	\$ 52,645	10,000	\$ 7,727
Vice President,	1999	\$129,038	\$ 14,736	10,000	\$ 924
Human Resources	1998(5)	\$ 48,563	\$ 5,766	20,000	\$30,394(4)
John M. Tarrh.....	2000	\$128,369	\$ 43,714	11,000	\$ 5,162
Vice President, Treasurer and	1999	\$123,676	\$ 15,555	10,000	\$ 856
Secretary	1998	\$104,748	\$ 19,563	15,000	\$ 3,322
Brian R. Chisholm.....	2000(5)	\$197,319	\$ 98,153	25,000	\$ --
Chief Operating Officer and	1999	\$175,428	\$ 46,734	25,000	\$ 658
Senior Vice President(6)	1998	\$148,609	\$ 34,648	25,000	\$ 4,431
Avishay Katz.....	2000(5)	\$186,452	\$ 76,000	25,000	\$ 7,874
Senior Vice President,	1999	\$168,039	\$ 40,165	25,000	\$ 1,224
Global Customer Operations(7)	1998(5)	\$ 96,720	\$ 11,429	45,000	\$ --

(1) Amounts shown indicate cash compensation earned and received by Drs. Post and Katz and Messrs. Tarrh, Burg, Ross, and Chisholm and Ms. Maunder; no amounts were earned but deferred at their election. Dr. Post and Messrs. Tarrh, Ross, and Burg, and Ms. Maunder participate, and Mr. Chisholm and Dr. Katz participated, in ASTeX's group health and life insurance programs and other benefits generally available to all employees of ASTeX.

(2) Amounts shown represent matching contributions made by ASTeX under its 401(k) Plan, unless additional amounts are footnoted below.

(3) Mr. Ross joined ASTeX as an employee on January 4, 2000. Amounts shown in this column include \$27,282 paid for Mr. Ross' services as a consultant to ASTeX prior to his employment by ASTeX.

(4) Includes one time payment of relocation expenses in amount of \$30,000.

(5) Represents partial year compensation.

(6) Effective July 28, 2000, Mr. Chisholm is no longer an employee of ASTeX.

(7) Effective June 30, 2000, Dr. Katz is no longer an employee of ASTeX.

OPTION GRANTS IN FISCAL YEAR 2000

INDIVIDUAL GRANTS					POTENTIAL REALIZABLE VALUE AT ASSUMED ANNUAL RATES OF STOCK PRICE APPRECIATION FOR OPTION TERM(4)	
(a)	(b)	(c)	(d)	(e)	(f)	(g)
NAME	NUMBER OF SECURITIES UNDERLYING OPTIONS GRANTED(#)(1)	% OF TOTAL OPTIONS GRANTED TO EMPLOYEES IN FISCAL YEAR(2)	EXERCISE OR BASE PRICE (\$/SH)	EXPIRATION DATE(3)	5%	10%
Richard S. Post.....	33,000	5%	\$ 22.00	10/04/2004	\$200,580	\$443,238
Stanley M. Burg.....	15,000	2.3%	\$ 22.00	10/04/2004	\$ 91,173	\$201,468
John Edward Ross.....	45,000	6.9%	\$31.9375	01/04/2005	\$397,068	\$877,417
	10,000	1.5%	\$20.8125	05/17/2005	\$ 57,501	\$127,062
Jill E. Maunder.....	10,000	1.5%	\$ 22.00	10/04/2004	\$ 60,782	\$134,312
John M. Tarrh.....	11,000	1.7%	\$ 22.00	10/04/2004	\$ 66,860	\$147,743
Brian R. Chisholm....	25,000	3.8%	\$ 22.00	10/04/2004	\$151,955	\$335,781
Avishay Katz.....	10,000	1.5%	\$ 21.75	07/01/2004	\$ 60,091	\$132,786
	15,000	2.3%	\$ 22.00	10/04/2004	\$ 91,173	\$201,468

(1) The options granted in fiscal year 2000 are exercisable as follows: 20% of the shares become exercisable on the date of the issuance of the options and an additional 20% of the option shares become exercisable on each successive anniversary date, with full vesting occurring on the fourth anniversary date.

(2) In fiscal year 2000, options to purchase a total of 653,445 shares of ASTeX common stock were granted to employees of ASTeX, including executive officers.

(3) The options are subject to earlier termination upon certain events related to termination of employment.

(4) The dollar gains under these columns result from calculations discussing hypothetical growth rates as set by the Commission and are not intended to forecast future price appreciation of the Common Stock.

AGGREGATED OPTION EXERCISES IN LAST FISCAL YEAR
AND FISCAL YEAR END OPTION VALUES

(a) NAME	(b) SHARES ACQUIRED ON EXERCISE (#)	(c) VALUE REALIZED(1)	(d) NUMBER OF SECURITIES UNDERLYING UNEXERCISED OPTIONS AT FISCAL YEAR END		(e) VALUE OF UNEXERCISED IN-THE-MONEY OPTIONS AT FISCAL YEAR END	
			EXERCISABLE	UNEXERCISABLE	EXERCISABLE	UNEXERCISABLE
Richard S. Post.....	61,048	\$788,703.80	6,600	52,800	\$ 25,275.00	\$639,348.00
Stanley M. Burg.....	15,600	\$299,956.25	15,400	54,000	\$ 198,475.00	\$617,250.00
Jill E. Maunder.....	16,000	\$426,750.00	2,000	22,000	\$ 7,750.00	\$322,000.00
John M. Tarrh.....	34,150	\$803,311.58	7,150	17,800	\$ 62,975.00	\$210,224.90
John Edward Ross(2)...	--	--	11,000	44,000	\$ 10,125.00	\$ 40,500.00
Brian R. Chisholm....	--	--	69,600	51,000	\$1,323,575.10	\$725,500.00
Avishay Katz.....	30,800	\$655,738.19	15,859	48,341	\$ 241,153.62	\$748,696.30

(1) Amounts shown in this column do not necessarily represent actual value realized from the sale of the shares acquired upon exercise of the option because in many cases the shares are not sold on exercise but continue to be held by the executive officer exercising the option. The amounts shown represent the difference between the option exercise price and the market price on the date of exercise, which is the amount that would have been realized if the shares had been sold immediately upon exercise.

(2) Mr. Ross joined ASTeX in January 2000.

COMPENSATION OF DIRECTORS

Messrs. Anderson, Bertucci, de Beaumont and Kahl receive \$1,000 per meeting for participation in board of directors meetings, and \$500 per meeting for participation in Committee meetings. All non-employee directors receive reimbursement of reasonable travel expenses.

Pursuant to ASTeX's Formula Plan, effective on and commencing as of November 16, 1995, all non-employee directors received a grant of options to purchase 18,000 shares of common stock at an exercise price equal to the fair market value of the common stock on such date of grant. Of the options received in the foregoing grant, options to purchase 1,000 shares of common stock vested immediately and the remaining options vested quarterly in increments of options to purchase 1,000 shares of common stock, subject to the option holder's continued service as a director of ASTeX. Effective as of November 19, 1998, all non-employee directors received a grant of options to purchase 8,500 shares of common stock at an exercise price equal to the fair market value of the common stock on such grant date, such options vesting in four equal quarterly installments on each of November 20, 1998, February 20, 1999, May 20, 1999 and August 20, 1999. Additionally, effective as of November 18, 1999, all non-employee directors received a grant of options to purchase 11,500 shares of common stock at an exercise price equal to the fair market value of the common stock on such grant date, such options vesting in four equal quarterly installments on each of November 18, 1998, February 18, 2000, May 18, 2000 and August 18, 2000.

EMPLOYMENT AGREEMENTS, TERMINATION OF EMPLOYMENT AND CHANGE-IN-CONTROL ARRANGEMENTS

ASTeX has entered into employment agreements with Dr. Post and Mr. Tarrh which are renewable annually. During Fiscal Year 2000, Dr. Post and Mr. Tarrh had annual salaries of approximately \$255,000 and \$128,000, respectively. In September 2000, Dr. Post's base salary was further increased from approximately \$255,000 to approximately \$335,000. Under the terms of these agreements, base salaries and bonuses of officers are determined by the board of directors, with each officer eligible to receive a bonus if ASTeX exceeds operating profit goals (exclusive of extraordinary items of gain and loss) for the fiscal year (the "Bonus Plan"). Pursuant to the Bonus Plan, Dr. Post and Mr. Tarrh earned bonuses of \$199,300 and \$43,714, respectively, during Fiscal Year 2000. Dr. Post and Mr. Tarrh are each entitled to receive benefits offered to ASTeX's employees generally and to receive twelve (12) months base salary as severance in the event his employment is terminated by ASTeX without cause. In addition, the employment agreements preclude each

individual from competing with ASTeX during his employment and for at least two years thereafter, from disclosing confidential information, and each agreement contains an ownership provision in ASTeX's favor for techniques, discoveries and inventions arising during the term of employment.

Each of the employment agreements for Dr. Post and Mr. Tarrh were amended in July 1996, to provide that in addition to the severance benefits discussed above, in the event of a sale or change of control in ASTeX, and if their employment is terminated without cause, or if they are transferred outside of Eastern Massachusetts or if they have a significant reduction in responsibility with ASTeX, then they shall be entitled to receive 299% of their prior year's compensation (as determined by Section 280G of the Internal Revenue Code of 1986, as amended). These employment agreements, as modified, also provide that if the executive remains with ASTeX for one year after a sale or change of control in ASTeX, then he shall receive as a bonus an amount equal to 18 months of his then current base salary. In addition, in the event of termination without cause or for good reason following a change of control Dr. Post's and Mr. Tarrh's stock options vest immediately prior, but subject to, the change of control.

ASTeX also has entered into employment agreements with Messrs. Ross, Burg, Hurley and Schuss and Ms. Maunder, each of which are renewable annually. According to the terms of these agreements, base salaries and bonuses are determined by the board of directors. Mr. Ross is entitled to a base salary of \$240,006 from the commencement of his employment through September 30, 2001, and Messrs. Burg's, Hurley's and Schuss' and Ms. Maunder's base salaries for Fiscal Year 2000 were approximately \$195,000, \$193,213, \$175,000 and \$140,000, respectively. Under their employment agreements Messrs. Ross (commencing with Fiscal Year 2001), Burg, Hurley and Schuss, and Ms. Maunder are eligible to receive an annual bonus of up to 40%, 40%, 30%, 30% and 25%, respectively, of their then current base salary. They also are entitled to receive benefits offered to ASTeX's employees generally and to receive, twelve (12) months for Mr. Ross, and six (6) months for Messrs. Burg, Schuss, Hurley and Ms. Maunder, base salary or until he/she starts a full time position with another company, whichever is sooner, as severance in the event his/her employment is terminated by ASTeX without cause or is not renewed for an additional term.

In addition, the employment agreements preclude each executive from (i) competing with ASTeX during their employment, and with respect Mr. Ross for one (1) year, and with respect to Ms. Maunder for (2) two years, thereafter, and (ii) from disclosing confidential information, and each agreement contains an ownership provision in ASTeX's favor for techniques, discoveries and inventions arising during the term of employment. Under their agreements Messrs. Ross, Hurley, Burg, Schuss and Ms. Maunder received initial stock option grants of 65,000, 65,000, 45,000, 30,000 and 20,000, respectively. Mr. Ross' options granted under his employment agreement vest in five equal installments commencing on the date of grant and thereafter, on the anniversary of the date he commenced employment with ASTeX, with full acceleration of vesting upon a change in control. Messrs. Burg's, Hurely's and Schuss' and Ms. Maunder's options vest 20% six (6) months after the date of the grant with the remaining 80% vesting in four (4) equal annual installments on the anniversary date of such grant, with an additional 20% of the unvested shares, if any, vesting in the event of a change in control. Each of these employment agreements also provides that the officers would receive additional option grants at the discretion of the ASTeX board of directors.

Messrs. Burg's, Hurley's and Schuss' and Ms. Maunder's employment agreements were each amended in September 2000. Mr. Ross's employment agreement, and Messrs. Burg's, Hurley's and Schuss' and Ms. Maunder's employment agreements as amended, further provide, that in addition to the severance benefits discussed above, in the event of a sale or change of control in ASTeX, if within eighteen (18) months thereafter, (i) their employment is terminated without cause, (ii) they are transferred more than 50 miles from their principal office (as existed prior to the change of control), (iii) if they have a significant reduction in responsibility with ASTeX, (iv) their base salary is reduced (other than a reduction in management salaries generally), or (iv) they become ineligible for the Management Bonus Program, then they shall be entitled to receive twelve (12) months base salary as severance.

401(k) PLAN

Effective July 1990, ASTeX adopted and established a 401(k) Employee Benefit Plan. Under the 401(k) Plan, any employee who has completed 90 days of service and has attained the age of 21 years is eligible to participate. Under the terms of the 401(k) Plan, an employee may defer up to 15% of his or her compensation through contributions to the 401(k) Plan. Also, ASTeX may make discretionary matching contributions on behalf of the participating employees. Amounts contributed to the 401(k) Plan by ASTeX are subject to a six year vesting schedule. ASTeX made voluntary matching contributions to the 401(k) Plan during Fiscal Year 2000 of \$392,351.25 on behalf of all eligible employees.

BOARD COMPENSATION COMMITTEE REPORT ON EXECUTIVE COMPENSATION

The board of directors established a compensation committee in November 1994. The committee is currently composed of Mr. Kahl, with Mr. Golding serving as an advisor, and is responsible for setting and administering the policies which govern annual compensation for ASTeX's executives. Following review and approval by the committee of the compensation policies, all issues pertaining to executive compensation are submitted to the board of directors for approval.

The committee believes that the primary objectives of ASTeX's compensation policies are to attract and retain a management team that can effectively implement and execute ASTeX's strategic business plan. These compensation policies include (i) an overall management compensation program that is competitive with management compensation programs at companies of similar size; (ii) to recognize individual initiative, leadership and achievement; (iii) short-term bonus incentives for management to meet ASTeX's net income performance goals; and (iv) long-term incentive compensation in the form of stock options and other long-term equity compensation that will encourage management to continue to focus on shareholder return.

The committee's goal is to use compensation policies to closely align the interests of ASTeX with the interests of shareholders so that ASTeX's management have incentives to achieve short-term performance goals while building long-term value for ASTeX's shareholders. The committee will review its compensation policies from time to time in order to determine the reasonableness of ASTeX's compensation programs and to take into account factors which are unique to ASTeX.

The committee has entered into employment agreements with all of the officers of ASTeX, which include Drs. Post and English and Messrs. Ross, Tarrh, Burg, Hurley and Schuss and Ms. Maunder. These agreements are renewable annually, and provide for termination for cause as well as termination without cause and limit competition if the officer's employment is terminated.

Base Salaries. For fiscal year 2000, Dr. Post's base salary was increased from \$228,488 to \$265,012.80 per annum; Mr. Tarrh's base salary was increased from \$123,676 to \$128,000 per annum; Mr. Chisholm's base salary was increased from \$190,008 to \$200,012 per annum; Dr. Katz' base salary was increased from \$168,000 to \$186,000 per annum; and Ms. Maunder's base salary was increased from \$133,473 to \$140,004 per annum. The base salaries of Mr. Ross, Mr. Burg and Mr. Schuss in Fiscal Year 2000 were \$190,008, \$195,020, and \$175,000, respectively. In September 2000, as part of ASTeX's annual salary review, Dr. Post's base salary was increased from \$265,012.80 to \$335,318. The Compensation Committee believes that these salaries reflect base salaries paid to senior officers of other companies of similar size and also reflect improvements in ASTeX's financial performance to date.

Bonus Plan. To further provide incentives for management to continue to improve operating results, in August 1994, the board of directors implemented the Bonus Plan. Pursuant to the Bonus Plan, the board of directors may grant bonuses to certain executive officers based on each individual's achievement of certain specified goals previously approved by the board of directors. The amounts to be distributed pursuant to the Bonus Plan are determined by the amount by which operating profits exceed the operating profit goal, which is established annually. The Committee believes that the Bonus Plan provides significant incentive to the executive officers of ASTeX to exceed the operating profit goal.

Long Term Incentive Compensation. Long-term incentive compensation, in the form of stock options, allows the executive officers to share in any appreciation in the value of ASTeX's common stock. The

Committee believes that stock option participation aligns executive officers' interests with those of the stockholders. In addition, the Committee believes that equity ownership by executive officers helps to balance the short term focus of annual incentive compensation with a longer term view and may help to retain key executive officers.

When establishing stock option grant levels, the Committee considers general corporate performance, the Chief Executive Officer's recommendations, level of seniority and experience, existing levels of stock ownership, previous grants of stock options, vesting schedules of outstanding options and the current stock price.

It is the standard policy of ASTeX to grant an initial stock option grant to all executive officers at the time they commence employment consistent with the number of options granted to executive officers in the industry at similar levels of seniority. In addition, the Committee may also make performance-based grants throughout the year. In making such performance-based grants, the Committee considers individual contributions to ASTeX's financial, operational and strategic objectives.

Senior management also participates in company-wide employee benefit plans, including ASTeX's 401(k) Plan. Benefits under these plans are not dependent upon individual performance.

Compensation for Chief Executive Officer. Dr. Post's compensation was based upon a careful analysis of other comparable public companies' Chief Executive Officers' compensation and Dr. Post's efforts and success in the following areas: improving ASTeX's operating results; establishing strategic goals and objectives for the long-term growth of ASTeX; and advancing ASTeX in obtaining its strategic goals.

COMPENSATION COMMITTEE

HANS-JOCHEN KAHL,
Chairman

_____, 200_

PERFORMANCE GRAPH

The following graph compares the cumulative total stockholder return (assuming reinvestment of dividends) from investing \$100 on July 1, 1995 (the trading day at the beginning of ASTeX's fiscal year 1996), and plotted at the end of fiscal years 1996, 1997, 1998, 1999 and 2000, in each of (i) ASTeX common stock, (ii) the Nasdaq Market Index of companies; and (iii) a peer group index based upon Standard Industry Classification number 3559, special industry machinery, N.E.C., referred to below as the SIC Code Index, which consists of other companies in special industry machinery. The graph was compiled by Media General Financial Services, Inc. The stock price performance on the graph below is not necessarily indicative of future price performance. ASTeX common stock is listed on the Nasdaq National Market under the ticker symbol "ASTX."

[COMPARISON GRAPH]

	APPLIED SCIENCE AND TECHNOLOGY, INC. -----	NASDAQ MARKET INDEX -----	SIC CODE INDEX -----
Jul 95	\$100.00	\$100.00	\$100.00
Jun 96	107.86	125.88	73.83
Jun 97	152.81	151.64	122.76
Jun 98	104.44	201.01	97.72
Jun 99	284.69	281.68	182.97
Jul 00	348.70	423.84	412.24

COMPLIANCE WITH SECTION 16(a)
OF THE SECURITIES EXCHANGE ACT OF 1934

Section 16(a) of the Securities Exchange Act of 1934, as amended, requires executive officers, directors, and persons who beneficially own more than ten percent (10%) of ASTeX's stock to file initial reports of ownership on Form 3 and reports of changes in ownership on Form 4 with the Securities and Exchange Commission and any national securities exchange on which ASTeX's securities are registered. Executive officers, directors and greater than ten percent (10%) beneficial owners are required by the Commission's regulations to furnish ASTeX with copies of all Section 16(a) forms they file.

Based solely on a review of the copies of such forms furnished to ASTeX and written representations from the executive officers and directors, ASTeX believes that all its executive officers, directors, and greater than ten percent (10%) beneficial owners complied with all applicable Section 16(a) filing requirements, with the following exception: Dr. Post failed to timely file a Form 4 reporting three exercises of stock options aggregating 61,048 shares.

DIVIDEND POLICY

ASTeX has not paid dividends on its common stock since its inception and has no intention of paying any dividends in the foreseeable future. ASTeX's current credit facility arrangements restrict ASTeX's ability to declare cash dividends without the lender's prior written consent. ASTeX intends to reinvest future earnings, if any, in the development and expansion of its business. Any declaration of dividends will be at the election of the board of directors and will depend upon the earnings, capital requirements and financial position of ASTeX, general economic conditions, requirements of any bank lending arrangements which may then be in place, and other pertinent factors.

PROPOSAL 2: RATIFICATION OF AUDITORS

The persons named in the enclosed proxy will vote to ratify the appointment of KPMG LLP as independent auditors for the fiscal year ending July 1, 2001. The board proposes that the ASTeX stockholders ratify this appointment, although such ratification is not required under Delaware law or ASTeX's Certificate of Incorporation or Bylaws, each as amended. A representative of KPMG LLP is expected to be present at the annual meeting, and will have the opportunity to make a statement and answer questions from ASTeX stockholders if he or she so desires.

The affirmative vote of a majority of the shares present or represented and voting at the annual meeting is required to ratify the appointment of the independent auditors.

In the event that the ratification of the appointment of KPMG LLP as the independent public accountants for ASTeX is not obtained at the meeting, the board of directors will reconsider its appointment.

THE BOARD OF DIRECTORS RECOMMENDS A VOTE TO APPROVE THE RATIFICATION OF THE APPOINTMENT OF KPMG LLP AS INDEPENDENT AUDITORS, AND PROXIES SOLICITED BY THE BOARD WILL BE VOTED IN FAVOR THEREOF UNLESS A STOCKHOLDER HAS INDICATED OTHERWISE ON THE PROXY.

STOCKHOLDER PROPOSALS

Only if the merger is not completed, ASTeX will set a date for its 2001 annual meeting of stockholders. ASTeX's by-laws provide that in order for a stockholder to bring business before or propose director nominations at an annual meeting that is called for a date that is within 30 days before or after the anniversary date of the immediately preceding annual meeting of stockholders, the stockholder must give written notice to ASTeX not less than 60 days nor more than 90 days prior to the anniversary date. If the annual meeting is called for a date that is not within 30 days before or after the anniversary date of the immediately preceding annual meeting of stockholders, a stockholder must give written notice to ASTeX not later than the close of business on the tenth day following the day on which notice of the date of the meeting was mailed or public

disclosure of the date of the meeting was made, whichever comes first. The notice must contain specified information about the proposed business or each nominee and the stockholder making the proposal or nomination. ASTeX suggests that proponents submit their proposals by certified mail, return receipt requested, addressed to the President of ASTeX.

LEGAL MATTERS

The validity of the shares of MKS common stock to be issued in connection with the merger will be passed on for MKS by Hale and Dorr LLP.

EXPERTS

The financial statements of MKS incorporated in this joint proxy statement/prospectus by reference to the Annual Report on Form 10-K for the year ended December 31, 1999 have been so incorporated in reliance on the report of PricewaterhouseCoopers LLP, independent accountants, given on the authority of said firm as experts in auditing and accounting.

The consolidated financial statements of ASTeX as of June 26, 1999 and July 1, 2000 and for each of the years in the three-year period ended July 1, 2000, have been incorporated by reference into this joint proxy statement/prospectus in reliance upon the report of KPMG LLP, independent certified public accounts, incorporated by reference herein, and upon the authority of said firm as experts in accounting and auditing.

WHERE YOU CAN FIND MORE INFORMATION

MKS and ASTeX each file annual, quarterly and special reports, proxy statements and other information with the Securities and Exchange Commission. MKS and ASTeX stockholders may read and copy any reports, statements or other information that MKS or ASTeX files at the Securities and Exchange Commission's public reference rooms in Washington, D.C., New York, New York and Chicago, Illinois. Please call the Securities and Exchange Commission at 1-800-SEC-0330 for further information on the public reference rooms. Securities and Exchange Commission filings are also available to the public from commercial document retrieval services and at the web site maintained by the Securities and Exchange Commission at <http://www.sec.gov>.

MKS filed with the Securities and Exchange Commission a registration statement on Form S-4 under the Securities Act of 1933 to register with the Securities and Exchange Commission the MKS common stock issuable pursuant to the merger agreement. This joint proxy statement/prospectus does not contain all the information you can find in the registration statement or the exhibits and schedules to the registration statement. For further information with respect to MKS, ASTeX and the MKS common stock, please refer to the registration statement, including the exhibits and schedules. You may inspect and copy the registration statement, including the exhibits and schedules, as described above. Statements contained in this joint proxy statement/prospectus about the contents of any contract or other document are not necessarily complete, and MKS refers you, in each case, to the copy of the contract or other document filed as an exhibit to the registration statement.

The Securities and Exchange Commission allows MKS and ASTeX to "incorporate by reference" information into this proxy statement/prospectus, which means that MKS and ASTeX can disclose important information to their stockholders by referring them to another document filed separately with the Securities and Exchange Commission. The information incorporated by reference is deemed to be part of this proxy statement/prospectus, except for any information superseded by information in this proxy statement/prospectus. This proxy statement/prospectus incorporates by reference the documents set forth below that MKS and ASTeX have previously filed with the Securities and Exchange Commission. These documents contain important information that you should read about MKS and ASTeX and their finances.

MKS SECURITIES AND EXCHANGE

COMMISSION FILINGS (FILE NO. 000-23621)

PERIOD

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Annual Report on Form 10-K.....	Fiscal year ended December 31, 1999
Quarterly Report on Form 10-Q.....	Quarter ended March 31, 2000
Quarterly Report on Form 10-Q.....	Quarter ended June 30, 2000
Current Report on Form 8-K.....	Filed on June 28, 2000
Current Report on Form 8-K.....	Filed on October 11, 2000
Definitive Proxy Statement on Schedule 14A.....	Annual Meeting of Stockholders held on May 17, 2000
Registration Statement on Form 8-A.....	Filed on March 2, 1999

ASTEX SECURITIES AND EXCHANGE

COMMISSION FILINGS (FILE NO. 0-22646)

PERIOD

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Current Report on Form 8-K.....	Filed on October 10, 2000
Annual Report on Form 10-K/A.....	Fiscal year ended July 1, 2000

MKS stockholders may request a copy of the MKS documents described above, which will be provided at no cost, by contacting MKS Instruments, Inc., Six Shattuck Road, Andover, Massachusetts 01810, Attention: Ronald C. Weigner, Telephone: (978) 975-2350.

ASTeX stockholders may request a copy of the ASTeX documents described above, which will be provided at no cost, by contacting Applied Science and Technology, Inc., 90 Industrial Way, Wilmington, Massachusetts 01887, Attn: John M. Tarrh, Telephone: (978) 284-4000.

MKS and ASTeX are each also incorporating by reference additional documents that they may file with the Securities and Exchange Commission between the date of this joint proxy statement/prospectus and the date of the special meeting of MKS stockholders and the annual meeting of the ASTeX stockholders.

MKS has supplied all information contained in this joint proxy statement/prospectus relating to MKS, and ASTeX has supplied all information contained in this joint proxy statement/prospectus relating to ASTeX.

MKS and ASTeX stockholders should rely only on the information contained in this joint proxy statement/prospectus to vote on the proposal(s) to be considered at their respective stockholders meetings. MKS and ASTeX have not authorized anyone to provide you with information that is different from what is contained in this joint proxy statement/prospectus. This joint proxy statement/prospectus is dated _____, 200_. MKS and ASTeX stockholders should not assume that the information contained in this joint proxy statement/prospectus is accurate as of any date other than _____, 200_, and neither the mailing of the joint proxy statement/prospectus to ASTeX and MKS stockholders nor the issuance of MKS common stock in the merger shall create any implication to the contrary.

AGREEMENT AND PLAN OF MERGER
BY AND AMONG
APPLIED SCIENCE AND TECHNOLOGY, INC.
MKS INSTRUMENTS, INC.
AND
MANGO SUBSIDIARY CORP.

DATED AS OF OCTOBER 2, 2000

TABLE OF CONTENTS

	PAGE

I. THE MERGER; CLOSING; EFFECTIVE TIME.....	A-1
1.1 The Merger.....	A-1
1.2 Closing.....	A-1
1.3 Effective Time.....	A-1
II. CERTIFICATE OF INCORPORATION AND BYLAWS OF THE SURVIVING CORPORATION.....	A-1
2.1 The Certificate of Incorporation.....	A-1
III. OFFICERS AND DIRECTORS OF THE SURVIVING CORPORATION.....	A-2
3.1 Directors.....	A-2
3.2 Officers.....	A-2
IV. EFFECT OF THE MERGER ON CAPITAL STOCK; EXCHANGE OF CERTIFICATES.....	A-2
4.1 Effect on Capital Stock.....	A-2
4.2 Exchange of Certificates for Shares.....	A-2
4.3 Appraisal Rights.....	A-4
4.4 Adjustments to Exchange Ratio.....	A-4
4.5 Unvested Stock.....	A-5
V. REPRESENTATIONS AND WARRANTIES OF THE COMPANY.....	A-5
5.1 Organization, Good Standing and Qualification.....	A-5
5.2 Capital Structure.....	A-6
5.3 Corporate Authority; Approval and Fairness.....	A-6
5.4 Governmental Filings; No Violations.....	A-7
5.5 Company Reports: Financial Statements.....	A-8
5.6 Absence of Certain Changes.....	A-8
5.7 Litigation.....	A-8
5.8 Employee Benefits.....	A-8
5.9 Compliance with Laws.....	A-10
5.10 Required Vote.....	A-10
5.11 Owned and Leased Real Properties.....	A-10
5.12 Environmental Matters.....	A-10
5.13 Accounting and Tax Qualification Matters.....	A-11
5.14 Taxes.....	A-11
5.15 Labor Matters.....	A-12
5.16 Intellectual Property.....	A-12
5.17 Agreements, Contracts and Commitments.....	A-13
5.18 Brokers and Finders.....	A-13
5.19 Board Recommendation.....	A-14
5.20 No Existing Discussions.....	A-14
5.21 Section 203 of the DGCL Not Applicable.....	A-14
5.22 Rights Agreement.....	A-14
5.23 Assets.....	A-14

	PAGE	

5.24	Customers and Suppliers.....	A-14
5.25	Business Activity Restrictions.....	A-14
5.26	Disclosure.....	A-15
5.27	No Other Representations or Warranties.....	A-15
VI.	REPRESENTATIONS AND WARRANTIES OF PARENT AND MERGER SUB.....	A-15
6.1	Ownership of Company Shares.....	A-15
6.2	Capitalization of Merger Sub.....	A-15
6.3	Organization, Good Standing and Qualification.....	A-15
6.4	Capital Structure.....	A-16
6.5	Corporate Authority: Approval and Fairness.....	A-16
6.6	Governmental Filings; No Violations.....	A-17
6.7	Parent Reports; Financial Statements.....	A-17
6.8	Absence of Certain Changes.....	A-17
6.9	Litigation.....	A-17
6.10	Compliance with Laws.....	A-18
6.11	Required Vote.....	A-18
6.12	No Owned Real Properties.....	A-18
6.13	Environmental Matters.....	A-18
6.14	Accounting and Tax Qualification Matters.....	A-18
6.15	Taxes.....	A-19
6.16	Labor Matters.....	A-19
6.17	Intellectual Property.....	A-19
6.18	Brokers and Finders.....	A-20
6.19	Board Recommendation.....	A-20
6.20	Assets.....	A-20
6.21	Customers and Suppliers.....	A-20
6.22	Business Activity Restrictions.....	A-21
6.23	Disclosure.....	A-21
6.24	No Other Representations or Warranties.....	A-21
VII.	COVENANTS.....	A-21
7.1	Interim Covenants.....	A-21
7.2	Acquisition Proposals.....	A-23
7.3	Information Supplied.....	A-24
7.4	Shareholders' Meetings.....	A-25
7.5	Filings; Other Actions; Notification.....	A-25
7.6	Accounting.....	A-27
7.7	Access.....	A-27
7.8	Affiliates.....	A-27
7.9	Stock Exchange Listing and De-listing.....	A-28
7.10	Publicity.....	A-28
7.11	Stock Options; Election of Directors.....	A-28
7.12	Expenses.....	A-29

	PAGE	

7.13	Indemnification; Directors' and Officers' Insurance.....	A-29
7.14	Takeover Statute.....	A-30
7.15	Parent Vote.....	A-30
7.16	"Pooling of Interests" Letters.....	A-30
7.17	Offers of Employment.....	A-30
7.18	Stockholder Litigation.....	A-30
VIII.	CONDITIONS.....	A-31
8.1	Conditions to Each Party's Obligation to Effect the Merger.....	A-31
8.2	Conditions to Obligations of Parent and Merger Sub.....	A-31
8.3	Conditions to Obligations of the Company.....	A-32
IX.	TERMINATION.....	A-33
9.1	Termination by Mutual Consent.....	A-33
9.2	Termination by Either Parent or the Company.....	A-33
9.3	Termination by the Company.....	A-33
9.4	Termination by Parent.....	A-33
9.5	Effect of Termination and Abandonment.....	A-34
9.6	Fees and Expenses.....	A-34
X.	MISCELLANEOUS AND GENERAL.....	A-35
10.1	Survival.....	A-35
10.2	Modification or Amendment.....	A-35
10.3	Waiver of Conditions.....	A-35
10.4	Counterparts.....	A-35
10.5	Governing Law and Venue; Waiver of Jury Trial.....	A-35
10.6	Notices.....	A-36
10.7	Entire Agreement: no other representations.....	A-36
10.8	No Third Party Beneficiaries.....	A-36
10.9	Obligations of Parent and of the Company.....	A-37
10.10	Severability.....	A-37
10.11	Interpretation.....	A-37
10.12	Assignment.....	A-37
10.13	Glossary of Terms.....	A-37

EXHIBITS

Exhibit A-1	Company Stockholder Agreement
Exhibit A-2	Parent Stockholder Agreement
Exhibit B-1	Form of Company Affiliates Letter
Exhibit B-2	Form of Parent Affiliates Letter

AGREEMENT AND PLAN OF MERGER

AGREEMENT AND PLAN OF MERGER (hereinafter called this "AGREEMENT"), dated as of October 2, 2000, by and among Applied Science and Technology, Inc., a Delaware corporation (the "COMPANY"), MKS Instruments, Inc., a Massachusetts corporation ("PARENT"), and Mango Subsidiary Corp., a Delaware corporation and a wholly-owned subsidiary of Parent ("MERGER SUB").

RECITALS

WHEREAS, the respective boards of directors of each of Parent, Merger Sub and the Company have approved this Agreement and adopted the plan of merger (the "PLAN") set forth herein whereby Merger Sub will merge with and into the Company upon the terms and subject to the conditions set forth in this Agreement (the "MERGER");

WHEREAS, it is intended that, for federal income tax purposes, the Merger shall qualify as a reorganization under the provisions of Section 368(a) of the Internal Revenue Code of 1986, as amended, and the rules and regulations promulgated thereunder (the "CODE");

WHEREAS, for financial accounting purposes, it is intended that the Merger shall be accounted for as a "POOLING-OF-INTERESTS"; and

WHEREAS, the Company, Parent and Merger Sub desire to make certain representations, warranties, covenants and agreements in connection with this Agreement.

NOW, THEREFORE, in consideration of the premises, and of the representations, warranties, covenants and agreements contained herein, the parties hereto, intending to be legally bound, agree as follows:

I. THE MERGER; CLOSING; EFFECTIVE TIME

1.1 The Merger. Upon the terms and subject to the conditions set forth in this Agreement, at the Effective Time (as hereinafter defined), Merger Sub shall be merged with and into the Company and the separate corporate existence of Merger Sub shall thereupon cease. The Company shall be the surviving corporation in the Merger (sometimes hereinafter referred to as the "SURVIVING CORPORATION"), and the separate corporate existence of the Company with all its rights, privileges, immunities, powers and franchises shall continue unaffected by the Merger, except as set forth in Section 3. The Merger shall have the effects specified in the Delaware General Corporation Law (the "DGCL").

1.2 Closing. The closing of the Merger (the "CLOSING") shall take place (i) at the offices of Hale and Dorr LLP, 60 State Street, Boston, Massachusetts 02109 at 10:00 A.M. on the third business day after the last to be satisfied or waived of the conditions set forth in Section 8 hereof (other than those conditions that by their nature are to be satisfied at the Closing, but subject to the satisfaction or waiver of those conditions) shall be satisfied or waived in accordance with this Agreement or (ii) at such other place and time and/or on such other date as the Company and Parent may agree in writing (the "CLOSING DATE").

1.3 Effective Time. As soon as practicable following the Closing, the Company and Parent will cause a Certificate of Merger reflecting the provisions set forth in this Agreement (the "CERTIFICATE OF MERGER") to be executed by the Company and Merger Sub and delivered for filing to the Secretary of State of the State of Delaware (the "DEPARTMENT") as provided in Section 251 of the DGCL. The Merger shall become effective at the time when the Certificate of Merger has been duly filed with the Department or at such later time agreed by the parties in writing and provided in the Certificate of Merger (the "EFFECTIVE TIME").

II. CERTIFICATE OF INCORPORATION AND BYLAWS OF THE SURVIVING CORPORATION

2.1 The Certificate of Incorporation. Subject to the provisions of Section 7.13 regarding indemnification, the Certificate of Incorporation, as amended, of the Merger Sub as in effect immediately prior to the

Effective Time shall be the certificate of incorporation of the Surviving Corporation (the "CERTIFICATE"), until duly amended as provided therein or by applicable law.

2.2 The Bylaws. The bylaws of the Merger Sub in effect immediately prior to the Effective Time shall be the bylaws of the Surviving Corporation (the "BYLAWS"), until duly amended as provided therein or by applicable law.

III. OFFICERS AND DIRECTORS OF THE SURVIVING CORPORATION

3.1 Directors. The board of directors of the Surviving Corporation shall consist of the Board of Directors of Merger Sub until their respective successors have been duly elected or appointed and qualified or until their earlier death, resignation or removal in accordance with the Articles and the Bylaws as in effect from time to time.

3.2 Officers. The persons listed on Schedule 3.2 shall, from and after the Effective Time, be the officers of the Surviving Corporation until their successors have been duly elected or appointed and qualified or until their earlier death, resignation or removal in accordance with the Articles and the Bylaws.

IV. EFFECT OF THE MERGER ON CAPITAL STOCK; EXCHANGE OF CERTIFICATES

4.1 Effect on Capital Stock. At the Effective Time, as a result of the Merger and without any action on the part of the holder of any capital stock of the Company:

(a) Merger Consideration. Each share of the Common Stock, par value \$0.01 per share, of the Company (the "COMPANY COMMON STOCK") issued and outstanding immediately prior to the Effective Time (a "SHARE" and, collectively, the "SHARES") (other than Shares owned by Parent, Merger Sub or any other direct or indirect Subsidiary of Parent (collectively, the "PARENT COMPANIES") or Shares that are owned by the Company or any direct or indirect wholly-owned Subsidiary of the Company and in each case not held on behalf of third parties (collectively, "EXCLUDED SHARES")), together with any Company Rights (as defined in Section 5.2(a)) attached thereto or associated therewith, shall be converted into and become exchangeable for (the "MERGER CONSIDERATION") 0.7669 share (as such number of shares may be adjusted in accordance with the terms of this Agreement, the "EXCHANGE RATIO") of Common Stock, no par value per share, of Parent ("PARENT COMMON STOCK").

At the Effective Time, all Shares and all Company Rights shall no longer be outstanding and shall be cancelled and retired and shall cease to exist, and each certificate (a "SHARE CERTIFICATE") formerly representing any of such Shares or Company Rights (other than Excluded Shares) shall thereafter represent only the right to the Merger Consideration and the right, if any, to receive pursuant to Section 4.2(e) cash in lieu of fractional shares of Parent Common Stock into which such Shares otherwise would have been converted pursuant to this Section 4.1(a) and any distribution or dividend pursuant to Section 4.2(c). All Company Options (as defined in Section 5.2(a)) shall be converted into options to purchase Parent Common Stock in accordance with Section 7.11(a) herein.

(b) Cancellation of Shares. Each Excluded Share shall cease to be outstanding, shall be cancelled and retired without payment of any consideration therefor and shall cease to exist.

(c) Merger Sub. Each share of Common Stock, par value \$.01 per share, of Merger Sub issued and outstanding immediately prior to the Effective Time shall be converted into one share of common stock of the Surviving Corporation.

4.2 Exchange of Certificates for Shares.

(a) Exchange Agent. At the Effective Time, Parent shall deposit, or shall cause to be deposited, with an exchange agent (the "EXCHANGE AGENT"), selected by Parent with the Company's prior approval for the benefit of the holders of Shares, certificates representing the shares of Parent Common Stock, and, after the Effective Time, if applicable, any cash dividends or other distributions with respect to the Parent Common Stock to be issued or paid pursuant to the penultimate sentence of Section 4.1(a) in

exchange for Shares outstanding immediately prior to the Effective Time upon due surrender of the Share Certificates (or affidavits of loss in lieu thereof) pursuant to the provisions of this Section 4 (such certificates for shares of Parent Common Stock, together with the amount of any cash dividends or other distributions payable with respect thereto (and any dividends or other distributions payable with respect thereto from time to time), being hereinafter referred to as the "EXCHANGE FUND").

(b) Exchange Procedures. As soon as practicable after the Effective Time, the Surviving Corporation shall cause the Exchange Agent to mail to each holder of record of Shares at the Effective Time (other than holders of Excluded Shares) (i) a letter of transmittal specifying that delivery of the Share Certificates shall be effected, and risk of loss and title to the Share Certificates shall pass, only upon delivery of the Share Certificates (or affidavits of loss in lieu thereof) to the Exchange Agent, such letter of transmittal to be in such form and have such other provisions as Parent and the Company shall reasonably agree, and (ii) instructions for use in effecting the surrender of the Share Certificates in exchange for (A) certificates representing shares of Parent Common Stock and (B) any unpaid dividends and other distributions and cash in lieu of fractional shares to be paid pursuant to this Agreement (such instructions shall include instructions for the payment of the Merger Consideration, cash in lieu of fractional shares, and dividends or other distributions to a Person other than the Person in whose name the surrendered Share Certificate is registered on the transfer books of the Company). Subject to Section 4.2(g), upon proper surrender of a Share Certificate for cancellation to the Exchange Agent together with such letter of transmittal, duly completed and executed, the holder of such Share Certificate shall be entitled to receive in exchange therefor (x) a certificate representing that number of whole shares of Parent Common Stock that such holder is entitled to receive pursuant to this Section 4, (y) a check in the amount (after giving effect to any required tax withholdings) of (A) any cash in lieu of fractional shares plus (B) any unpaid non-stock dividends and any other dividends or other distributions that such holder has the right to receive pursuant to the provisions of this Section 4, and the Share Certificate so surrendered shall forthwith be cancelled. No interest will be paid or accrued on any amount payable upon due surrender of the Share Certificates. In the event of a transfer of ownership of Shares that is not registered in the transfer records of the Company, a certificate representing the proper number of shares of Parent Common Stock, together with a check for any cash to be paid upon due surrender of the Share Certificate and any other dividends or distributions in respect thereof, may be issued and/or paid to such a transferee if the Share Certificate formerly representing such Shares is presented to the Exchange Agent, accompanied by all documents required to evidence and effect such transfer.

For the purposes of this Agreement, the term "PERSON" shall mean any individual, corporation (including not-for-profit), general or limited partnership, limited liability company, joint venture, estate, trust, association, organization, Governmental Entity (as hereinafter defined) or other entity of any kind or nature.

(c) Distributions with Respect to Unexchanged Shares; Voting.

(i) All shares of Parent Common Stock to be issued pursuant to the Merger shall be deemed issued and outstanding as of the Effective Time and whenever a dividend or other distribution is declared by Parent in respect of the Parent Common Stock, the record date for which is at or after the Effective Time, that declaration shall include dividends or other distributions in respect of all shares of Parent Common Stock issuable pursuant to this Agreement. No dividends or other distributions in respect of the Parent Common Stock shall be paid to any holder of any unsurrendered Share Certificate until such Share Certificate is surrendered for exchange in accordance with this Section 4. Following surrender of any Share Certificate, there shall be issued and/or paid to the holder of the certificates representing whole shares of Parent Common Stock issued in exchange therefor, without interest, (A) at the time of such surrender, the dividends and other distributions with a record date after the Effective Time theretofore payable with respect to such whole shares of Parent Common Stock and not paid and (B) at the appropriate payment date, the dividends and other distributions payable with respect to such whole shares of Parent Common Stock with a record date after the Effective Time but with a payment date subsequent to surrender.

(ii) Holders of unsurrendered Share Certificates shall be entitled to vote after the Effective Time at any meeting of Parent stockholders the number of whole shares of Parent Common Stock which such holder thereof is entitled to receive upon exchange of such Share Certificates, regardless of whether such holders have exchanged their Share Certificates.

(d) Transfers. After the Effective Time, there shall be no transfers on the stock transfer books of the Company of the Shares that were outstanding immediately prior to the Effective Time.

(e) Fractional Shares. Notwithstanding any other provision of this Agreement to the contrary, no fractional shares of Parent Common Stock will be issued pursuant to the Merger and any holder of Shares entitled to receive a fractional share of Parent Common Stock but for this Section 4.2(e) shall be entitled to receive a cash payment in lieu thereof, which payment shall represent such holder's proportionate interest in a share of Parent Common Stock based on the closing price per share of Parent Common Stock as reported in The Wall Street Journal, New York City Edition or, if not reported thereby, another reasonably agreed authoritative source on the trading day immediately preceding the Effective Time.

(f) Termination of Exchange Fund. Any portion of the Exchange Fund that remains unclaimed by the stockholders of the Company for 180 days after the Effective Time shall be returned to Parent. Any stockholders of the Company who have not theretofore complied with this Section 4 shall thereafter look only to Parent for payment of the Merger Consideration and any cash dividends and other distributions in respect thereof payable and/or issuable pursuant to Section 4.1 and Section 4.2(c) upon due surrender of their Share Certificates (or affidavits of loss in lieu thereof), in each case, without any interest thereon.

(g) Lost, Stolen or Destroyed Share Certificates. In the event any Share Certificate shall have been lost, stolen or destroyed, upon the making of an affidavit of that fact by the Person claiming such Share Certificate to be lost, stolen or destroyed and, if required by Parent, the posting by such Person of a bond in customary amount as indemnity against any claim that may be made against it with respect to such Share Certificate, the Exchange Agent will issue in exchange for such lost, stolen or destroyed Share Certificate the shares of Parent Common Stock and any cash payable and any unpaid dividends or other distributions deliverable in respect thereof pursuant to Section 4.2(c) upon due surrender of the Shares represented by such Share Certificate pursuant to this Agreement.

(h) No Liability. To the extent permitted by applicable law, none of the Parent, the Merger Sub, the Company, the Surviving Corporation or the Exchange Agent shall be liable to any holder of Shares or of Parent Common Stock, as the case may be, for such shares (or dividends or distributions with respect thereto) delivered to a public official pursuant to any applicable abandoned property, escheat or similar law. If any Share Certificate shall not have been surrendered prior to 180 days after the Effective Time (or immediately prior to such earlier date on which any shares of Parent Common Stock, and any cash payable to the holder of such Share Certificate pursuant to this Section 4 or any dividends or distributions payable to the holder of such Share Certificate would otherwise escheat to or become the property of any Governmental Entity (as defined in Section 5.4(a)), any such shares of Parent Common Stock or cash, dividends or distributions in respect of such Share Certificate shall, to the extent permitted by applicable law, become the property of the Surviving Corporation, free and clear of all claims or interest of any person previously entitled thereto.

(i) Affiliates. Notwithstanding anything herein to the contrary, Certificates surrendered for exchange by any "AFFILIATE" of the Company (as defined in Section 7.8(a)) shall not be exchanged until the Parent has received a Company Affiliate Agreement (as defined in Section 7.8(a)) from such Affiliate.

4.3 Appraisal Rights. No appraisal rights shall be available to holders of Shares in connection with the Merger in accordance with the provisions of Section 262 of the DGCL.

4.4 Adjustments to Exchange Ratio. The Exchange Ratio shall be adjusted to reflect the effect of any reclassification, stock split, reverse split, stock dividend (including any dividend or distribution of securities convertible into Parent Common Stock or Shares), reorganization, recapitalization or other like change with

respect to Parent Common Stock or Shares occurring (or for which a record date is established) after the date hereof and prior to the Effective Time.

4.5 Unvested Stock. At the Effective Time, unvested Shares, if any, awarded to employees, directors or consultants pursuant to any of the Company's plans or arrangements and outstanding immediately prior to the Effective Time shall be converted into unvested shares of Parent Common Stock in accordance with the Exchange Ratio and shall remain subject to the same terms, restrictions and vesting schedule (including acceleration provisions, if any) as in effect immediately prior to the Effective Time. All outstanding rights which the Company may hold immediately prior to the Effective Time to repurchase unvested Shares, if any, shall be assigned to the Parent in the Merger and shall thereafter be exercisable by Parent upon the same terms and conditions in effect immediately prior to the Effective Time, except that the shares purchasable pursuant to such rights and the purchase price payable per share shall be adjusted to reflect the Exchange Ratio.

V. REPRESENTATIONS AND WARRANTIES OF THE COMPANY

The Company represents and warrants to the Parent and the Merger Sub that the statements contained in this Section 5 are true and correct, except as set forth herein or in the disclosure letter delivered by the Company to the Parent on or before the date of this Agreement (the "COMPANY DISCLOSURE LETTER"). The Company Disclosure Letter shall be arranged in paragraphs corresponding to the numbered and lettered paragraphs contained in this Section 5 and the disclosure in any paragraph shall qualify other paragraphs in this Section 5 only to the extent that it is reasonably apparent from a reading of such disclosure that it also qualifies or applies to such other paragraphs.

5.1 Organization, Good Standing and Qualification. Each of the Company and its Subsidiaries (as hereinafter defined) is a corporation duly organized, validly existing and in good standing or of active status, as applicable, under the laws of its jurisdiction of organization and has all requisite corporate or similar power and authority to own and operate its properties and assets and to carry on its business as presently conducted and is qualified to do business and is in good standing as a foreign corporation in each jurisdiction where the ownership or operation of its properties or conduct of its business requires such qualification, except where the failure to be so qualified or in good standing would not have a Company Material Adverse Effect (as hereinafter defined). The Company has made available to Parent complete and correct copies of the Company's and its Subsidiaries' articles of incorporation and bylaws (or comparable governing instruments), as amended to the date hereof. The Company's and its Subsidiaries' articles of incorporation and bylaws (or comparable governing instruments) so delivered are in full force and effect.

As used in this Agreement, the term "SUBSIDIARY" means, with respect to the Company, Parent or Merger Sub, as the case may be, any entity, whether incorporated or unincorporated, of which at least a majority of the securities or ownership interests having by their terms ordinary voting power to elect a majority of the board of directors or other persons performing similar functions is directly or indirectly owned or controlled by such party or by one or more of its respective Subsidiaries or by such party and any one or more of its respective Subsidiaries.

As used in this Agreement, the term "COMPANY MATERIAL ADVERSE EFFECT" means a material adverse effect on the financial condition, properties, business, results of operations or prospects of the Company and its Subsidiaries taken as a whole; provided, however, that any such effect resulting from any change (i) in law, rule, regulation or generally accepted accounting principles ("GAAP") or interpretations thereof, (ii) in economic or business conditions generally or in the industries of the Company or any of its Subsidiaries specifically in a manner not disproportionate to the manner in which such conditions affect other companies generally or other companies in the industries of the Company or any of its Subsidiaries, as the case may be, or (iii) as a proximate result of the execution and delivery of this Agreement and the contemplated consummation of the transactions contemplated hereby shall not be considered when determining if a Company Material Adverse Effect has occurred.

5.2 Capital Structure.

(a) The authorized capital stock of the Company consists of 30,000,000 shares of Company Common Stock and 1,000,000 shares of preferred stock, \$.01 par value per share ("COMPANY PREFERRED STOCK"), of which 100,000 shares are designated Series A Junior Participating Preferred Stock. As of the close of business on the date hereof, (i) 14,550,519 shares of Company Common Stock were issued and outstanding, (ii) no shares of Company Common Stock were held in the treasury of the Company or by Subsidiaries of the Company, and (iii) no shares of the Company Preferred Stock were issued and outstanding. Section 5.2(a) of the Company Disclosure Letter lists the number of shares of Company Common Stock reserved for future issuance pursuant to stock options granted and outstanding as of the date of this Agreement and the plans under which such options were granted (collectively, the "COMPANY STOCK PLANS") and sets forth a complete and accurate list of all holders of outstanding options to purchase shares of Company Common Stock (such outstanding options, the "COMPANY OPTIONS") under the Company Stock Plans, indicating the number of shares of Company Common Stock subject to each Company Option, and the exercise price, the date of grant, vesting schedule and the expiration date thereof. All outstanding shares of Company Common Stock are, and all shares of Company Common Stock subject to issuance as specified in the previous sentence, upon issuance on the terms and conditions specified in the instruments pursuant to which they are issuable, will be, duly authorized, validly issued, fully paid and nonassessable and not subject to or issued in violation of any purchase option, call option, right of first refusal, preemptive right, subscription right or any similar right under any provision of the DGCL, the Company's certificate of incorporation or bylaws or any agreement to which the Company is a party or is otherwise bound. There are no obligations, contingent or otherwise, of the Company or any of its Subsidiaries to repurchase, redeem or otherwise acquire any shares of the Company Common Stock or other capital stock of the Company or any of its Subsidiaries. Each of the outstanding shares of capital stock or other securities of each of the Company's Subsidiaries is duly authorized, validly issued, fully paid and nonassessable and owned by the Company or a direct or indirect wholly-owned Subsidiary of the Company, free and clear of any lien, pledge, security interest, claim, limitation on the Company's voting rights or other encumbrance. Except for (x) pursuant to Company Stock Plans and (y) the rights ("COMPANY RIGHTS") issued and issuable under the Company's Shareholder Rights Plan, dated as of March 4, 1998 between the Company and American Stock Transfer and Trust Company (the "COMPANY RIGHTS PLAN") there are no preemptive or other outstanding rights, options, warrants, conversion rights, stock appreciation rights, redemption rights, repurchase rights, agreements, arrangements or commitments to issue or to sell any shares of capital stock or other securities of the Company or any of its Subsidiaries or any securities or obligations convertible or exchangeable into or exercisable for, or giving any Person a right to subscribe for or acquire, any securities of the Company or any of its Subsidiaries, and no securities or obligations evidencing such rights are authorized, issued or outstanding. The Company does not have outstanding any bonds, debentures, notes or other obligations the holders of which have the right to vote (or convertible into or exercisable for securities having the right to vote) with the stockholders of the Company on any matter ("VOTING DEBT"). To the knowledge of the executive officers of the Company, other than the Company Stockholder Agreement to be delivered by Richard S. Post and John M. Tarrh, there are no agreements or understandings with respect to the voting (including voting trusts and proxies) or sale or transfer (including agreements imposing transfer restrictions) of any shares of capital stock of the Company or any of its Subsidiaries.

(b) Except as set forth in the Company Reports (as defined below) filed prior to the date of this Agreement, neither the Company nor any of its Subsidiaries directly or indirectly owns any equity, membership, partnership or similar interest in, or any interest convertible into or exchangeable or exercisable for any equity, membership, partnership or similar interest in, any corporation, partnership, joint venture, limited liability company or other business association or entity, whether incorporated or unincorporated.

5.3 Corporate Authority; Approval and Fairness.

(a) The Company has all requisite corporate power and authority and has taken all corporate action necessary in order to execute, deliver and perform its obligations under this Agreement and to

consummate, subject only to approval of this Agreement by the holders of a majority of the outstanding Shares (the "COMPANY REQUISITE VOTE"), the Merger and the transactions contemplated hereby. This Agreement has been duly executed and delivered by the Company, and assuming due authorization, execution and delivery of this Agreement by Parent and Merger Sub, is a valid and legally binding agreement of the Company enforceable against the Company in accordance with its terms, subject to bankruptcy, insolvency, fraudulent transfer, reorganization, moratorium and similar laws of general applicability relating to or affecting creditors' rights and to general equity principles (the "BANKRUPTCY AND EQUITY EXCEPTION").

(b) The Board of Directors of the Company (A) has approved this Agreement and adopted the Plan set forth in this Agreement and (B) has received the opinion of its financial advisors, CIBC World Markets Corp., to the effect that the Exchange Ratio pursuant to this Agreement is fair from a financial point of view to the holders of the Shares.

5.4 Governmental Filings; No Violations.

(a) Except with respect to Environmental Laws, which are specifically addressed in Section 5.12, other than the filings and/or notices (A) pursuant to Section 1.3 and (B) under the Hart-Scott-Rodino Antitrust Improvements Act of 1976, as amended (the "HSR ACT"), the Securities Act of 1933, as amended (the "SECURITIES ACT"), and the Securities Exchange Act of 1934, as amended (the "EXCHANGE ACT"), no notices, reports or other filings are required to be made by the Company with, nor are any consents, registrations, approvals, permits or authorizations required to be obtained by the Company from, any governmental or regulatory authority, agency, commission, body or other governmental entity (each a "GOVERNMENTAL ENTITY"), in connection with the execution and delivery of this Agreement by the Company and the consummation by the Company of the Merger and the other transactions contemplated hereby.

(b) The execution, delivery and performance of this Agreement by the Company do not, and the consummation by the Company of the Merger and the other transactions contemplated hereby will not, constitute or result in (A) a breach or violation of, or a default under, either the certificate of incorporation of the Company or bylaws of the Company or the comparable governing instruments of any of its Subsidiaries, (B) a breach or violation of, a default under, the acceleration of any obligations or the creation of a lien, pledge, security interest or other encumbrance on the assets of the Company or any of its Subsidiaries (with or without notice, lapse of time or both) pursuant to, any agreement, lease, contract, note, mortgage, indenture, arrangement or other obligation ("CONTRACTS") binding upon the Company or any of its Subsidiaries or any Law or governmental or non-governmental permit, license, judgment, injunction, order, decree, statute, law, ordinance, rule or regulation to which the Company or any of its Subsidiaries is subject or (C) any change in the rights or obligations of any party under any of the Contracts, except, in the case of clause (B) above, for any breach, violation, default, acceleration, creation or change that would not have a Company Material Adverse Effect or prevent, materially delay or materially impair the ability of the Company to consummate the transactions contemplated by this Agreement.

5.5 Company Reports: Financial Statements. The Company has made or, as appropriate, will make, available to Parent each registration statement, report, proxy statement or information statement required to be filed by it since July 1, 2000 (the "AUDIT DATE") and prior to the Effective Time, including the Company's Annual Report on Form 10-K for the fiscal year ended July 1, 2000 in the form (including exhibits, annexes and any amendments thereto) filed with the Securities and Exchange Commission (the "SEC") (collectively, including amendments of any such reports as amended, the "COMPANY REPORTS"). The Company Reports (i) were or will be filed on a timely basis, (ii) were or will be prepared in compliance in all material respects with the applicable requirements of the Securities Act and the Exchange Act, as the case may be, and the rules and regulations of the SEC thereunder applicable to such Company Reports, and (iii) did not or will not at the time they were or are filed contain any untrue statement of a material fact or omit to state a material fact required to be stated in such Company Reports or necessary in order to make the statements in such Company Reports, in the light of the circumstances under which they were made, not misleading. No

Subsidiary of the Company is required to file any forms, reports or other documents with the SEC. Each of the consolidated balance sheets included in or incorporated by reference into the Company Reports (including the related notes and schedules) fairly presents the consolidated financial position of the Company and its Subsidiaries as of its date and each of the consolidated statements of income and of consolidated statements of cash flow included in or incorporated by reference into the Company Reports (including any related notes and schedules) fairly presents the consolidated results of operations and cash flows, as the case may be, of the Company and its Subsidiaries for the periods set forth therein (subject, in the case of unaudited statements, to the absence of notes and normal year-end audit adjustments, which will not be material), in each case in accordance with GAAP consistently applied during the periods involved, except as may be noted therein.

5.6 Absence of Certain Changes. Except as disclosed in the Company Reports or as permitted hereunder, since the Audit Date and through the date hereof, the Company and its Subsidiaries taken as a whole have conducted their business only in, and have not engaged in any material transaction other than according to, the ordinary and usual course of such business and there has not been (i) any change in the financial condition, properties, business, results of operations or prospects of the Company and its Subsidiaries that has had, or would be reasonably expected to have, a Company Material Adverse Effect; (ii) any material damage, destruction or other casualty loss with respect to any material asset or material property owned, leased or otherwise used by the Company or any of its Subsidiaries, not covered by insurance; (iii) any declaration, setting aside or payment of any dividend or other distribution in respect of the capital stock of the Company; (iv) any change by the Company in accounting principles, practices or methods which is not required or permitted by GAAP; or (v) any other action that would have required Parent consent pursuant to Section 7.1(a). Since the Audit Date and through the date hereof, except as provided for herein or as disclosed in the Company Reports, there has not been any material increase in the compensation payable or that could become payable by the Company or any of its Subsidiaries to officers or key employees or any material amendment of any of the Compensation and Benefit Plans (as hereinafter defined) other than increases or amendments in the ordinary course.

5.7 Litigation. Except with respect to Environmental Laws, which are specifically addressed in Section 5.12, and except as disclosed in the Company Reports, there are no civil, criminal or administrative actions, suits, claims, hearings, investigations or proceedings pending or, to the knowledge of the executive officers of the Company, threatened against or affecting the Company or any of its Subsidiaries, except for those that would not have a Company Material Adverse Effect or prevent or materially burden or materially impair the ability of the Company to consummate the transactions contemplated by this Agreement, nor any judgment, decree, injunction, rule or rules of any Governmental Entity pending or, to the knowledge of the executive officers of the Company, threatened against or affecting the Company or any of its Subsidiaries, except for those that would not have a Company Material Adverse Effect or prevent or materially burden or materially impair the ability of the Company to consummate the transactions contemplated by this Agreement. There are no judgments, orders or decrees outstanding against the Company which, individually or in the aggregate, have had or are reasonably likely to have a Company Material Adverse Effect.

5.8 Employee Benefits.

(a) A true and correct copy of each bonus, deferred compensation, pension, retirement, profit-sharing, thrift, savings, employee stock ownership, stock bonus, stock purchase, restricted stock, stock option, employment, termination, severance, compensation, medical, health or other plan, agreement, policy or arrangement, including, without limitation, any employee benefit plan under the Employee Retirement Income Security Act of 1974, as amended ("ERISA"), maintained or contributed to by the Company, its Subsidiaries or any entity which is considered one employer with the Company under Section 4001 of ERISA or Section 414 of the Code (an "ERISA AFFILIATE") (the "COMPENSATION AND BENEFIT PLANS") and any trust agreement or insurance contract forming a part of such Compensation and Benefit Plans has been made available to Parent prior to the date hereof. In addition, where relevant, the following documents regarding the Compensation and Benefit Plans of the Company and its Subsidiaries has been made available to Parent: (i) administrative service agreements; (ii) summary plan descriptions; and (iii) IRS Form 5500s, Form 5500C and Form 5500R for the last three (3) years. The Compensation and Benefit Plans are listed in Section 5.8 of the Company Disclosure Letter and any

Compensation and Benefit Plans containing "CHANGE OF CONTROL" or similar provisions therein are specifically identified in Section 5.8 of the Company Disclosure Letter.

(b) All Compensation and Benefit Plans covering Employees (the "PLANS") are in compliance with all applicable laws, including the Code and ERISA, to the extent applicable and the laws of any applicable foreign jurisdiction, except for any noncompliance that would not have a Company Material Adverse Effect or prevent or materially burden or materially impair the ability of the Company to consummate the transactions contemplated by this Agreement. Each Compensation and Benefit Plan has been administered in accordance with its terms and the requirements of ERISA and the Code, to the extent applicable. Each Plan that is an "EMPLOYEE PENSION BENEFIT PLAN" within the meaning of Section 3(2) of ERISA (a "PENSION PLAN") and that is intended to be qualified under Section 401(a) of the Code has received or is the subject of a favorable determination letter from the Internal Revenue Service (the "IRS") with respect to "TRA" (as defined in Section 1 of Rev. Proc. 93-39) and no such determination letter has been revoked and revocation has not been threatened, and no act or omission has occurred that is reasonably likely to result in revocation of any such favorable letter. As of the date hereof, there is no audit or investigation by any Governmental Entity underway, and there are no termination proceedings or to the knowledge of the executive officers of the Company, other claims (except claims for benefits payable in the ordinary course) suits or proceedings threatened against or involving any Compensation and Benefit Plans that would give rise to any liability. Neither the Company, its Subsidiaries, nor any employee, officer or director thereof, nor, any third-party with respect to Compensation and Benefit Plans, has engaged or failed to engage in any conduct with respect to any Compensation and Benefit Plan that could subject the Company or any of its Subsidiaries to any material fine, penalty, tax or liability of any kind under the Code or ERISA or could require indemnification by the Company or any of its Subsidiaries.

(c) Neither the Company, its Subsidiaries nor any ERISA Affiliate has ever maintained a Compensation and Benefit Plan subject to Section 412 of the Code or Title IV of ERISA. At no time has the Company, its Subsidiaries or any ERISA Affiliate been obligated to contribute to any "MULTIEMPLOYER PLAN" as defined in ERISA.

(d) All contributions required to be made under the terms of any Compensation and Benefit Plan as of the date hereof have been timely made.

(e) Except as required by Code Section 4980B or any similar state law, neither the Company nor its Subsidiaries has any obligations for retiree health and life benefits under any Compensation and Benefit Plan nor any unfunded obligation under any other Compensation and Benefit Plan for post-employment benefits. The Company, its Subsidiaries and its ERISA Affiliates have at all times complied with the continuation coverage requirements of Code Section 4980B, or similar state law.

(f) The consummation of the Merger and the other transactions contemplated by this Agreement will not (w) entitle any Employees to severance pay, (x) accelerate the time of payment or vesting or trigger any payment or funding (through a grantor trust or otherwise) of compensation or benefits under, increase the amount payable or trigger any other material obligation pursuant to, any of the Compensation and Benefit Plans, (y) result in any breach or violation of, or a default under, any of the Compensation and Benefit Plans, or (z) provide any payment that may be subject to the tax imposed by Section 4999 of the Code or included in the determination of such person's "PARACHUTE PAYMENT" under Section 280G of the Code.

(g) No Compensation and Benefit Plan or related documentation prohibits the Company or any Subsidiary from amending or terminating such Compensation and Benefit Plan.

No Compensation and Benefit Plan is funded by, associated with or related to a "VOLUNTARY EMPLOYEE'S BENEFICIARY ASSOCIATION" within the meaning of Section 501(c)(9) of the Code.

(h) Notwithstanding anything to the contrary contained in this Section 5.8, the representations and warranties contained in this Section 5.8, other than the representations and warranties set forth in

paragraph (f) above, shall be deemed to be true and correct unless such failures to be true and correct are reasonably likely to have a Company Material Adverse Effect.

5.9 Compliance with Laws. Exclusive of Environmental Laws which are specifically dealt with in Section 5.12 below, the business of the Company and its Subsidiaries taken as a whole is not being conducted in violation of any federal, state, local or foreign law, statute, ordinance, rule, regulation, judgment, order, injunction, decree, arbitration award, agency requirement, license or permit of any Governmental Entity (collectively, "LAWS"), except for violations that would not have a Company Material Adverse Effect or prevent or materially burden or materially impair the ability of the Company to consummate the transactions contemplated by this Agreement. Exclusive of Environmental Laws which are specifically dealt with in Section 5.12 below, no investigation or review by any Governmental Entity with respect to the Company or any of its Subsidiaries is pending or, to the knowledge of the executive officers of the Company, threatened, nor has any Governmental Entity indicated an intention to conduct the same, except for those the outcome of which would not have a Company Material Adverse Effect or prevent or materially burden or materially impair the ability of the Company to consummate the transactions contemplated by this Agreement. The Company and its Subsidiaries each has all permits, licenses, franchises, variances, exemptions, orders and other governmental authorizations, consents and approvals ("PERMITS") from Governmental Entities necessary to conduct its business as presently conducted, except for those the absence of which would not have a Company Material Adverse Effect or prevent or materially burden or materially impair the ability of the Company to consummate the transactions contemplated by this Agreement. The Company and its Subsidiaries are in compliance with the terms of the Permits, except where the failure to so comply, individually or in the aggregate, is not reasonably likely to have a Company Material Adverse Effect. No Permit will cease to be effective as a result of the consummation of transactions contemplated by this Agreement, except where the cessation of effectiveness, individually or in the aggregate, will not have a Company Material Adverse Effect.

5.10 Required Vote. The Company shareholder approval, being the affirmative vote of a majority of the Shares entitled to vote, is the only vote of the holders of any class or series of the securities of Company necessary to approve this Agreement, the Merger and the other transactions contemplated hereby.

5.11 Owned and Leased Real Properties.

(a) Except as disclosed in the Company Reports, the Company and its Subsidiaries do not own any real property.

(b) The Company has provided to the Parent a complete and accurate list of all real property leased by the Company or its Subsidiaries (collectively "COMPANY LEASES") and the location of the premises. The Company is not in default under any of the Company Leases, except where the existence of such defaults, individually or in the aggregate, has not had, and is not reasonably likely to have a Company Material Adverse Effect. Each of the Company Leases is in full force and effect and will not cease to be in full force and effect as a result of the transactions contemplated by this Agreement.

5.12 Environmental Matters. Except as disclosed in the Company Reports and except for such matters that would not have a Company Material Adverse Effect, the Company and its Subsidiaries: (i) are in compliance with all applicable Environmental Laws (as hereinafter defined); (ii) have not received any notice from any Governmental Entity or any third party alleging any violation of, or liability under, any applicable Environmental Laws; (iii) are not subject to any court order, administrative order or decree arising under any Environmental Law; (iv) to the knowledge of the executive officers of the Company, do not own or operate any property that has been contaminated with any Hazardous Substance (as hereinafter defined) and (v) are not subject to any claims, demands or notifications concerning liability for any Hazardous Substance disposal or contamination.

Parent and Merger Sub acknowledge that the representations and warranties contained in this Section 5.12 are the only representations and warranties being made by the Company with respect to compliance with, or liability or claims under, Environmental Laws or with respect to permits issued or required under Environmental Laws, that no other representation by the Company contained in this Agreement shall apply to

any such matters and that no other representation or warranty, express or implied, is being made with respect thereto.

As used herein, the term "ENVIRONMENTAL LAW" means any federal, state, local or foreign statute, law, regulation, order, decree, permit, authorization, common law or agency requirement as in effect and as interpreted as of the date hereof relating to (A) the protection, investigation or restoration of the environment, human health, worker safety, or the protection of natural resources or (B) the handling, use, presence, disposal, release or threatened release of, or exposure to, any Hazardous Substance.

As used herein, the term "HAZARDOUS SUBSTANCE" means any substance that is listed, classified or regulated as such pursuant to any Environmental Law including any petroleum product or by-product, asbestos-containing material, lead-containing paint or plumbing, polychlorinated biphenyls, radioactive material or radon.

5.13 Accounting and Tax Qualification Matters. As of or prior to the date hereof, neither the Company nor any of its Affiliates (as defined in Section 7.8(a)) has taken or agreed to take any action, nor do the executive officers of the Company have any knowledge of any fact or circumstance relating to the Company, that would prevent Parent from accounting for the business combination to be effected by the Merger as a "POOLING-OF-INTERESTS" or prevent the Merger from qualifying as a "REORGANIZATION" within the meaning of Section 368 (a) of the Code.

5.14 Taxes.

(a) The Company and each of its Subsidiaries (i) have duly and timely filed (taking into account any extension of time within which to file) all Tax Returns (as defined below) required to be filed by any of them and all such filed Tax Returns are complete and accurate in all respects, (ii) have paid all Taxes (as defined below) owed by the Company and each of its Subsidiaries (whether or not shown on any Tax Return) or that the Company or any of its Subsidiaries are obligated to withhold from amounts owing to any employee, creditor or third party, except with respect to matters contested in good faith and (iii) have not waived any statute of limitations with respect to Taxes or agreed to any extension of time with respect to a Tax assessment or deficiency, except, in each case, for those failures to file or pay or those waivers that would not have a Company Material Adverse Effect. As of the date hereof, there are not pending or, to the knowledge of the executive officers of the Company, threatened in writing, any audits, examinations, investigations or other proceedings in respect of Taxes or Tax matters.

(b) Neither the Company nor any Subsidiary has made any payments, is obligated to make any payments, or is a party to any agreement that could obligate it to make any payments that will be an "EXCESS PARACHUTE PAYMENT" under Code Section 280G.

(c) Neither the Company nor any Subsidiary has any actual or potential liability for any Taxes of any person (other than the Company and its Subsidiaries) under Treasury Regulation Section 1.1502-6 (or any similar provision of federal, state, local, or foreign law), or as a transferee or successor, by contract, or otherwise.

(d) Neither the Company nor any Subsidiary is a "CONSENTING CORPORATION" within the meaning of Section 341(f) of the Code, and none of the assets of the Company or the Subsidiaries are subject to an election under Section 341(f) of the Code.

(e) None of the assets of the Company or any Subsidiary is property that is required to be treated as being owned by any other person pursuant to the provisions of former Section 168(f)(8) of the Code.

(f) None of the assets of the Company or any Subsidiary is "TAX-EXEMPT USE PROPERTY" within the meaning of Section 168(h) of the Code.

(g) None of the assets of the Company or any Subsidiary directly or indirectly secures any debt the interest on which is tax exempt under Section 103(a) of the Code.

(h) Neither the Company nor any Subsidiary has undergone a change in its method of accounting resulting in an adjustment to its taxable income pursuant to Section 481(h) of the Code.

(i) Neither the Company nor any Subsidiary is or has ever been a member of a group of corporations with which it has filed (or been required to file) consolidated, combined or unitary Tax Returns, other than a group of which only the Company and the Subsidiaries are or were members.

(j) The Company has never participated in or cooperated with an international boycott within the meaning of Section 999 of the Code.

As used in this Agreement, (i) the term "TAX" (including, with correlative meaning, the terms "TAXES", and "TAXABLE") includes all federal, state, local and foreign income, profits, franchise, gross receipts, environmental, customs duty, capital stock, severances, stamp, payroll, sales, employment, unemployment, disability, use, property, withholding, excise, transfer production, value added, ad valorem occupancy and other taxes, duties or assessments of any nature whatsoever, imposed by the United States of America or any state, local or foreign government, or any agency thereof, or other political subdivision of the United States or any such government, together with all interest, penalties and additions imposed with respect to such amounts and any interest in respect of such penalties and additions, and (ii) the term "TAX RETURN" includes all returns and reports (including elections, declarations, disclosures, schedules, estimates and information returns) required to be supplied to a Tax authority relating to Taxes.

5.15 Labor Matters. Neither the Company nor any of its Subsidiaries is a party to or otherwise bound by any collective bargaining agreement, contract or other agreement or understanding with a labor union or labor organization. Neither the Company nor any of its Subsidiaries is the subject of any proceeding asserting that the Company or any of its Subsidiaries has committed an unfair labor practice nor is there pending or, to the knowledge of the executive officers of the Company, threatened, nor since January 1, 1998 has there been any labor strike, dispute, walk-out, work stoppage, slow-down or lockout involving the Company or any of its Subsidiaries, except for those that would not have a Company Material Adverse Effect or prevent or materially burden or materially impair the ability of the Company to consummate the transactions contemplated by this Agreement.

5.16 Intellectual Property.

(a) The Company and/or one or more of its Subsidiaries owns, or is licensed or otherwise possesses valid rights to use, all patents, trademarks, trade names, service marks, domain names, copyrights, and any applications therefor, technology, know-how, computer software programs or applications, and tangible or intangible proprietary information or materials that are used in the business of the Company and its Subsidiaries as conducted as of the date hereof, except for any such failures to own, be licensed or possess that would not have a Company Material Adverse Effect, and to the knowledge of the executive officers of the Company all patents, trademarks, trade names, service marks and copyrights owned by the Company and/or its Subsidiaries are valid and subsisting, except for those the invalidity of which would not have a Company Material Adverse Effect.

(b) Except as disclosed in Company Reports or except as would not have a Company Material Adverse Effect:

(i) the Company is not, nor will it be as a result of the execution and delivery of this Agreement or the performance of its obligations hereunder, in violation of any licenses, sublicenses and other agreements as to which the Company is a party as of the date hereof and pursuant to which the Company is authorized to use any third-party patents, trademarks, service marks, copyrights, domain names, trade secrets or computer software (collectively, "THIRD-PARTY INTELLECTUAL PROPERTY RIGHTS"), except for those items listed in Section 5.16(a)(i) of the Company Disclosure Letter.

(ii) no claims with respect to (a) the patents, registered and material unregistered trademarks and service marks, domain names, registered copyrights, trade names, and any applications therefor, trade secrets or computer software owned by the Company or any of its Subsidiaries (collectively,

the "COMPANY INTELLECTUAL PROPERTY RIGHTS") or (b) Third-Party Intellectual Property Rights are currently pending or, to the knowledge of the executive officers of the Company, are threatened by any Person;

(iii) to the knowledge of the executive officers of the Company there are not any valid grounds for any bona fide claims (a) to the effect that the sale, licensing or use of any product or service as used, sold or licensed by the Company or any of its Subsidiaries as of the date hereof, infringes on any copyright, patent, trademark, service mark, domain name or trade secret; (b) against the use by the Company or any of its Subsidiaries of any Company Intellectual Property Rights or the Third-Party Intellectual Property Rights used in the business of the Company or any of its Subsidiaries as currently conducted; (c) challenging the ownership, validity or enforceability of any of the Company Intellectual Property Rights; or (d) challenging the license or legally enforceable right to use of the Third-Party Intellectual Rights by the Company or any of its Subsidiaries; and

(iv) to the knowledge of the executive officers of the Company, there is no unauthorized use, infringement or misappropriation of any of the Company Intellectual Property Rights by any third party, including any employee or former employee of the Company or any of its Subsidiaries.

(v) The Company and its Subsidiaries have taken reasonable measures to protect the proprietary nature of the Company Intellectual Property Rights that are material to the business of the Company and its Subsidiaries, taken as a whole, and to maintain in confidence all trade secrets and confidential information owned or used by the Company or any of its Subsidiaries and that are material to the business of the Company and its Subsidiaries, taken as a whole.

5.17 Agreements, Contracts and Commitments.

(a) Other than the contracts identified on the exhibit indices of the Company Reports filed prior to the date of this Agreement (the "COMPANY MATERIAL CONTRACTS"), there are no contracts or agreements that are material to the business, assets, condition (financial or otherwise) or results of operations of the Company and its Subsidiaries. Each Company Material Contract has not expired by its terms and is in full force and effect. Neither the Company nor any of its Subsidiaries is in violation of or in default under (nor does there exist any condition which, upon the passage of time or the giving of notice or both, would cause such a violation of or default under) any loan or credit agreement, note, bond, mortgage, indenture, lease, permit, concession, franchise, license or other contract, arrangement or understanding to which it is a party or by which it or any of its properties or assets is bound, except for violations or defaults which, individually or in the aggregate, have not resulted in, and are not reasonably likely to result in, a Company Material Adverse Effect.

(b) Section 5.17(b) of the Company Disclosure Letter sets forth a complete list of each contract or agreement to which the Company or any of its Subsidiaries is a party or bound with any Affiliate of the Company (other than any Subsidiary which is a direct or indirect wholly owned Subsidiary of the Company). Complete and accurate copies of all the agreements, contracts and arrangements set forth in Section 5.17(b) of the Company Disclosure Letter have heretofore been furnished to the Parent. Except as disclosed in the Company Reports filed prior to the date of this Agreement, neither the Company nor any of its Subsidiaries has entered into any transaction with any director, officer or other affiliate of the Company or any of its Subsidiaries or any transaction that would be subject to proxy statement disclosure pursuant to Item 404 of Regulation S-K.

5.18 Brokers and Finders. Except for CIBC World Markets Corp., neither the Company nor any of its officers, directors or employees has employed any broker or finder or incurred any liability for any brokerage fees, commissions or finders' fees in connection with the Merger or the other transactions contemplated by this Agreement. CIBC World Market Corp.'s fees and expenses will be paid by the Company. Section 5.18 of the Company Disclosure Letter sets forth a complete and accurate list of the estimated fees and expenses incurred and to be incurred by the Company and any of its Subsidiaries in connection with this Agreement and the transactions contemplated by this Agreement (including the fees and expenses of CIBC World Markets Corp. and of the Company's legal counsel and accountants).

5.19 Board Recommendation. The Company Board, at a meeting duly called and held, has by a unanimous vote (with John R. Bertucci abstaining), (i) determined and declared that this Agreement and the transactions contemplated hereby, including the Merger, are advisable and fair to and in the best interests of Company and the shareholders of Company, and (ii) resolved to recommend that the holders of Shares approve this Agreement and the transactions contemplated herein, including the Merger. Each of Richard S. Post and John M. Tarrh, simultaneously with the execution of this Agreement, has executed a Stockholder Agreement, in the form attached hereto as Exhibit A-1 (the "COMPANY STOCKHOLDER AGREEMENT"), agreeing to vote all shares of Company Common Stock owned by them in favor of the transactions contemplated by this Agreement.

5.20 No Existing Discussions. As of the date of this Agreement, neither the Company nor any of its Subsidiaries is engaged, directly or indirectly, in any discussions or negotiations with any other party with respect to an Acquisition Proposal (as defined in Section 7.2).

5.21 Section 203 of the DGCL Not Applicable. The Board of Directors of the Company has taken all actions necessary so that the restrictions contained in Section 203 of the DGCL applicable to a "BUSINESS COMBINATION" (as defined in Section 203) will not apply to the execution, delivery or performance of this Agreement, the Company Stockholder Agreement or the consummation of the Merger or the other transactions contemplated by this Agreement or the Company Stockholder Agreement.

5.22 Rights Agreement. The Company has duly entered into an amendment to the Company Rights Plan, a signed copy of which has been delivered to the Parent, and taken all other action necessary or appropriate so that the entering into of this Agreement or the Company Stockholder Agreement do not and will not result in the ability of any person to exercise any of the Company Rights under the Company Rights Plan or enable or require the Company Rights issued thereunder to separate from the Shares to which they are attached or to be triggered or become exercisable or cease to be redeemable.

5.23 Assets. Each of the Company and its Subsidiaries owns or leases all tangible assets necessary for the conduct of its businesses as presently conducted and as presently proposed to be conducted. All of such tangible assets which are owned, are owned free and clear of all mortgages, security interests, pledges, liens and encumbrances ("LIENS") except for (i) Liens which are disclosed in the Company Reports filed prior to the date of this Agreement and (ii) other Liens which, individually and in the aggregate, do not materially interfere with the ability of the Company and its Subsidiaries to conduct their business as currently conducted and as presently proposed to be conducted and have not resulted in, and are not reasonably likely to result in, a Company Material Adverse Effect. The tangible assets of the Company and its Subsidiaries, taken as a whole, are free from material defects, have been maintained in accordance with normal industry practice, are in good operating condition and repair (subject to normal wear and tear) and are suitable for the purpose for which they are presently used.

5.24 Customers and Suppliers. No customer of the Company or any of its Subsidiaries that represented 5% or more of the Company's consolidated revenues in the fiscal year ended July 1, 2000 has indicated to the Company or any of its Subsidiaries that it will stop, or decrease the rate of, buying materials, products or services from the Company or any of its Subsidiaries. No supplier of the Company or any of its Subsidiaries has indicated to the Company or any of its Subsidiaries that it will stop, or decrease the rate of, supplying materials, products or services to them, which cessation or decrease, individually or in the aggregate, is reasonably likely to have a Company Material Adverse Effect.

5.25 Business Activity Restrictions. There is no non-competition or other similar agreement, commitment, judgment, injunction or order to which the Company or any Subsidiary of the Company is a party or subject to that has or could reasonably be expected to have the effect of prohibiting or impairing the conduct of the business by the Company in any material respect. The Company has not entered into any agreement under which it is restricted in any material respect from selling, licensing or otherwise distributing any of its technology or products, or providing services to, customers or potential customers or any class of customers, in any geographic area, during any period of time or any segment of the market or line of business.

5.26 Disclosure. No representation or warranty by Company in this Agreement, nor any statement, schedule, document or exhibit hereto furnished or to be furnished by or on behalf of Company pursuant to this Agreement or in connection with transactions contemplated hereby, contains or shall contain any untrue statement of material fact or omits or shall omit a material fact necessary to make the statements contained herein or therein not misleading.

5.27 No Other Representations or Warranties. Except for the representations and warranties contained in this Section 5, neither the Company nor any other Person makes any other express or implied representation or warranty on behalf of the Company or any of its Affiliates.

VI. REPRESENTATIONS AND WARRANTIES OF PARENT AND MERGER SUB

The Parent and the Merger Sub, jointly and severally, represent and warrant to the Company that the statements contained in this Section 6 are true and correct, except as set forth herein or in the disclosure schedule delivered by the Parent to the Company on or before the date of this Agreement (the "PARENT DISCLOSURE LETTER"). The Parent Disclosure Letter shall be arranged in paragraphs corresponding to the numbered and lettered paragraphs contained in this Section 6 and the disclosure in any paragraph shall qualify other paragraphs in this Section 6 only to the extent that it is reasonably apparent from a reading of such document that it also qualifies or applies to such other paragraphs.

6.1 Ownership of Company Shares. Neither Parent nor any of its Subsidiaries (i) owns any of the Shares, and (ii) will acquire any of the Shares prior to the Effective Time.

6.2 Capitalization of Merger Sub. The authorized capital stock of Merger Sub consists of 1,000 shares of Common Stock, par value \$.01 per share, of Merger Sub all of which are validly issued and outstanding. All of the issued and outstanding capital stock of Merger Sub is, and at the Effective Time will be, owned by Parent, and there are (i) no other shares of capital stock or voting securities of Merger Sub authorized, (ii) no securities of Merger Sub convertible into or exchangeable for shares of capital stock or voting securities of Merger Sub and (iii) no options or other rights to acquire from Merger Sub, and no obligations of Merger Sub to issue, any capital stock, voting securities or securities convertible into or exchangeable for capital stock or voting securities of Merger Sub. Merger Sub has not conducted any business prior to the date hereof and has no, and prior to the Effective Time will have no, assets, liabilities or obligations of any nature other than those incident to its formation and pursuant to or in connection with this Agreement and the Merger and the other transactions contemplated by this Agreement.

6.3 Organization, Good Standing and Qualification. Each of Parent and its Subsidiaries is a corporation duly organized, validly existing and in good standing under the laws of its jurisdiction of organization and has all requisite corporate or similar power and authority to own and operate its properties and assets and to carry on its business as presently conducted and is qualified to do business and is in good standing as a foreign corporation in each jurisdiction where the ownership or operation of its properties or conduct of its business requires such qualification, except where the failure to be so qualified or in good standing would not have a Parent Material Adverse Effect (as hereinafter defined). Parent has made available to the Company a complete and correct copy of Parent's and the Merger Sub's article of organization and bylaws (or comparable governing instruments), as amended and/or restated to the date hereof. Parent's and its Subsidiaries' articles of organization and bylaws (or comparable governing instruments) are in full force and effect.

As used in this Agreement, the term "PARENT MATERIAL ADVERSE EFFECT" means a material adverse effect on the financial condition, properties, business or results of operations of Parent and its Subsidiaries taken as a whole; provided, however, that any such effect resulting from any change (i) in law, rule, or regulation or GAAP or interpretations thereof (ii) in economic or business conditions generally or in the industries of the Parent or any of its Subsidiaries specifically in a manner not disproportionate to the manner in which such conditions affect other companies generally or other companies in the industries of the Parent or any of its Subsidiaries, as the case may be, or (iii) as a proximate result of the execution and delivery of this Agreement and the contemplated consummation of the transactions contemplated hereby shall not be considered when determining if a Parent Material Adverse Effect has occurred.

6.4 Capital Structure. The authorized capital stock of the Parent consists of 50,000,000 shares of Parent Common Stock and 2,000,000 shares of preferred stock, \$.01 par value per share (the "PARENT PREFERRED STOCK"). As of the close of business on the date hereof, 25,532,257 shares of Parent Common Stock were issued and outstanding and no shares of Parent Preferred Stock were issued and outstanding. As of the close of business on the date hereof, there were an aggregate of 2,899,361 shares of Parent Common Stock subject to outstanding options pursuant to the Parent's Amended and Restated 1995 Stock Incentive Plan, 1996 Amended and Restated Director Stock Option Plan and 1997 Director Stock Option Plan. In addition, 427,286 shares of Parent Common Stock are reserved for future issuance pursuant to the 1999 Employee Stock Purchase Plan. All outstanding shares of Parent Common Stock are, and all shares of Parent Common Stock subject to issuance as specified above, upon issuance on the terms and conditions specified in the instruments pursuant to which they are issuable, will be, duly authorized, validly issued, fully paid and nonassessable. All of the shares of Parent Common Stock issuable pursuant to Section 4.1(a) in connection with the Merger, when issued in accordance with this Agreement, will be duly authorized, validly issued, fully paid and nonassessable and not subject to or issued in violation of any purchase option, call option, right of first refusal, preemptive right, subscription right or any similar right under any provision of the Parent's or Merger Sub's charter or bylaws or any agreement to which the Parent or Merger Sub is a party or is otherwise bound. There are no obligations, contingent or otherwise, of the Parent or any of its Subsidiaries to repurchase, redeem or otherwise acquire any shares of the Parent Common Stock or other capital stock of the Parent or any of its Subsidiaries. Each of the outstanding shares of capital stock or other securities of each of Merger Sub is duly authorized, validly issued, fully paid and nonassessable and owned by Parent or a direct or indirect wholly-owned Subsidiary of Parent, free and clear of any lien, pledge, security interest, claim or other encumbrance. Except as set forth above, there are no preemptive or other outstanding rights, options, warrants, conversion rights, stock appreciation rights, redemption rights, repurchase rights, agreements, arrangements or commitments to issue or to sell any shares of capital stock or other securities of Parent or Merger Sub or any securities or obligations convertible or exchangeable into or exercisable for, or giving any Person a right to subscribe for or acquire, any securities of Parent or Merger Sub, and no securities or obligations evidencing such rights are authorized, issued or outstanding. Parent does not have outstanding any bonds, debentures, notes or other obligations the holders of which have the right to vote (or convertible into or exercisable for securities having the right to vote) with the stockholders of Parent on any matter ("PARENT VOTING DEBT"). To the knowledge of the executive officers of Parent, other than the Parent Stockholder Agreement to be delivered by John R. Bertucci, Claire R. Bertucci and certain Bertucci family trusts, there are no agreements or understandings with respect to the voting (including voting trusts and proxies) or sale or transfer (including agreements imposing transfer restrictions) of any shares of capital stock of the Parent or any of its Subsidiaries.

6.5 Corporate Authority: Approval and Fairness.

(a) Each of Parent and Merger Sub has all requisite corporate power and authority and has taken all corporate action necessary in order to execute, deliver and perform its obligations under this Agreement, and to consummate, subject only to approval by the holders of a majority of the outstanding shares of Parent Common Stock of the issuance of Parent Common Stock pursuant to Section 4 hereof (the "PARENT REQUISITE VOTE"), the Merger and the transactions contemplated hereby. This Agreement has been duly executed and delivered by Parent and Merger Sub and, assuming due authorization, execution and delivery of this Agreement by the Company, is a valid and legally binding agreement of Parent and Merger Sub, enforceable against each of Parent and Merger Sub in accordance with its terms, subject to the Bankruptcy and Equity Exception. The Parent Common Stock, when issued, will be registered under the Securities Act and registered or exempt from registration under any applicable state securities or "BLUE SKY" laws.

(b) The Board of Directors of each of the Parent and the Merger Sub has approved this Agreement and adopted the Plan set forth in this Agreement. The Board of Directors of Parent has received the opinion of its financial advisors, Merrill, Lynch, Pierce, Fenner & Smith Incorporated, to the effect that the Merger Consideration to be issued by Parent is fair, from a financial point of view, to Parent.

6.6 Governmental Filings; No Violations.

(a) Except with respect to Environmental Laws, which are specifically addressed in Section 6.13, other than the filings and/or notices (A) pursuant to Section 1.3, (B) under the HSR Act, the Securities Act and the Exchange Act, (C) to comply with state securities or "BLUE SKY" laws and (D) required to be made with The Nasdaq Stock Market, Inc., no notices, reports or other filings are required to be made by Parent or Merger Sub with, nor are any consents, registrations, approvals, permits or authorizations required to be obtained by Parent or Merger Sub from, any Governmental Entity, in connection with the execution and delivery of this Agreement by Parent and Merger Sub and the consummation by Parent and Merger Sub of the Merger and the other transactions contemplated hereby.

(b) The execution, delivery and performance of this Agreement by Parent and Merger Sub do not, and the consummation by Parent and Merger Sub of the Merger and the other transactions contemplated hereby will not, constitute or result in (A) a breach or violation of, or a default under, either the articles of organization or bylaws of Parent, the certificate of incorporation or bylaws of Merger Sub or the comparable governing instruments of any of Parent's Subsidiaries, (B) a breach or violation of, or a default under, the acceleration of any obligations or the creation of a lien, pledge, security interest or other encumbrance on the assets of Parent or any of its Subsidiaries (with or without notice, lapse of time or both) pursuant to, any Contracts binding upon Parent or any of its Subsidiaries or any Law or governmental or non-governmental permit, license, judgment, injunction, order, decree, statute, law, ordinance, rule or regulation to which Parent or any of its Subsidiaries is subject or (C) any change in the rights or obligations of any party under any of the Contracts, except, in the case of clause (B) above, for any breach, violation, default, acceleration, creation or change that would not have a Parent Material Adverse Effect or prevent, materially delay or materially impair the ability of Parent or Merger Sub to consummate the transactions contemplated by this Agreement.

6.7 Parent Reports; Financial Statements. Parent has made, or, as appropriate, will make, available to the Company each registration statement, report, proxy statement or information statement filed by it since December 31, 1999 (the "PARENT AUDIT DATE") and prior to the Effective Time, including (i) Parent's Annual Report on Form 10-K for the fiscal year ended December 31, 1999, (ii) Parent's Quarterly Reports on Form 10-Q for the quarterly periods ended March 31, 2000 and June 30, 2000, (iii) Form 8-K filed with the SEC on June 28, 2000, (iv) Registration Statement on Form S-8 filed with the SEC on February 28, 2000, and (v) Registration Statement on Form S-3 filed with the SEC on April 10, 2000 and amendments thereto, each in the form (including exhibits, annexes and any amendments thereto) filed with the SEC (collectively, including amendments of any such reports as amended, the "PARENT REPORTS"). The Parent Reports (i) were or will be filed on a timely basis, (ii) were or will be prepared in compliance in all material respects with the applicable requirements of the Securities Act and the Exchange Act, as the case may be, and the rules and regulations of the SEC thereunder applicable to such Parent Reports, and (iii) did not or will not at the time they were or are filed contain any untrue statement of a material fact or omit to state a material fact required to be stated in such Parent Reports or necessary in order to make the statements in such Parent Reports, in the light of the circumstances under which they were made, not misleading. No Subsidiary of the Parent is required to file any forms, reports or other documents with the SEC. Each of the consolidated balance sheets included in or incorporated by reference into the Parent Reports (including the related notes and schedules) fairly presents the consolidated financial position of Parent and its Subsidiaries as of its date and each of the consolidated statements of income and of changes in financial positions included in or incorporated by reference into the Parent Reports (including any related notes and schedules) fairly presents the consolidated results of operations and cash flows, as the case may be, of Parent and its Subsidiaries for the periods set forth therein (subject, in the case of unaudited statements, to the absence of notes and normal year-end audit adjustments, which will not be material), in each case in accordance with GAAP consistently applied during the periods involved, except as may be noted therein.

6.8 Absence of Certain Changes. Except as disclosed in the Parent Reports or as set forth on Section 6.8 of the Parent Disclosure Letter, since the Parent Audit Date and through the date hereof, Parent and its Subsidiaries taken as a whole have conducted their business only in, and have not engaged in any material transaction other than according to, the ordinary and usual course of such business and there has not been (i) any change in the financial condition, properties, business, results of operations or prospects of Parent

and its Subsidiaries that has had, or is reasonably likely to have, a Parent Material Adverse Effect; (ii) any material damage, destruction or other casualty loss with respect to any material asset or material property owned, leased or otherwise used by Parent or any of its Subsidiaries, not covered by insurance; (iii) any change by Parent in accounting principles, practices or methods which is not required or permitted by GAAP; or (iv) any declaration, setting aside or payment of any dividend or other distribution in respect of the capital stock of Parent, except for dividends or other distributions on its capital stock publicly announced prior to the date hereof or in the ordinary course of business consistent with past practice.

6.9 Litigation. Except with respect to Environmental Laws, which are specifically addressed in Section 6.13, and except as disclosed in the Parent Reports, there are no civil, criminal or administrative actions, suits, claims, hearings, investigations or proceedings pending or, to the knowledge of the executive officers of the Parent, threatened against or affecting the Parent or any of its Subsidiaries, except for those that would not have a Parent Material Adverse Effect or prevent or materially burden or materially impair the ability of the Parent or Merger Sub to consummate the transactions contemplated by this Agreement, nor any judgment, decree, injunction, rule or rules of any Governmental Entity pending or, to the knowledge of the executive officers of the Parent, threatened against or affecting the Parent or any of its Subsidiaries, except for those that would not have a Parent Material Adverse Effect or prevent or materially burden or materially impair the ability of the Parent or Merger Sub to consummate the transactions contemplated by this Agreement. There are no judgments, orders or decrees outstanding against the Parent which, individually or in the aggregate, have had or are reasonably likely to have a Parent Material Adverse Effect.

6.10 Compliance with Laws. The business of Parent and its Subsidiaries taken as a whole is not being conducted in violation of any Laws, except for violations that would not have a Parent Material Adverse Effect or prevent or materially burden or materially impair the ability of Parent to consummate the transactions contemplated by this Agreement. No investigation or review by any Governmental Entity with respect to Parent or any of its Subsidiaries is pending or, to the knowledge of the executive officers of Parent, threatened, nor has any Governmental Entity indicated an intention to conduct the same, except for those the outcome of which would not have a Parent Material Adverse Effect or prevent or materially burden or materially impair the ability of Parent to consummate the transactions contemplated by this Agreement. Parent and its Subsidiaries each has all Permits from Governmental Entities necessary to conduct its business as presently conducted, except for those the absence of which would not have a Parent Material Adverse Effect or prevent or materially burden or materially impair the ability of Parent or Merger Sub to consummate the Merger and the other transactions contemplated by this Agreement. The Parent and its Subsidiaries are in compliance with the terms of the Permits, except where the failure to so comply, individually or in the aggregate, is not reasonably likely to have a Parent Material Adverse Effect. No Permit will cease to be effective as a result of the consummation of transactions contemplated by this Agreement, except where the cessation of effectiveness, individually or in the aggregate, will not have a Parent Material Adverse Effect.

6.11 Required Vote. The Parent shareholders approval, being the affirmative vote of a majority of the Parent Common Stock entitled to vote, is the only vote of the holders of any class or series of the securities of Parent necessary to approve this Agreement, the Merger and the other transactions contemplated hereby.

6.12 No Owned Real Properties. Except as disclosed in the Parent Reports, the Parent and its Subsidiaries do not own any real property.

6.13 Environmental Matters. Except as disclosed in the Parent Reports and except for such matters that would not have a Parent Material Adverse Effect, Parent and its Subsidiaries: (i) are in compliance with all applicable Environmental Laws; (ii) have not received any notice from any Governmental Entity or any third party alleging any violation of, or liability under, any applicable Environmental Laws; (iii) are not subject to any court order, administrative order or decree arising under any Environmental Law; (iv) to the knowledge of the executive officers of Parent do not own or operate any property that has been contaminated with any Hazardous Substance; and (v) are not subject to any claims, demands or notifications concerning liability for any Hazardous Substance disposal or contamination.

6.14 Accounting and Tax Qualification Matters. As of or prior to the date hereof, neither Parent nor any of its Affiliates has taken or agreed to take any action, nor do the executive officers of Parent have any knowledge of any fact or circumstance, that would prevent Parent from accounting for the business

combination to be effected by the Merger as a "POOLING-OF-INTERESTS" or prevent the Merger from qualifying as a "REORGANIZATION" within the meaning of Section 368(a) of the Code. It is the present plan and intention of Parent to (a) cause the Company to continue at least one significant historic business line, or to use a significant portion of the Company's historic business assets in a business, in each case within the meaning of Treasury Regulation 1.368-1(d) promulgated under the Internal Revenue Code and (b) maintain the Company as a separate subsidiary which is directly owned by the Parent and not to liquidate the Company or merge the Company with any other entity; provided, however, Parent may cause the Company to be merged into Parent.

6.15 Taxes. Parent and each of its Subsidiaries (i) have duly and timely filed (taking into account any extension of time within which to file) all Tax Returns required to be filed by any of them and all such filed Tax Returns are complete and accurate in all respects, (ii) have paid all Taxes owed by the Parent and each of its Subsidiaries (whether or not shown on any Tax Return) that are shown as due on such filed Tax Returns or that Parent or any of its Subsidiaries are obligated to withhold from amounts owing to any employee, creditor or third party, except with respect to matters contested in good faith, and (iii) have not waived any statute of limitations with respect to Taxes or agreed to any extension of time with respect to a Tax assessment or deficiency, except, in each case, for those failures to file or pay or those waivers that would not have a Parent Material Adverse Effect. As of the date hereof, there are not pending or, to the knowledge of the executive officers of Parent, threatened in writing, any audits, examinations, investigations or other proceedings in respect of Taxes or Tax matters.

6.16 Labor Matters. Neither the Parent nor any of its Subsidiaries is a party to or otherwise bound by any collective bargaining agreement, contract or other agreement or understanding with a labor union or labor organization. Neither Parent nor any of its Subsidiaries is the subject of any proceeding asserting that Parent or any of its Subsidiaries has committed an unfair labor practice nor is there pending or, to the knowledge of the executive officers of Parent, threatened, nor since January 1, 1998 has there been any labor strike, dispute, walk-out, work stoppage, slow-down or lockout involving Parent or any of its Subsidiaries, except for those that would not have a Parent Material Adverse Effect or prevent or materially burden or materially impair the ability of Parent to consummate the transactions contemplated by this Agreement.

6.17 Intellectual Property.

(a) Parent and/or one or more of its Subsidiaries owns, or is licensed or otherwise possesses valid rights to use, all patents, trademarks, trade names, service marks, domain names, copyrights, and any applications therefor, technology, know-how, computer software programs or applications, and tangible or intangible proprietary information or materials that are used in the business of Parent and its Subsidiaries as conducted as of the date hereof, except for any such failures to own, be licensed or possess that would not have a Parent Material Adverse Effect, and to the knowledge of the executive officers of Parent all patents, trademarks, trade names, service marks and copyrights owned by Parent and/or its Subsidiaries are valid and subsisting, except for those the invalidity of which would not have a Parent Material Adverse Effect.

(b) Except as disclosed in Parent Reports or except as would not have a Parent Material Adverse Effect:

(i) Parent is not, nor will it be as a result of the execution and delivery of this Agreement or the performance of its obligations hereunder, in violation of any licenses, sublicenses and other agreements as to which Parent is a party as of the date hereof and pursuant to which Parent is authorized to use any third-party patents, trademarks, service marks, domain names, copyrights, trade secrets or computer software (collectively, "PARENT THIRD-PARTY INTELLECTUAL PROPERTY RIGHTS");

(ii) no claims with respect to (a) the patents, registered and material unregistered trademarks and service marks, domain names, registered copyrights, trade names, and any applications therefor, trade secrets or computer software owned by Parent or any of its Subsidiaries (collectively, the "PARENT INTELLECTUAL PROPERTY RIGHTS") or (b) Parent Third-Party Intellectual Property Rights are

currently pending or, to the knowledge of the executive officers of Parent, are threatened by any Person;

(iii) to the knowledge of the executive officers of Parent there are not any valid grounds for any bona fide claims (a) to the effect that the sale, licensing or use of any product or service as used, sold or licensed by Parent or any of its Subsidiaries, infringes on any copyright, patent, trademark, service mark, domain names or trade secret; (b) against the use by Parent or any of its Subsidiaries of any Parent Intellectual Property Rights or Parent Third-Party Intellectual Property Rights used in the business of Parent or any of its Subsidiaries as currently conducted; (c) challenging the ownership, validity or enforceability of any of the Parent Intellectual Property Rights; or (d) challenging the license or legally enforceable right to use of the Parent Third-Party Intellectual Rights by Parent or any of its Subsidiaries; and

(iv) to the knowledge of the executive officers of Parent, there is no unauthorized use, infringement or misappropriation of any of the material Parent Intellectual Property Rights by any third party, including any employee or former employee of Parent or any of its Subsidiaries.

(v) The Parent and its Subsidiaries have taken reasonable measures to protect the proprietary nature of the Parent Intellectual Property Rights that are material to the business of the Parent and its Subsidiaries, taken as a whole, and to maintain in confidence all trade secrets and confidential information owned or used by the Parent or any of its Subsidiaries and that are material to the business of the Parent and its Subsidiaries, taken as a whole.

6.18 Brokers and Finders. Except for Merrill, Lynch, Pierce, Fenner & Smith, neither Parent nor any of its Affiliates, officers, directors or employees has employed any broker or finder or incurred any liability for any brokerage fees, commissions or finders' fees in connection with the Merger or the other transactions contemplated by this Agreement. The Parent shall pay the fees and expenses of Merrill Lynch and Company. Section 6.18 of the Parent Disclosure Letter sets forth the estimated fees and expenses of Merrill Lynch and Company incurred and to be incurred by the Parent and any of its Subsidiaries in connection with this Agreement and the transactions contemplated by this Agreement.

6.19 Board Recommendation. The Parent Board, at a meeting duly called and held, has by a unanimous vote, (i) determined and declared that this Agreement and the transactions contemplated hereby, including the Merger, are advisable and fair to and in the best interests of Parent and the shareholders of Parent and (ii) resolved to recommend that the holders of Parent Common Stock approve the issuance of Parent Common Stock pursuant to the Merger. John R. Bertucci, Claire R. Bertucci and certain Bertucci family trusts, simultaneously with the execution of this Agreement, have executed the Parent Stockholder Agreement, in the form attached hereto as Exhibit A-2 (the "PARENT STOCKHOLDER AGREEMENT"), agreeing to vote all shares of Parent Common Stock owned by them in favor of the transactions contemplated by this Agreement.

6.20 Assets. Each of the Parent and its Subsidiaries owns or leases all tangible assets necessary for the conduct of its businesses as presently conducted and as presently proposed to be conducted. All of such tangible assets which are owned, are owned free and clear of all Liens except for (i) Liens which are disclosed in the Parent Reports filed prior to the date of this Agreement and (ii) other Liens which, individually and in the aggregate, do not materially interfere with the ability of the Parent and its Subsidiaries to conduct their business as currently conducted and as presently proposed to be conducted and have not resulted in, and are not reasonably likely to result in, a Parent Material Adverse Effect. The tangible assets of the Parent and its Subsidiaries, taken as a whole, are free from material defects, have been maintained in accordance with normal industry practice, are in good operating condition and repair (subject to normal wear and tear) and are suitable for the purpose for which they are presently used.

6.21 Customers and Suppliers. No customer of the Parent or any of its Subsidiaries that represented 5% or more of the Parent's consolidated revenues in the fiscal year ended December 31, 1999 has indicated to the Parent or any of its Subsidiaries that it will stop, or decrease the rate of, buying materials, products or services from the Parent or any of its Subsidiaries. No supplier of the Parent or any of its Subsidiaries has

indicated to the Parent or any of its Subsidiaries that it will stop, or decrease the rate of, supplying materials, products or services to them, which cessation or decrease, individually or in the aggregate, is reasonably likely to have a Parent Material Adverse Effect.

6.22 Business Activity Restrictions. There is no non-competition or other similar agreement, commitment, judgment, injunction or order to which the Parent or any Subsidiary of the Parent is a party or subject to that has or could reasonably be expected to have the effect of prohibiting or impairing the conduct of the business by the Parent in any material respect. The Parent has not entered into any agreement under which it is restricted in any material respect from selling, licensing or otherwise distributing any of its technology or products, or providing services to, customers or potential customers or any class of customers, in any geographic area, during any period of time or any segment of the market or line of business.

6.23 Disclosure. No representation or warranty by Parent and/or Merger Sub in this Agreement, nor any statement, certificate, schedule, document or exhibit hereto furnished or to be furnished by or on behalf of Parent and/or Merger Sub pursuant to this Agreement or in connection with transactions contemplated hereby, contains or shall contain any untrue statement of material fact or omits or shall omit a material fact necessary to make the statements contained herein or therein not misleading.

6.24 No Other Representations or Warranties Except for the representations and warranties contained in this Section 6, neither Parent or Merger Sub nor any other Person makes any other express or implied representation or warranty on behalf of Parent, Merger Sub or any of their respective Affiliates.

VII. COVENANTS

7.1 Interim Covenants.

(a) Interim Operations of the Company. From the date hereof through the Effective Time, the Company covenants and agrees that its business and the business of its Subsidiaries shall be conducted in the ordinary and usual course and, to the extent consistent therewith, it and its Subsidiaries shall use their respective commercially reasonable efforts to preserve its business organization intact and maintain its existing relations and goodwill with customers, suppliers, distributors, creditors, lessors, employees and business associates. Without limiting the generality of the foregoing, the Company covenants and agrees as to itself and its Subsidiaries that, from the date hereof and prior to the Effective Time (unless Parent shall otherwise approve in writing, and except as otherwise expressly contemplated by this Agreement or by Law):

(i) it shall not (A) issue, sell, pledge, dispose of or encumber any capital stock owned by it in any of its Subsidiaries; (B) amend its certificate of incorporation or bylaws or the comparable governing instruments of any of its Subsidiaries; (C) split, combine or reclassify its outstanding shares of capital stock; or (D) repurchase, redeem or otherwise acquire any shares of its capital stock or any securities convertible into or exchangeable or exercisable for any shares of its capital stock, except in connection with the Company Stock Plans, or permit any of its Subsidiaries to purchase or otherwise acquire, any shares of its capital stock or any securities convertible into or exchangeable or exercisable for any shares of its capital stock;

(ii) neither it nor any of its Subsidiaries shall (A) issue, sell, pledge, dispose of or encumber any shares of, or securities convertible into or exchangeable or exercisable for, or options, warrants, calls, commitments or rights of any kind to acquire, any shares of its capital stock of any class or any Voting Debt or any other property or assets (other than Shares issuable pursuant to Company Options outstanding on the date hereof under the Company Stock Plans); (B) other than in the ordinary and usual course of business, transfer, lease, license, guarantee, sell, mortgage, pledge, dispose of or encumber any other property or assets (including capital stock of any of its Subsidiaries); (C) incur or modify any indebtedness for borrowed money or guarantee any such indebtedness of another Person; or (D) by any means, make any acquisition of, or investment in, assets or stock (whether by way of merger, consolidation, tender offer, share exchange or other activity) of any Person;

(iii) neither it nor any of its Subsidiaries shall enter into any transaction involving a merger, consolidation, reorganization, share exchange, or similar transaction involving, or any purchase of any assets or any securities of, it or any of its Subsidiaries;

(iv) it shall not adopt any stockholder rights plan or, except as provided in Section 5.22, alter or further amend the Company Rights Plan or the Company Rights;

(v) neither it nor any of its Subsidiaries shall make any capital expenditures or other expenditures with respect to property, plant or equipment except pursuant to the capital expenditure budget set forth in Section 7.1(a)(v) of the Company Disclosure Letter;

(vi) neither it nor any of its Subsidiaries shall make any changes in accounting methods, principles or practices, except insofar as may have been required by a change in GAAP or, except as so required, change any assumption underlying, or method of calculating, any bad debt, contingency or other reserve;

(vii) neither it nor any of its Subsidiaries shall (A) pay, discharge, settle or satisfy any claims, liabilities or obligations (whether absolute, accrued, asserted or unasserted, contingent or otherwise), other than the payment, discharge or satisfaction, in the ordinary course of business consistent with past practice or in accordance with their terms as in effect on the date of this Agreement, of claims, liabilities or obligations reflected or reserved against in, or contemplated by, the most recent consolidated financial statements (or the notes thereto) of the Company included in the Company Reports filed prior to the date of this Agreement (to the extent so reflected or reserved against) or incurred since the date of such financial statements in the ordinary course of business consistent with past practice, or (B) waive any material benefits of, modify in any adverse respect, fail to enforce, or consent to any matter with respect to which its consent is required under, any confidentiality, standstill or similar agreements to which the Company or any of its Subsidiaries is a party;

(viii) neither it nor any of its Subsidiaries shall except in the ordinary course of business consistent with past practice, modify, amend or terminate any material contract or agreement to which the Company or any of its Subsidiaries is party, or knowingly waive, release or assign any material rights or claims (including any write-off or other compromise of any accounts receivable of the Company or any of its Subsidiaries);

(ix) neither it nor any of its Subsidiaries shall except in the ordinary course of business consistent with past practice (A) enter into any material contract or agreement relating to the distribution, sale or marketing by third parties of the products, of, or products licensed by, the Company or any of its Subsidiaries or (B) license any material intellectual property rights to or from any third party;

(x) neither it nor any of its Subsidiaries shall except as required to comply with applicable law or agreements, plans or arrangements existing on the date hereof, (A) adopt, enter into, terminate or amend any employment, severance or similar agreement or benefit plan for the benefit or welfare of any current or former director, officer, employee or consultant or any collective bargaining agreement, (B) except as provided in Section 7.1(a)(x) of the Company Disclosure Letter, increase in any material respect the compensation or fringe benefits of, or pay any bonus to, any director, officer, key employee or consultant, (C) accelerate the payment, right to payment or vesting of any compensation or benefits, including any outstanding options or restricted stock awards, (D) pay any material benefit not provided for as of the date of this Agreement under any benefit plan, (E) grant any awards under any bonus, incentive, performance or other compensation plan or arrangement or benefit plan (including the grant of stock options, stock appreciation rights, stock based or stock related awards, performance units or restricted stock, or the removal of existing restrictions in any benefit plans or agreements or awards made thereunder); provided, however, that the Company shall be permitted to grant options (with exercise prices equal to the fair market value of the Company Common Stock on the respective dates of grant) to purchase Shares under the Company Stock Plans in the ordinary course of business consistent with past practice, or (F) take any action other

than in the ordinary course of business consistent with past practice to fund or in any other way secure the payment of compensation or benefits under any employee plan, agreement, contract or arrangement or benefit plan;

(xi) it shall not make or rescind any Tax election, settle or compromise any Tax liability or amend any Tax return;

(xii) neither it nor any of its Subsidiaries shall initiate, compromise or settle any material litigation or arbitration proceeding;

(xiii) neither it nor any of its Subsidiaries shall fail to maintain insurance at levels substantially comparable to levels existing as of the date of this Agreement;

(xiv) neither it nor any of its Subsidiaries shall fail to pay accounts payable and other obligations in the ordinary course of business consistent with past practice; or

(xv) authorize any of, or commit or agree, in writing or otherwise, to take any of, the foregoing actions or any action which would make any representation or warranty of the Company in this Agreement untrue or incorrect in any material respect, or would materially impair or prevent the occurrence of any the conditions contained in Section 7 hereof.

(b) Interim Operations of Parent. From the date hereof through the Effective Time, Parent covenants and agrees that its business and the business of its Subsidiaries shall be conducted in the ordinary and usual course and, to the extent consistent therewith, it and its Subsidiaries shall use their respective commercially reasonable efforts to preserve its business organization intact and maintain its existing relations and goodwill with customers, suppliers, distributors, creditors, lessors, employees and business associates. Without limiting the generality of the foregoing, Parent covenants and agrees as to itself and its Subsidiaries that, from the date hereof and prior to the Effective Time (unless the Company shall otherwise approve in writing, and except as otherwise expressly contemplated by this Agreement or by Law):

(i) it shall not (w) issue or sell shares of Parent Common Stock representing more than 20% of the outstanding Parent Common Stock; (x) except as indicated on Section 7.1(b) to the Parent Disclosure Letter, amend its articles of organization or bylaws or the comparable governing instruments of any of its Subsidiaries; or (y) repurchase, redeem or otherwise acquire any shares of its capital stock or any securities convertible into or exchangeable or exercisable for any shares of its capital stock, except in connection with the Parent's existing stock plans, or permit any of its Subsidiaries to purchase or otherwise acquire, any shares of its capital stock or any securities convertible into or exchangeable or exercisable for any shares of its capital stock; or

(ii) neither it nor any of its Subsidiaries will authorize or enter into an agreement to do anything prohibited by the foregoing.

7.2 Acquisition Proposals.

(a) From and after the date of this Agreement until the earlier of the termination of this Agreement in accordance with its terms or the Effective Time, the Company and its Subsidiaries shall not, directly or indirectly, through any officer, director, employee, financial advisor, representative or agent (x) solicit, initiate, or encourage any inquiries or proposals that constitute, or could reasonably be expected to lead to, a proposal or offer for a merger, consolidation, business combination, sale of substantial assets, tender offer, sale of shares of capital stock (excluding sales pursuant to existing Compensation and Benefit Plans) or similar transaction involving the Company or any of its Subsidiaries, other than the transactions contemplated by this Agreement (any of the foregoing inquiries or proposals being referred to in this Agreement as an "ACQUISITION PROPOSAL"), (y) engage in negotiations or discussions concerning, or provide any information to any person or entity relating to, any Acquisition Proposal, or (z) agree to or recommend any Acquisition Proposal; provided, however, that, if the Company has not breached this

Section 7.2, nothing contained in this Agreement shall prevent the Company or its Board of Directors, prior to the adoption of this Agreement by the shareholders of the Company, from:

(i) furnishing information to, or entering into discussions or negotiations with, any person or entity in connection with an unsolicited bona fide written Acquisition Proposal by such person or entity or recommending an unsolicited bona fide written Acquisition Proposal to the shareholders of the Company, if and only to the extent that:

(A) the Board of Directors of the Company believes in good faith (after consultation with its financial advisor) that such Acquisition Proposal is reasonably capable of being completed on the terms proposed and would, if consummated, result in a transaction more favorable than the transaction contemplated by this Agreement (any such more favorable Acquisition Proposal being referred to in this Agreement as a "SUPERIOR PROPOSAL") and the Company's Board of Directors determines in good faith after consultation with outside legal counsel that such action is necessary for such Board of Directors to fulfill its fiduciary duties,

(B) prior to furnishing such non-public information to, or entering into discussions or negotiations with, such person or entity, such Board of Directors receives from such person or entity an executed confidentiality agreement with terms no less favorable to such party than those contained in the Confidentiality Agreement, and

(C) prior to recommending a Superior Proposal or terminating this Agreement in respect thereof, the Company shall provide the Parent with at least five business days' notice of its proposal to do so, during which time the Parent may make, and in such event the Company shall consider, a counterproposal to such Superior Proposal; or

(ii) complying with Rule 14d-9 and 14e-2 promulgated under the Exchange Act with respect to an Acquisition Proposal; provided, however, that neither the Company nor its Board of Directors, shall, except as permitted by paragraph (i) of this section, propose to approve or recommend an Acquisition Proposal.

(b) The Company will immediately cease any and all existing activities, discussions or negotiations with any parties conducted heretofore of the nature described in Section 7.2(a) and will use reasonable efforts to obtain the return of any confidential information furnished to any such parties.

(c) The Company shall notify the Parent immediately (but in any event, within one (1) business day) after receipt by the Company (or its advisors) of any Acquisition Proposal or any request for nonpublic information in connection with an Acquisition Proposal. Such notice shall be made orally and in writing and shall indicate in reasonable detail the identify of the offer and the terms and conditions of such proposal, inquiry or contact. The Company shall continue to keep the Parent promptly informed of any change in the status of any such discussions or negotiations and the terms being discussed or negotiated

(d) Nothing in this Section 7.2 shall (i) permit the Company to terminate this Agreement (except as specifically provided in Section 9.3 hereof), or (ii) permit the Company to enter into any agreement with respect to an Acquisition Proposal during the term of this Agreement (other than a confidentiality agreement of the type referred to in Section 7.2(a) above).

(e) Without limiting the foregoing, it is understood that any violation of the restrictions set forth in this Section 7.2 by any director or officer of the Company or any of its Subsidiaries or any investment banker, financial advisor, attorney, accountant or other representative of the Company or any of its Subsidiaries shall be deemed to be a breach of this Section 7.2 by the Company.

7.3 Information Supplied.

(a) The Company and Parent each agrees, as to itself and its Subsidiaries, that none of the information supplied or to be supplied by it or its Subsidiaries for inclusion or incorporation by reference in (i) the Registration Statement on Form S-4 to be filed with the SEC by Parent in connection with the

issuance of shares of Parent Common Stock in the Merger (including the joint proxy statement and prospectus (the "PROSPECTUS/PROXY STATEMENT") constituting a part thereof) (the "S-4 REGISTRATION STATEMENT") will, at the time the S-4 Registration Statement becomes effective under the Securities Act, contain any untrue statement of a material fact or omit to state any material fact required to be stated therein or necessary to make the statements therein, in light of the circumstances under which they were made, not misleading, and (ii) the Prospectus/Proxy Statement and any amendment or supplement thereto will, at the date of mailing to shareholders of Company and Parent and at the times of the meetings of shareholders of the Company and Parent to be held in connection with the Merger, contain any untrue statement of a material fact or omit to state any material fact required to be stated therein or necessary in order to make the statements therein, in light of the circumstances under which they were made, not misleading.

(b) As soon as practicable following the date of this Agreement, Company and Parent shall prepare the Prospectus/Proxy Statement. Company shall, in cooperation with Parent, file the Prospectus/Proxy Statement with the SEC as its preliminary proxy statement and Parent shall, in cooperation with Company, prepare and file with the SEC the Registration Statement, in which the Prospectus/Proxy Statement will be included. Each of Company and Parent shall use commercially reasonable efforts to have the Registration Statement declared effective under the Securities Act as promptly as practicable after such filing and to keep the Registration Statement effective as long as is necessary to consummate the Merger. Parent and Company shall mail the Prospectus/Proxy Statement to their respective stockholders as promptly as practicable after the Registration Statement is declared effective under the Securities Act and, if necessary, after the Prospectus/Proxy Statement shall have been so mailed, promptly circulate supplemental or amended proxy material, and, if required in connection therewith, resolicit proxies.

7.4 Shareholders' Meetings. The Company will take, in accordance with applicable law and its certificate of incorporation and bylaws, all action necessary to convene a meeting of holders of Shares (the "SHAREHOLDERS' MEETING") as promptly as practicable after the S-4 Registration Statement is declared effective to consider and vote upon the approval of this Agreement and such other matters as may be appropriate. The Board of Directors of the Company shall recommend such approval and shall take all lawful action reasonably necessary to solicit such approval; provided, however, that the Company's adoption of this Agreement and the recommendation of the Board of Directors of the Company may be withdrawn if the Company terminates this Agreement pursuant to Section 9.3.

Parent will take, in accordance with applicable law and its articles of organization and bylaws, all action necessary to convene a meeting of holders of Parent Common Stock (the "PARENT STOCKHOLDERS' MEETING") as promptly as practicable after the S-4 Registration Statement is declared effective to consider and vote upon the approval of the issuance of Parent Common Stock pursuant to this Agreement and such other matters as may be appropriate. The Board of Directors of Parent shall recommend such approval and shall take all lawful action reasonably necessary to solicit such approval.

7.5 Filings; Other Actions; Notification.

(a) Parent and the Company shall promptly, following the date hereof, prepare and file with the SEC the Prospectus/Proxy Statement, and Parent shall promptly, following the date hereof, prepare and file with the SEC the S-4 Registration Statement. Parent and the Company each shall use its commercially reasonable efforts to have the S-4 Registration Statement declared effective under the Securities Act as promptly as practicable after such filing, and as soon as practicable thereafter mail the Prospectus/Proxy Statement to its shareholders and, if necessary after the Prospectus/Proxy Statement is mailed, promptly circulate amended supplemental proxy material, and, if required, resolicit proxies. Parent shall also use its commercially reasonable efforts to obtain prior to the effective date of the S-4 Registration Statement all necessary state securities law or "BLUE SKY" permits and approvals required in connection with the Merger and to consummate the other transactions contemplated by this Agreement and will pay all expenses incident thereto.

(b) The Company and Parent each shall use commercially reasonable efforts to cause to be delivered to the other party and its directors a letter of its independent auditors, dated (i) the date on which the S-4 Registration Statement shall become effective and (ii) the Closing Date, and addressed to the other party and its directors, in form and substance customary for "COMFORT" letters delivered by independent public accountants in connection with registration statements similar to the S-4 Registration Statement.

(c) The Company and Parent shall cooperate with each other and use (and shall cause their respective Subsidiaries to use) their respective commercially reasonable efforts to take or cause to be taken all actions, and do or cause to be done all things, necessary, proper or advisable on its part under this Agreement and applicable Laws to consummate and make effective the Merger and the other transactions contemplated by this Agreement as soon as practicable, including preparing and filing as soon as practicable all documentation to effect all necessary notices, reports and other filings and to obtain as soon as practicable all consents, registrations, approvals, permits and authorizations necessary or advisable to be obtained from any third party and/or any Governmental Entity in order to consummate the Merger or any of the other transactions contemplated by this Agreement. Subject to applicable Laws relating to the exchange of information, Parent and the Company shall have the right to review in advance, and to the extent practicable each will consult the other on, all the information relating to Parent or the Company, as the case may be, and any of their respective Subsidiaries, that appear in any filing made with, or written materials submitted to, any third party and/or any Governmental Entity in connection with the Merger and the other transactions contemplated by this Agreement. In exercising the foregoing right, each of the Company and Parent shall act reasonably and as promptly as practicable.

(d) The Company and Parent each shall, upon request by the other, furnish the other with all information concerning itself, its Subsidiaries, directors, officers and stockholders and such other matters as may be reasonably necessary or advisable in connection with the Prospectus/Proxy Statement, the S-4 Registration Statement or any other statement, filing, notice or application made by or on behalf of Parent, the Company or any of their respective Subsidiaries to any third party and/or any Governmental Entity in connection with the Merger and the transactions contemplated by this Agreement.

(e) Subject to any confidentiality obligations and the preservation of any attorney-client privilege, the Company and Parent each shall keep the other apprised of the status of matters relating to completion of the transactions contemplated hereby, including promptly furnishing the other with copies of notices or other communications received by Parent or the Company, as the case may be, or any of its Subsidiaries, from any third party and/or any Governmental Entity with respect to the Merger and the other transactions contemplated by this Agreement.

(f) Subject to the terms hereof, the Parent and the Company agree, and shall cause each of their respective Subsidiaries, to cooperate and to use their respective commercially reasonable efforts to obtain any government clearances or approvals required for Closing under the HSR Act, the Sherman Act, as amended, the Clayton Act, as amended, the Federal Trade Commission Act, as amended, and any other federal, state or foreign law, or, regulation or decree designed to prohibit, restrict or regulate actions for the purpose or effect of monopolization or restraint of trade (collectively, "ANTITRUST LAWS"), to respond as promptly as practicable to any government requests for information under any Antitrust Law and to contest and resist any action, including any legislative, administrative or judicial action and to have vacated, lifted, reversed or overturned any decree, judgment, injunction or other order (whether temporary, preliminary or permanent) (an "ANTITRUST ORDER") that restricts, prevents or prohibits the consummation of the Merger or any other transactions contemplated by this Agreement under any Antitrust Law. Each of the Company and Parent shall (i) give the other party prompt notice of the commencement or threat of commencement of any legal proceeding by or before any Governmental Entity with respect to the Merger or any of the other transactions contemplated by this Agreement, (ii) keep the other party informed as to the status of any such legal proceeding or threat and (iii) promptly inform the other party of any communication to or from the Federal Trade Commission, the Department of Justice or any other Governmental Entity regarding the Merger. Except as may be prohibited by any Governmental Entity or by any Law, the Company and Parent will consult and

cooperate with one another, and will consider in good faith the views of one another, in connection with any analysis, appearance, presentation, memorandum, brief, argument, opinion or proposal made or submitted in connection with any legal proceeding under or relating to the HSR Act or any other foreign, federal or state antitrust or fair trade Laws. In addition, except as may be prohibited by any Governmental Entity or by any Law, in connection with any legal proceeding under or relating to the HSR Act or any other foreign, federal or state antitrust or fair trade Law or any other similar legal proceeding, each of the Company and Parent will permit authorized Representatives of the other party to be present at each meeting or conference relating to any such legal proceeding and to have access to and be consulted in connection with any document, opinion or proposal made or submitted to any Governmental Entity in connection with any such legal proceeding. Notwithstanding anything to the contrary in this Agreement, neither the Company, the Parent nor any of their respective Subsidiaries shall be required to (x) divest any of their respective businesses, product lines or assets, or to take or agree to take any other action or agree to any limitation, that could reasonably be expected to have a Parent Material Adverse Effect or (y) take any action under this Section if the United States Department of Justice or the United States Federal Trade Commission authorizes its staff to seek a preliminary injunction or restraining order to enjoin consummation of the Merger.

7.6 Accounting. Both Parent and the Company agree not to knowingly take or cause to be taken any action, whether before or after the Effective Time, that would disqualify the Merger as a "POOLING OF INTERESTS" for accounting purposes

7.7 Access. Upon reasonable notice, and except as may otherwise be required by applicable Law, the Company and Parent each shall (and shall each cause its Subsidiaries to) afford the other's officers, employees, counsel, accountants and other authorized representatives ("REPRESENTATIVES") reasonable access, during normal business hours throughout the period prior to the Effective Time, to its properties, books, contracts and records and, during such period, each shall (and each shall cause its Subsidiaries to) furnish promptly to the other all information concerning its business, properties and personnel as may reasonably be requested; provided, that no investigation pursuant to this Section shall affect or be deemed to modify any representation or warranty made by the Company, Parent or Merger Sub; and, provided, further, that the foregoing shall not require the Company or Parent to permit any inspection, or to disclose any information, that in the reasonable judgment of the Company or Parent, as the case may be, would result in the disclosure of any trade secrets of third parties or violate any of its obligations with respect to confidentiality if the Company or Parent, as the case may be, shall have used reasonable efforts to obtain the consent of such third party to such inspection or disclosure. All requests for information made pursuant to this Section shall be directed to an executive officer of the Company or Parent, as the case may be, or such Person as may be designated by any of their respective executive officers, as the case may be. All such information shall be governed by the terms of the Confidentiality Agreement.

7.8 Affiliates.

(a) At least ten (10) days prior to the date of the Shareholders' Meeting, the Company shall deliver to Parent a list of names and addresses of those Persons who the Company expects will be, as of thirty (30) days prior to the Effective Time, "AFFILIATES" of the Company for the purposes of applicable interpretations regarding the pooling-of-interests method of accounting. There shall be added to such list the names and addresses of any other Person subsequently identified by the Company as a Person who may be deemed within thirty (30) days prior to the Effective Time to be an affiliate of the Company for the purposes described above. The Company shall exercise its commercially reasonable efforts to deliver or cause to be delivered to Parent, prior to the date of the Shareholders' Meeting, from each affiliate of the Company identified in the foregoing list (as the same may be supplemented as aforesaid), a letter dated as of the date of the Shareholders' Meeting substantially in the form attached as Exhibit B-1 (the "COMPANY AFFILIATES LETTER").

(b) At least ten (10) days prior to the date of the Parent Stockholders' Meeting, Parent shall deliver to the Company a list of names and addresses of those Persons who Parent expects will be, as of thirty (30) days prior to the Effective Time, "AFFILIATES" of Parent for the purposes of applicable

interpretations regarding the "POOLING-OF-INTERESTS" method of accounting. There shall be added to such list the names and addresses of any other Person as being a Person who may be deemed within thirty (30) days prior to the Effective Time to be such an affiliate of Parent for the purposes described above. Parent shall exercise its commercially reasonable efforts to deliver or cause to be delivered to the Company, prior to the date of the Parent Stockholders' Meeting, from each of such affiliates of Parent identified in the foregoing list (as the same may be supplemented as aforesaid), a letter dated as of the Closing Date substantially in the form attached as Exhibit B-2 (the "PARENT AFFILIATES LETTER").

7.9 Stock Exchange Listing and De-listing. Parent shall use its commercially reasonable efforts to cause the shares of Parent Common Stock to be issued in the Merger to be approved for listing on the Nasdaq National Market prior to the Closing Date. The Surviving Corporation shall use its commercially reasonable efforts to cause the Shares to be removed from quotation on the Nasdaq National Market and de-registered under the Exchange Act as soon as practicable following the Effective Time.

7.10 Publicity. The initial press release with respect to the Merger shall be a joint press release and thereafter the Company and Parent each shall consult with the other prior to issuing any press releases or otherwise making public announcements with respect to the Merger and the other transactions contemplated by this Agreement and prior to making any filings with any third party and/or any Governmental Entity (including any national securities exchange or national market systems) with respect thereto, except as may be required by law or by obligations pursuant to any listing agreement with or rules of any national securities exchange or national market system.

7.11 Stock Options; Election of Directors.

(a) Stock Options.

(i) Each Company Option under the Company Stock Plans shall, at the Effective Time, in accordance with the terms of the Company Stock Plans pursuant to which such Company Options were issued, be deemed to constitute options to acquire, on the same terms and conditions as were applicable under such Company Options immediately prior to the Effective Time, a number of shares of Parent Common Stock equal to the product (rounded down to the nearest whole number) obtained by multiplying (x) the number equal to the number of Shares the holder of each such Company Option would have been entitled to receive immediately prior to the Effective Time had such holder exercised such Company Option in full (assuming for such purposes that such Company Option was fully exercisable at such time) immediately prior to the Effective Time and (y) the Exchange Ratio, at a price per share of Parent Common Stock (rounded up to the nearest whole cent) equal to (A) the aggregate exercise price for the Shares otherwise purchasable pursuant to each such Company Option (assuming for such purposes that such Company Option was fully exercisable at such time) divided by (B) the number of full shares of Parent Common Stock deemed purchasable pursuant to each such Company Option in accordance with the foregoing; provided, however, the term, exercisability, vesting schedule, status as an "INCENTIVE STOCK OPTION" under Section 422 of the Code, if applicable, and all of the other terms of the Options shall otherwise remain unchanged, and any such adjustment for a Company option intended to be an incentive stock option shall comply with Section 422 of the Code.

(ii) At or prior to the Effective Time, the Company shall make all necessary arrangements with respect to the Company Stock Plans to permit the assumption of the Company Options by Parent. Effective at the Effective Time, Parent shall assume each Company Option in accordance with the terms of the Stock Plans under which it was issued and the stock option agreement by which it is evidenced. At or prior to the Effective Time, Parent shall take all corporate action necessary to reserve for issuance a sufficient number of shares of Parent Common Stock for delivery upon exercise of Company Options. As soon as practicable after the Effective Time, Parent shall file a registration statement on Form S-8, or, if unavailable, a registration statement on Form S-3 (or any successor forms), or another appropriate form with respect to the Parent Common Stock subject to Company Options, and shall use its commercially reasonable efforts to cause such registration statement to become and remain effective (and maintain the current status of the prospectus or

prospectuses contained therein), as well as comply with any applicable state securities or "BLUE SKY" laws, for so long as any Company Options remain outstanding.

(iii) Prior to the Effective Time, the Board of Directors of Parent shall take all actions necessary to ensure that the options to purchase Parent Common Stock (resulting from Company Options) held by the officers and directors of the Company in accordance with this Section 7.11(a) shall be exempt for purposes of Rule 16b-3 under the Exchange Act.

(b) Election to Parent's Board of Directors. At the Effective Time of the Merger, Parent shall increase the size of its Board of Directors to seven members and cause (i) Robert R. Anderson to be appointed to the Board of Directors of Parent as a member of the class of directors whose terms will expire at the annual meeting of stockholders to be held in 2002, and (ii) Hans-Jochen Kahl to be appointed to the Board of Directors of Parent as a member of the class of directors whose terms will expire at the annual meeting of stockholders to be held in 2003.

7.12 Expenses. Parent shall pay all charges and expenses, including those of the Exchange Agent, in connection with the transactions contemplated in Section 4. Except as otherwise provided in this Section 7.12 and Section 9.6, whether or not the Merger is consummated, all costs and expenses incurred in connection with this Agreement and the Merger and the other transactions contemplated by this Agreement shall be paid by the party incurring such expense.

7.13 Indemnification; Directors' and Officers' Insurance.

(a) The Certificate shall contain the provisions with respect to indemnification set forth in Article VII of the bylaws of the Company on the date of this Agreement and shall provide for indemnification to the fullest extent permitted by and in accordance with the DGCL, which provisions shall not be amended, repealed or otherwise modified for a period of six years after the Effective Time (or, in the case of matters known prior to the Effective Time which have not been resolved prior to the sixth anniversary of the Effective Time, until such matters are finally resolved) in any manner that would adversely affect the rights thereunder of individuals who at any time prior to the Effective Time were directors or officers of the Company in respect of actions or omissions occurring at or prior to the Effective Time (including, without limitation, the transactions contemplated by this Agreement).

(b) Following the Effective Time, Parent shall indemnify and hold harmless, to the fullest extent permitted under applicable law (and Parent shall also advance expenses as incurred to the fullest extent permitted under applicable law), each present and former director and officer of the Company and its Subsidiaries (collectively, the "INDEMNIFIED PARTIES") against any costs or expenses (including attorneys' fees), judgments, fines, losses, claims, damages or liabilities (collectively, "COSTS") reasonably incurred in connection with any claim, action, suit, proceeding or investigation, whether civil, criminal, administrative or investigative, arising out of or pertaining to matters existing or occurring at or prior to the Effective Time, including the transactions contemplated by this Agreement.

(c) Any Indemnified Party wishing to claim indemnification under paragraph (b) of this Section 7.13, upon receiving written notification of any such claim, action, suit, proceeding or investigation, shall promptly notify Parent thereof, but the failure to so notify shall not relieve Parent of any liability it may have to such Indemnified Party to the extent that such failure does not prejudice Parent. In the event of any such claim, action, suit, proceeding or investigation (whether arising before or after the Effective Time), (i) Parent shall have the right within ten (10) days following the notification of Parent by the Indemnified Person of such claim, action, suit, proceeding or investigation to assume the defense thereof (with counsel of its selection, which may be regular corporate counsel to Parent) and Parent shall not be liable to such Indemnified Parties for any legal expenses of other counsel subsequently incurred by such Indemnified Parties in connection with the defense thereof, except that if Parent elects not to assume such defense, or representation of the Indemnified Parties by counsel selected by Parent would pose a conflict of interest, the Indemnified Parties may retain counsel satisfactory to them, and Parent shall pay all reasonable fees and expenses of such counsel for the Indemnified Parties. If such indemnity is not available with respect to any Indemnified Party, then Parent and the Indemnified Party shall contribute to

the amount payable in such proportion as is appropriate to reflect the relative faults and benefits of the Surviving Corporation (in the case of Parent) and the Indemnified Parties. No settlements shall be made on behalf of an Indemnified Party without such Indemnified Party's consent unless such settlement provide for a full release of such Indemnified Party. No Indemnified Party may enter into any settlement without the prior written consent of the Parent.

(d) The Surviving Corporation shall maintain the Company's existing officers' and directors' liability insurance ("D&O INSURANCE") for a period of six years after the Effective Time so long as the annual premium therefor is not in excess of 200% of the last annual premium paid prior to the date hereof (the "CURRENT PREMIUM"); provided, however, that if the existing D&O Insurance is terminated or cancelled during such six-year period, the Surviving Corporation shall use commercially reasonable efforts to obtain as much D&O Insurance as can be obtained for the remainder of such period for a premium not in excess (on an annualized basis) of 200% of the Current Premium and shall agree to indemnify the directors and officers for any Costs not covered by such D&O Insurance.

(e) The provisions of this Section are intended to be for the benefit of, and shall be enforceable by, each of the Indemnified Parties, their heirs and their representatives and shall be in addition to any other rights to indemnification (e.g. any assumed indemnification obligations).

7.14 Takeover Statute. If any Takeover Statute is or may become applicable to the Merger or the other transactions contemplated by this Agreement, each of Parent and the Company and their respective Board of Directors shall grant such approvals and take such actions as are reasonably necessary so that such transactions may be consummated as promptly as practicable on the terms contemplated by this Agreement or by the Merger and otherwise act to eliminate or minimize the effect's of such statute or regulation on such transactions.

7.15 Parent Vote. Parent shall vote (or consent with respect to) or cause to be voted (or a consent to be given with respect to) any Shares and any shares of common stock of Merger Sub beneficially owned by it or any of its Affiliates or with respect to which it or any of its Affiliates has the power (by agreement, proxy or otherwise) to cause to be voted (or to provide a consent), in favor of the approval of this Agreement at the Shareholders' Meeting or any other meeting of stockholders of the Company or Merger Sub, respectively, at which this Agreement shall be submitted for approval and at all adjournments or postponements thereof (or, if applicable, by any action of stockholders of either the Company or Merger Sub by consent in lieu of a meeting).

7.16 "POOLING OF INTERESTS" Letters. Each of Parent and the Company shall use their respective commercially reasonable efforts to obtain from their respective independent accountants the "POOLING OF INTERESTS" letters described in Section 8.1(h).

7.17 Offers of Employment. At the Effective Time, the Parent or Surviving Corporation shall offer to employ all employees of the Company as of immediately prior to the Effective Time on terms and conditions that are substantially the same as their terms and conditions immediately prior to the Effective Time. Parent will give credit for past services of such employees with the Company or its Affiliates for purposes of eligibility, vesting and benefits levels to the extent permitted under the Parent's employee benefits plans. The employees of the Company will be provided with benefits under employee benefit plans that are not materially less favorable in the aggregate than the Plans provided by the Parent to its employees.

7.18 Stockholder Litigation. Until the earlier of the termination of this Agreement in accordance with its terms or the Effective Time, the Company shall give the Parent the opportunity to participate in the defense or settlement of any stockholder litigation against the Company or its Board of Directors relating to this Agreement or any of the transactions contemplated by this Agreement, and shall not settle any such litigation without the Parent's prior written consent, which will not be unreasonably withheld or delayed.

VIII. CONDITIONS

8.1 Conditions to Each Party's Obligation to Effect the Merger. The respective obligation of each party to effect the Merger is subject to the satisfaction or waiver at or prior to the Effective Time of each of the following conditions:

(a) Stockholder Approval. This Agreement shall have been duly approved by holders of Shares constituting the Company Requisite Vote and shall have been duly approved by the sole stockholder of Merger Sub (prior to the execution of this Agreement) in accordance with applicable law and the certificate of incorporation or articles of organization and bylaws of each such corporation (or other organizational documents of such corporation) and the issuance of Parent Common Stock pursuant to this Agreement shall have been duly approved by the holders of Parent Common Stock constituting the Parent Requisite Vote in accordance with the Massachusetts Business Corporation Law.

(b) Nasdaq National Market Listing. The shares of Parent Common Stock issuable to the stockholders of the Company pursuant to this Agreement shall have been authorized for listing on the Nasdaq National Market.

(c) HSR. The waiting period applicable to the consummation of the Merger under the HSR Act shall have expired or been earlier terminated.

(d) Other Regulatory Consents. Other than the filing provided for in Section 1.3, the parties shall have made or filed all notices, reports or other filings required to be made or filed with, and obtained all registrations, approvals, permits or authorizations required to be obtained from or filed with, any Governmental Entity as contemplated by Sections 5.4 and 6.6 ("GOVERNMENTAL CONSENTS") which if not obtained or filed would be reasonably likely to have a Parent Material Adverse Effect (assuming for this purpose that the Effective Time had occurred, and, at such time, the Company is a Subsidiary of Parent).

(e) Litigation. No court or Governmental Entity of competent jurisdiction shall have enacted, issued, promulgated, enforced or entered any statute, law, ordinance, rule, regulation, judgment, decree, injunction or other order that is in effect and permanently enjoins or otherwise prohibits consummation of the Merger (collectively, an "ORDER").

(f) S-4. The S-4 Registration Statement shall have become effective under the Securities Act. No stop order suspending the effectiveness of the S-4 Registration Statement shall have been issued, and no proceedings for that purpose shall have been initiated or be threatened, by the SEC.

(g) Blue Sky Approvals. Parent shall have received all state securities and "BLUE SKY" permits and approvals, if any, necessary to consummate the transactions contemplated hereby.

(h) "POOLING OF INTERESTS" Letters. (i) Parent and the Company shall have each received a letter from PriceWaterhouseCoopers LLP, independent accountants to Parent, dated as of the Closing Date and addressed to Parent and the Company, stating that the acquisition of the Company by Parent will be treated as a "POOLING OF INTERESTS" as described in Accounting Principles Board Opinion No. 16 and applicable rules and regulations of the SEC, and (ii) Parent and the Company shall have received a letter from KPMG LLP, independent accountants to the Company, dated as of the Closing Date and addressed to Parent and the Company, stating that the Company is a pooling candidate for purposes of the transactions contemplated hereby in conformity with GAAP as described in Accounting Principles Board Opinion No. 16 and applicable rules and regulations of the SEC.

8.2 Conditions to Obligations of Parent and Merger Sub. The obligations of Parent and Merger Sub to effect the Merger are also subject to the satisfaction or waiver by Parent at or prior to the Effective Time of the following conditions:

(a) Representations and Warranties. The representations and warranties of the Company set forth in this Agreement shall be true and correct as of the Closing Date as though made on and as of the Closing Date (except to the extent any such representation or warranty expressly speaks as of an earlier date), and Parent shall have received a certificate signed on behalf of the Company by an executive

officer of the Company to such effect; provided, however, that notwithstanding anything herein to the contrary, this Section (a) shall be deemed to have been satisfied as to representations and warranties not qualified by materiality or Company Material Adverse Effect even if such representations or warranties are not so true and correct unless the failure of such representations or warranties to be so true and correct would have a Company Material Adverse Effect or would prevent, materially delay or materially impair the ability of the Company to consummate the transactions contemplated by this Agreement.

(b) Performance of Obligations of the Company. The Company shall have performed in all material respects all material obligations required to be performed by it under this Agreement at or prior to the Closing Date, and Parent shall have received a certificate signed on behalf of the Company by an executive officer of the Company to such effect.

(c) Tax Opinion. Parent shall have received the opinion of Hale and Dorr LLP, counsel to Parent, dated the Closing Date, to the effect that the Merger will be treated for Federal income tax purposes as a reorganization within the meaning of Section 368 (a) of the Code; provided that if Hale and Dorr LLP does not render such opinion, this condition shall nonetheless be deemed satisfied if Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C. renders such opinion to Parent (it being agreed that Parent and the Company shall each provide reasonable cooperation, including making reasonable representations, to Hale and Dorr LLP or Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C., as the case may be, to enable them to render such opinion).

(d) No Company Material Adverse Effect. Between the date of this Agreement and the Effective Time, there shall not have occurred any Company Material Adverse Effect, nor shall there have been any change, event or condition that, with the passage of time, would reasonably be expected to result in a Company Material Adverse Effect.

(e) Employment Agreement. The employment agreements between the Parent and each of those individuals listed on Schedule 8.2(e) of this Agreement shall be in full force and effect.

(f) Resignations. The Parent shall have received written resignations, effective as of the Effective Time, of each officer and director of the Company and its Subsidiaries.

8.3 Conditions to Obligations of the Company. The obligation of the Company to effect the Merger is also subject to the satisfaction or waiver by the Company at or prior to the Effective Time of the following conditions:

(a) Representations and Warranties. The representations and warranties of Parent and Merger Sub set forth in this Agreement shall be true and correct as of the Closing Date as though made on and as of the Closing Date, (except to the extent any such representation and warranty expressly speaks as of an earlier date) and the Company shall have received a certificate signed on behalf of Parent by an executive officer of Parent and on behalf of Merger Sub by an executive officer of Merger Sub in each case to such effect; provided, however, that notwithstanding anything herein to the contrary, this Section (a) shall be deemed to have been satisfied as to representations and warranties not qualified by materiality or Parent Material Adverse Effect even if such representations or warranties are not so true and correct unless the failure of such representations or warranties to be so true and correct would have a Parent Material Adverse Effect or would prevent Parent from consummating the transactions contemplated by this Agreement.

(b) Performance of Obligations of Parent and Merger Sub. Each of Parent and Merger Sub shall have performed in all material respects all material obligations required to be performed by it under this Agreement at or prior to the Closing Date, and the Company shall have received a certificate signed on behalf of Parent and Merger Sub by an executive officer of Parent to such effect.

(c) Tax Opinion. The Company shall have received the opinion of Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C., counsel to the Company, dated the Closing Date, to the effect that the Merger will be treated for Federal income tax purposes as a reorganization within the meaning of Section 368 (a) of the Code; provided that if Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C. does not render

such opinion, this condition shall nonetheless be deemed satisfied if Hale and Dorr LLP renders such opinion to the Company (it being agreed that Parent and the Company shall each provide reasonable cooperation, including making reasonable representations, to Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C. or Hale and Dorr LLP, as the case may be, to enable them to render such opinion).

(d) No Parent Material Adverse Effect. Between the date of this Agreement and the Effective Time, there shall not have occurred any Parent Material Adverse Effect, nor shall there have been any change, event or condition that, with the passage of time, would reasonably be expected to result in a Parent Material Adverse Effect.

IX. TERMINATION

9.1 Termination by Mutual Consent. This Agreement may be terminated and the Merger may be abandoned at any time prior to the Effective Time, whether before or after the approval by stockholders of the Company and Parent, respectively, each referred to in Section 7.1(a), by mutual written consent of the Company and Parent by action of their respective Boards of Directors.

9.2 Termination by Either Parent or the Company. This Agreement may be terminated and the Merger may be abandoned at any time prior to the Effective Time by action of the Board of Directors of either Parent or the Company if (a) the Merger shall not have been consummated by March 31, 2001, whether such date is before or after the date of receipt of the Company Requisite Vote and/or the Parent Requisite Vote (the "TERMINATION DATE"), (b) the approval of the Company's stockholders required by Section 8.1(a) shall not have been obtained at a meeting duly convened therefor or at any adjournment or postponement thereof, (c) the approval of Parent's stockholders as required by Section 8.1(a) shall not have been obtained at a meeting duly convened therefor or at any postponement or adjournment thereof or (d) any Order permanently restraining, enjoining or otherwise prohibiting consummation of the Merger shall become final and non-appealable after the parties have used their respective commercially reasonable efforts to have such Order removed, repealed or overturned (whether before or after the approval by the stockholders of the Company); provided, that the right to terminate this Agreement shall not be available to any party that has breached in any material respect its obligations under this Agreement in any manner that shall have proximately contributed to the occurrence of the failure of the Merger to be consummated.

9.3 Termination by the Company. This Agreement may be terminated and the Merger may be abandoned at any time prior to the Effective Time, whether before or after the approval by stockholders of the Company referred to in Section 8.1(a), by action of the Board of Directors of the Company if (a) there has been a material breach by Parent or Merger Sub of any material covenant or agreement contained in this Agreement that is not curable or, if curable, is not cured within thirty (30) days after written notice of such breach is given by the Company to the party committing such breach; (b) the Board of Directors of the Parent shall have failed to recommend approval of the Merger in the Proxy Statement or shall have withdrawn or modified its recommendation of the Merger; or (c) (i) the Company after the date hereof has received an unsolicited Acquisition Proposal that its Board of Directors has determined after consultation with its financial advisor is a Superior Proposal, (ii) the Company has complied with all of the provisions of Section 7.2(a)(i), (iii) the Board of Directors of the Company has determined in good faith after consultation with its outside legal counsel that termination of this Agreement is necessary for such Board of Directors to fulfill with its fiduciary duties under applicable law, and (iv) the Company, contemporaneously with, and as a condition to, its termination of this Agreement, pays to Parent the fees and expenses provided for in Section 9.6.

9.4 Termination by Parent. This Agreement may be terminated and the Merger may be abandoned at any time prior to the Effective Time by action of the Board of Directors of Parent if (a) there has been a material breach by the Company of any material covenant or agreement contained in this Agreement that is not curable or, if curable, is not cured within thirty (30) days after written notice of such breach is given by Parent to the party committing such breach; (b) the Board of Directors of the Company shall have failed to recommend approval of the Merger in the Proxy Statement or shall have withdrawn or modified its recommendation of the Merger; (c) the Board of Directors of the Company shall have approved or recommended to the stockholders of the Company an Alternative Transaction (as defined in Section 9.6(d)

below); (d) an Alternative Transaction shall have been announced or otherwise publicly known and the Board of Directors of the Company shall have (A) failed to recommend against acceptance of such Alternative Transaction by its shareholders within ten (10) days of delivery of a written request from the Parent for such action or (B) failed to reconfirm its approval and recommendation of this Agreement and the transactions contemplated hereby within ten (10) days of delivery of a written request from the Parent for such action or (e) a tender offer or exchange offer for 20% or more of the outstanding Shares is commenced (other than by the Parent or an Affiliate of the Parent) and the Board of Directors of the Company recommends that the shareholders of the Company tender their shares in such tender or exchange offer or, within ten (10) days after such tender or exchange offer, fails to recommend against acceptance of such offer or takes no position with respect to the acceptance thereof.

9.5 Effect of Termination and Abandonment. In the event of termination of this Agreement and the abandonment of the Merger pursuant to this Section 9 (other than as set forth in Section 9.6), this Agreement shall become void and of no effect with no liability on the part of any party hereto (or of any of its directors, officers, employees, agents, legal and financial advisors or other representatives); provided, however, that except as otherwise provided herein, no such termination shall relieve any party hereto of any liability or damages resulting from any willful breach of this Agreement.

9.6 Fees and Expenses.

(a) The Company shall pay the Parent up to \$500,000 as reimbursement for expenses of the Parent actually incurred relating to the transactions contemplated by this Agreement prior to termination (including, but not limited to, fees and expenses of the Parent's counsel, accountants and financial advisors, but excluding any discretionary fees paid to such financial advisors), upon the termination of this Agreement (i) by the Parent pursuant to Section 9.2(a) as a result of the failure of the Company to satisfy the condition set forth in Section 8.2(a); or (ii) by the Parent or the Company pursuant to Section 9.2(b) under circumstances in which no fee is payable to Parent under Section 9.6(b).

(b) The Company shall pay the Parent a termination fee of \$9,075,000 upon the earliest to occur of the following events: (i) the termination of this Agreement by the Parent pursuant to Section 9.4; (ii) the termination of this Agreement by the Company pursuant to Section 9.3(c); or (iii) the termination of this Agreement by either Parent or the Company pursuant to Section 9.2(b) if, at or prior to such termination, a bona fide proposal for an Alternative Transaction with respect to the Company shall have been publicly announced. Any termination fee paid by the Company pursuant to this Section 9.6(b) shall be the Parent's sole and exclusive remedy for any termination of this Agreement in accordance with the provisions of this Section 9.6(b).

(c) If the Company fails to promptly pay to the Parent any expense reimbursement or fee due hereunder, the defaulting party shall pay the costs and expenses (including legal fees and expenses) in connection with any action, including the filing of any lawsuit or other legal action, taken to collect payment, together with interest on the amount of any unpaid fee at the publicly announced prime rate of Fleet Bank, N.A. plus five percent per annum, compounded quarterly, from the date such expense reimbursement or fee was required to be paid.

(d) As used in this Agreement, "ALTERNATIVE TRANSACTION" means either (i) a transaction pursuant to which any person (or group of persons) other than the Parent or its affiliates (a "THIRD PARTY"), acquires more than 20% of the outstanding Shares pursuant to a tender offer or exchange offer or otherwise, (ii) a merger or other business combination involving the Company pursuant to which a Third Party acquires more than 20% of the outstanding Shares or of the entity surviving such merger or business combination, (iii) any other transaction pursuant to which any Third Party acquires control of assets (including for this purpose the outstanding equity securities of Subsidiaries of the Company, and the entity surviving any merger or business combination including any of them) of the Company having a fair market value equal to more than 20% of the fair market value of all the assets of the Company immediately prior to such transaction, or (iv) any public announcement by a Third Party of a proposal, plan or intention to do any of the foregoing or any agreement to engage in any of the foregoing.

(e) The Parent shall pay the Company up to \$500,000 as reimbursement for expenses of the Company actually incurred relating to the transactions contemplated by this Agreement prior to termination (including, but not limited to, fees and expenses of the Company's counsel, accountants and financial advisors, but excluding any discretionary fees paid to such financial advisors), upon the termination of this Agreement (i) by the Company pursuant to Section 9.2(a) as a result of the failure of the Parent to satisfy the condition set forth in Section 8.3(a), or (ii) by the Parent or the Company pursuant to Section 9.2(c).

X. MISCELLANEOUS AND GENERAL

10.1 Survival. This Section 10 and the agreements of the Company, Parent and Merger Sub contained in Sections 7.6 (Accounting), 7.9 (Stock Exchange Listing and De-listing), 7.11 (Stock Options; Election of Directors), 7.12 (Expenses) and 7.13 (Indemnification; Directors' and Officers' Insurance) and 7.16 (Offers of Employment) shall survive the consummation of the Merger. This Section 10, the agreements of the Company, Parent and Merger Sub contained in Section 7.12 (Expenses), Section 9.5 (Effect of Termination and Abandonment) and the Confidentiality Agreement and the Standstill Agreement (each as hereinafter defined) shall survive the termination of this Agreement. All other representations, warranties, covenants and agreements in this Agreement shall not survive the consummation of the Merger or the termination of this Agreement.

10.2 Modification or Amendment. Subject to the provisions of applicable Law, at any time prior to the Effective Time, the parties hereto may modify or amend this Agreement, by written agreement executed and delivered by duly authorized officers of the respective parties.

10.3 Waiver of Conditions. The conditions to each of the parties' obligations to consummate the Merger are for the sole benefit of such party and may be waived by such party in whole or in part to the extent permitted by applicable law.

10.4 Counterparts. This Agreement may be executed in any number of counterparts, each such counterpart being deemed to be an original instrument, and all such counterparts shall together constitute the same agreement.

10.5 Governing Law and Venue; Waiver of Jury Trial. THIS AGREEMENT SHALL BE DEEMED TO BE MADE IN AND IN ALL RESPECTS SHALL BE INTERPRETED, CONSTRUED AND GOVERNED BY AND IN ACCORDANCE WITH THE LAW OF THE STATE OF DELAWARE WITHOUT REGARD TO THE CONFLICT OF LAW PRINCIPLES THEREOF. The parties hereby irrevocably submit to the jurisdiction of the courts of the Commonwealth of Massachusetts and the Federal courts of the United States of America located in the Commonwealth of Massachusetts solely in respect of the interpretation and enforcement of the provisions of this Agreement and of the documents referred to in this Agreement, and in respect of the transactions contemplated hereby, and hereby waive, and agree not to assert, as a defense in any action, suit or proceeding for the interpretation or enforcement hereof or of any such document, that it is not subject thereto or that such action, suit or proceeding may not be brought or is not maintainable in said courts or that the venue thereof may not be appropriate or that this Agreement or any such document may not be enforced in or by such courts, and the parties hereto irrevocably agree that all claims with respect to such action or proceeding shall be heard and determined in such a Commonwealth of Massachusetts or Federal court. The parties hereby consent to and grant any such court jurisdiction over the person of such parties and over the subject matter of such dispute and agree that mailing of process or other papers in connection with any such action or proceeding in the manner provided in Section 10.6 or in such other manner as may be permitted by law shall be valid and sufficient service thereof.

10.6 Notices. Any notice, request, instruction or other document to be given hereunder by any party to the others shall be in writing and delivered personally or sent by registered or certified mail, postage prepaid, or by facsimile:

if to Parent or Merger Sub:
 MKS Instruments, Inc.
 Six Shattuck Road
 Andover, Massachusetts 01810
 Fax: (978) 975-3756
 Attention: John R. Bertucci, Chairman and CEO

with a copy to:
 Hale and Dorr LLP
 60 State Street
 Boston, Massachusetts 02109
 Attention: Mark G. Borden, Esq.
 Fax: (617) 526-5000

if to the Company:
 Applied Science and Technology, Inc.
 90 Industrial Way
 Wilmington, Massachusetts 01887
 Fax: (978) 284-4442
 Attention: Richard S. Post, Chairman and CEO

with a copy to:
 Mintz, Levin, Cohn, Ferris,
 Glosky and Popeo, P.C.
 One Financial Center
 Boston, Massachusetts 02111
 Attention: Neil H. Aronson, Esq.
 Fax: (617) 542-2241

or to such other persons or addresses as may be designated in writing by the party to receive such notice as provided above.

10.7 Entire Agreement: no other representations. This Agreement including any exhibits hereto), the Company Disclosure Letter, the Parent Disclosure Letter, the Confidentiality Agreement, dated August 15, 2000, between Parent and Company (the "CONFIDENTIALITY AGREEMENT"), and the Standstill Agreement, dated August 15, 2000 between Parent and Company (the "STANDSTILL AGREEMENT") constitute the entire agreement, and supersede all other prior agreements, understandings, representations and warranties both written and oral, among the parties, with respect to the subject matter hereof. EACH PARTY HERETO AGREES THAT, EXCEPT FOR THE REPRESENTATIONS AND WARRANTIES CONTAINED IN THIS AGREEMENT, THE CONFIDENTIALITY AGREEMENT AND THE STANDSTILL AGREEMENT, NEITHER PARENT AND MERGER SUB NOR THE COMPANY MAKES ANY OTHER REPRESENTATIONS OR WARRANTIES, AND EACH HEREBY DISCLAIMS ANY OTHER REPRESENTATIONS OR WARRANTIES MADE BY ITSELF OR ANY OF ITS OFFICERS, DIRECTORS, EMPLOYEES, AGENTS, FINANCIAL AND LEGAL ADVISORS OR OTHER REPRESENTATIVES, WITH RESPECT TO THE EXECUTION AND DELIVERY OF THIS AGREEMENT OR THE TRANSACTIONS CONTEMPLATED HEREBY, NOTWITHSTANDING THE DELIVERY OR DISCLOSURE TO THE OTHER OR THE OTHER'S REPRESENTATIVES OF ANY DOCUMENTATION OR OTHER INFORMATION WITH RESPECT TO ANY ONE OR MORE OF THE FOREGOING.

10.8 No Third Party Beneficiaries. Except as provided in Section 7.11 (Stock Options; Election of Director), Section 7.13 (Indemnification; Directors' and Officers' Insurance), and Section 7.16 (Offers of

Employment) this Agreement is not intended to confer upon any Person other than the parties hereto any rights or remedies hereunder.

10.9 Obligations of Parent and of the Company. Whenever this Agreement requires a Subsidiary of Parent to take any action, such requirement shall be deemed to include an undertaking on the part of Parent to cause such Subsidiary to take such action. Whenever this Agreement requires a Subsidiary of the Company to take any action, such requirement shall be deemed to include an undertaking on the part of the Company to cause such Subsidiary to take such action and, after the Effective Time, on the part of the Surviving Corporation to cause such Subsidiary to take such action.

10.10 Severability. The provisions of this Agreement shall be deemed severable and the invalidity or unenforceability of any provision shall not affect the validity or enforceability of the other provisions hereof. If any provision of this Agreement, or the application thereof to any Person or any circumstance, is invalid or unenforceable, (a) a suitable and equitable provision shall be substituted therefor in order to carry out, so far as may be valid and enforceable, the intent and purpose of such invalid or unenforceable provision and (b) the remainder of this Agreement and the application of such provision to other Persons or circumstances shall not be affected by such invalidity or unenforceability, nor shall such invalidity or unenforceability affect the validity or enforceability of such provision, or the application thereof, in any other jurisdiction.

10.11 Interpretation. The table of contents and headings herein are for convenience of reference only, do not constitute part of this Agreement and shall not be deemed to limit or otherwise affect any of the provisions hereof. Where a reference in this Agreement is made to a Section or Exhibit, such reference shall be to a Section of or Exhibit to this Agreement unless otherwise indicated. Whenever the words "INCLUDE," "INCLUDES" or "INCLUDING" are used in this Agreement, they shall be deemed to be followed by the words "WITHOUT LIMITATION."

10.12 Assignment. This Agreement shall not be assignable by operation of law or otherwise.

10.13 Glossary of Terms. The following sets forth the location of definitions of capitalized terms defined in the body of this Agreement:

"Acquisition Proposal"	Section 7.2(a)
"Affiliates"	Section 7.8(a)
"Alternative Transaction"	Section 9.6(d)
"Antitrust Laws"	Section 7.5(e)
"Antitrust Order"	Section 7.5(e)
"Audit Date"	Section 5.5
"Bankruptcy and Equity Exception"	Section 5.3(a)
"Bylaws"	Section 2.2
"Certificate"	Section 2.1
"Certificate of Merger"	Section 1.3
"Closing"	Section 1.2
"Closing Date"	Section 1.2
"Code"	2nd Recital
"Company Affiliates Letter"	Section 7.8(a)
"Company Common Stock"	Section 4.1(a)
"Company Disclosure Letter"	Section 5
"Company Intellectual Property Rights"	Section 5.16(b)(ii)
"Company Leases"	Section 5.11(a)
"Company Material Adverse Effect"	Section 5.1
"Company Options"	Section 5.2
"Company Preferred Stock"	Section 5.2(a)
"Company Reports"	Section 5.5
"Company Requisite Vote"	Section 5.3(a)

"Company Rights"	Section 5.2(a)
"Company Rights Plan"	Section 5.2(a)
"Company Stock Plans"	Section 5.2
"Company Stockholder Agreement"	Section 5.19
"Compensation and Benefit Plans"	Section 5.8
"Confidentiality Agreement"	Section 10.7
"Contracts"	Section 5.4(b)
"Costs"	Section 7.13(b)
"Current Premium"	Section 7.13(d)
"D&O Insurance"	Section 7.13(d)
"Department"	Section 1.3
"DGCL"	Section 1.1
"Effective Time"	Section 1.3
"Environmental Law"	Section 5.12
"ERISA"	Section 5.8(b)
"ERISA Affiliate"	Section 5.8(a)
"Exchange Act"	Section 5.4(a)
"Exchange Agent"	Section 4.2(a)
"Exchange Fund"	Section 4.2(a)
"Exchange Ratio"	Section 4.1(a)
"Excluded Shares"	Section 4.1(a)
"GAAP"	Section 5.1
"Governmental Entity"	Section 5.4(a)
"Governmental Consents"	Section 8.1(d)
"Hazardous Substance"	Section 5.12
"HSR Act"	Section 5.4(a)
"Indemnified Parties"	Section 7.13(b)
"IRS"	Section 5.8(b)
"Laws"	Section 5.8
"Liens"	Section 5.23
"Merger"	1st Recital
"Merger Consideration"	Section 4.1(a)
"Order"	Section 8.1(e)
"Parent Affiliates Letter"	Section 7.8(b)
"Parent Audit Date"	Section 6.7
"Parent Common Stock"	Section 4.1(a)
"Parent Companies"	Section 4.1(a)
"Parent Disclosure Letter"	Section 6
"Parent Intellectual Property Rights"	Section 6.17(b)(ii)
"Parent Material Adverse Effect"	Section 6.3
"Parent Reports"	Section 6.7
"Parent Requisite Vote"	Section 6.7
"Parent Common Stock"	Section 4.1(a)
"Parent Companies"	Section 4.1(a)
"Parent Stock Plan"	Section 6.4
"Parent Stockholder Agreement"	Section 6.19
"Parent Preferred Stock"	Section 6.4
"Parent Shareholders' Meeting"	Section 7.4

"Parent Third-Party Intellectual Property Rights"	Section 6.17(b)(i)
"Parent Voting Debt"	Section 6.4
"Pension Plan"	Section 5.8
"Permits"	Section 5.9
"Person"	Section 4.2(b)
"Plans"	Section 5.8
"Prospectus/Proxy Statement"	Section 7.3
"Representatives"	Section 7.7
"S-4 Registration Statement"	Section 7.3
"SEC"	Section 5.5
"Securities Act"	Section 5.4(a)
"Share"	Section 4.1(a)
"Shares"	Section 4.1(a)
"Share Certificate"	Section 4.1(a)
"Shareholders' Meeting"	Section 7.4
"Standstill Agreement"	Section 10.7
"Subsidiary"	Section 5.1
"Superior Proposal"	Section 7.2(a)(i)(A)
"Surviving Corporation"	Section 1.1
"Tax"	Section 5.14
"Tax Return"	Section 5.14
"Taxable"	Section 5.14
"Taxes"	Section 5.14
"Termination Date"	Section 9.2
"Third Party"	Section 9.6(e)
"Third-Party Intellectual Property Rights"	Section 5.16(b)(i)
"Voting Debt"	Section 5.2(a)

IN WITNESS WHEREOF, this Agreement has been duly executed and delivered by the duly authorized officers of the parties hereto as of the date first written above.

APPLIED SCIENCE AND TECHNOLOGY, INC.

By: /s/ RICHARD S. POST

Name: Richard S. Post
Title: Chairman and Chief
Executive Officer

MKS INSTRUMENTS, INC.

By: /s/ JOHN R. BERTUCCI

Name: John R. Bertucci
Title: Chairman and Chief
Executive Officer

MANGO SUBSIDIARY CORP.

By: /s/ JOHN R. BERTUCCI

Name: John R. Bertucci
Title: President

[LETTERHEAD OF MERRILL LYNCH, PIERCE, FENNER & SMITH INCORPORATED]

September 30, 2000

Board of Directors
MKS Instruments, Inc.
Six Shattuck Road
Andover, MA 01810-2449

Members of the Board of Directors:

MKS Instruments, Inc. ("MKS") and Applied Science and Technology, Inc. ("ASTeX") propose to enter into an Agreement and Plan of Merger (the "Agreement") pursuant to which Mango Subsidiary Corp., a Delaware corporation and a wholly owned subsidiary of MKS, will be merged with and into ASTeX (the "Merger") and each outstanding share of the common stock, par value \$0.01 per share, of ASTeX (the "ASTeX Common Stock") will be converted into the right to receive 0.7669 of a share (the "Exchange Ratio") of common stock, no par value, of MKS (the "MKS Common Stock").

You have asked us whether, in our opinion, the Exchange Ratio is fair from a financial point of view to MKS.

In arriving at the opinion set forth below, we have, among other things:

- (1) Reviewed certain publicly available business and financial information relating to MKS and ASTeX that we deemed to be relevant;
- (2) Reviewed certain information, including financial forecasts, relating to the business, earnings, cash flows, assets, liabilities and prospects of MKS and ASTeX, furnished to or discussed with us by MKS and ASTeX;
- (3) Conducted discussions with members of senior management and representatives of MKS and ASTeX concerning the matters described in clauses 1 and 2 above, as well as their respective businesses and prospects before and after giving effect to the Merger;
- (4) Reviewed the market prices and valuation multiples for the MKS Common Stock and the ASTeX Common Stock and compared them with those of certain publicly traded companies that we deemed to be relevant;
- (5) Reviewed the results of operations of MKS and ASTeX and compared them with those of certain publicly traded companies that we deemed to be relevant;
- (6) Compared the proposed financial terms of the Merger with the financial terms of certain other transactions that we deemed to be relevant;
- (7) Participated in certain discussions and negotiations among representatives of MKS and ASTeX and their respective financial and legal advisors;
- (8) Reviewed the potential pro forma impact of the Merger;
- (9) Reviewed a draft dated September 26, 2000 of the Agreement; and

[MERRILL LYNCH LOGO]

(10) Reviewed such other financial studies and analyses and took into account such other matters as we deemed necessary, including our assessment of general economic, market and monetary conditions.

In preparing our opinion, we have assumed and relied on the accuracy and completeness of all information supplied or otherwise made available to us, discussed with or reviewed by us, or publicly available, and we have not assumed any responsibility for independently verifying such information or undertaken an independent evaluation or appraisal of any of the assets or liabilities (contingent or otherwise) of MKS or ASTeX or been furnished with any such evaluation or appraisal. In addition, we have not assumed any obligation to conduct, nor have we conducted any physical inspection of the properties or facilities of MKS and ASTeX. As you are aware, we have not been provided with internal financial forecasts for MKS or ASTeX, but have utilized in our analysis publicly available financial forecasts for MKS and ASTeX which have been reviewed and discussed with the managements and representatives of MKS and ASTeX, as the case may be, and have been advised, and have assumed, that such forecasts reflect reasonable estimates and judgments as to the expected future financial performance of MKS and ASTeX. We have further assumed that the Merger will be accounted for as a pooling of interests under generally accepted accounting principles and that it will qualify as a tax-free reorganization for U.S. federal income tax purposes. We have also assumed that the final form of the Agreement will be substantially similar to the last draft reviewed by us.

Our opinion is necessarily based upon market, economic and other conditions as they exist and can be evaluated on, and on the information made available to us as of, the date hereof.

We are acting as financial advisor to MKS in connection with the Merger and will receive a fee from MKS for our services contingent upon the consummation of the Merger. In the ordinary course of our business, we may actively trade the MKS Common Stock and other securities of MKS as well as the ASTeX Common Stock and other securities of ASTeX, for our own account and for the accounts of customers and, accordingly, may at any time hold a long or short position in such securities.

This opinion is for the use and benefit of the Board of Directors of MKS in its evaluation of the Merger. Our opinion does not address the merits of the underlying decision by MKS to engage in the Merger and does not constitute a recommendation to any shareholder as to how such shareholder should vote on the proposed Merger or any matter related thereto.

We are not expressing any opinion herein as to the prices at which the MKS Common Stock will trade following the announcement or consummation of the Merger.

On the basis of, and subject to the foregoing, we are of the opinion that, as of the date hereof, the Exchange Ratio is fair from a financial point of view to MKS.

Very truly yours,

/s/ Merrill Lynch, Pierce, Fenner &
Smith Incorporated
MERRILL LYNCH, PIERCE, FENNER &
SMITH INCORPORATED

B-1-2

[LETTERHEAD OF CIBC WORLD MARKETS CORP.]

October 2, 2000

The Board of Directors
Applied Science and Technology, Inc.
90 Industrial Way
Wilmington, Massachusetts 01887

Members of the Board:

You have asked CIBC World Markets Corp. ("CIBC World Markets") to render a written opinion ("Opinion") to the Board of Directors as to the fairness, from a financial point of view, to the holders of the common stock of Applied Science and Technology, Inc. ("AST") of the Exchange Ratio (defined below) provided for in the Agreement and Plan of Merger, dated as of October 2, 2000 (the "Merger Agreement"), by and among AST, MKS Instruments, Inc. ("MKS") and Mango Subsidiary Corp., a wholly owned subsidiary of MKS ("Merger Sub"). The Merger Agreement provides for, among other things, the merger of Merger Sub with and into AST (the "Merger") pursuant to which each outstanding share of the common stock, par value \$0.01 per share, of AST ("AST Common Stock") will be converted into the right to receive 0.7669 (the "Exchange Ratio") of a share of the common stock, no par value, of MKS ("MKS Common Stock").

In arriving at our Opinion, we:

- (a) reviewed the Merger Agreement;
- (b) reviewed audited financial statements of AST for the fiscal years ended June 27, 1998, June 26, 1999 and July 1, 2000 and audited financial statements of MKS for the fiscal years ended December 31, 1997, December 31, 1998 and December 31, 1999;
- (c) reviewed unaudited financial statements of AST for the two-month period ended August 31, 2000 and unaudited financial statements of MKS for the fiscal quarters ended March 31, 2000 and June 30, 2000 and the two-month period ended August 31, 2000;
- (d) reviewed and discussed with the managements of AST and MKS publicly available financial forecasts relating to AST and MKS and certain other financial and business information relating to AST and MKS;
- (e) reviewed historical market prices and trading volume for AST Common Stock and MKS Common Stock;
- (f) held discussions with the senior managements of AST and MKS with respect to the businesses and prospects for future growth of AST and MKS;
- (g) reviewed and analyzed certain publicly available financial data for certain companies we deemed comparable to AST and MKS;
- (h) reviewed and analyzed certain publicly available information for transactions that we deemed comparable to the Merger;
- (i) performed discounted cash flow analyses of AST and MKS using certain assumptions of future performance provided to or discussed with us by the managements of AST and MKS;
- (j) reviewed public information concerning AST and MKS; and
- (k) performed such other analyses and reviewed such other information as we deemed appropriate.

The Board of Directors
Applied Science and Technology, Inc.
90 Industrial Way
Wilmington, Massachusetts 01887

In rendering our Opinion, we relied upon and assumed, without independent verification or investigation, the accuracy and completeness of all of the financial and other information provided to or discussed with us by AST, MKS and their respective employees, representatives and affiliates. With respect to publicly available forecasts relating to AST and MKS which we reviewed and discussed with the managements of AST and MKS, we assumed, at the direction of the managements of AST and MKS, without independent verification or investigation, that such forecasts were prepared on bases reflecting reasonable estimates and judgments as to the future financial condition and operating results of AST and MKS. We also have assumed, with the consent of AST, that the Merger will be treated as a tax-free reorganization for federal income tax purposes and as a pooling of interests in accordance with generally accepted accounting principles. In addition, we have assumed with the consent of AST that, in the course of obtaining the necessary regulatory or third party approvals for the Merger, no limitations, restrictions or conditions will be imposed that would have a material adverse effect on AST, MKS or the contemplated benefits to AST of the Merger. We have neither made nor obtained any independent evaluations or appraisals of the assets or liabilities (contingent or otherwise) of AST, MKS or affiliated entities. In connection with our engagement, we were not requested to, and we did not, solicit generally third party indications of interest in the acquisition of all or a part of AST. We are not expressing any opinion as to the underlying valuation, future performance or long-term viability of AST or MKS or the price at which the MKS Common Stock will trade upon or subsequent to announcement or consummation of the Merger. Our Opinion is necessarily based on the information available to us and general economic, financial and stock market conditions and circumstances as they exist and can be evaluated by us on the date hereof. It should be understood that, although subsequent developments may affect this Opinion, we do not have any obligation to update, revise or reaffirm the Opinion.

As part of our investment banking business, we are regularly engaged in valuations of businesses and securities in connection with acquisitions and mergers, underwritings, secondary distributions of securities, private placements and valuations for other purposes.

We have acted as financial advisor to AST in connection with the Merger and to the Board of Directors of AST in rendering this Opinion and will receive a fee for our services, a significant portion of which is contingent upon consummation of the Merger. We also will receive a fee upon the delivery of this Opinion. CIBC World Markets has in the past provided services to AST unrelated to the proposed Merger, for which services we have received compensation. In the ordinary course of business, CIBC World Markets and its affiliates may actively trade securities of AST and MKS for their own account and for the accounts of customers and, accordingly, may at any time hold a long or short position in such securities.

Based upon and subject to the foregoing, and such other factors as we deemed relevant, it is our opinion that, as of the date hereof, the Exchange Ratio is fair, from a financial point of view, to the holders of AST Common Stock. This Opinion is for the use of the Board of Directors of AST in its evaluation of the Merger and does not constitute a recommendation to any stockholder as to how such stockholder should vote on any matters relating to the Merger.

Very truly yours,

/s/ CIBC World Markets Corp.

CIBC WORLD MARKETS CORP.

B-2-2

STOCKHOLDER AGREEMENT

STOCKHOLDER AGREEMENT, dated as of October 2, 2000 (this "AGREEMENT"), among the stockholders listed on the signature page(s) hereto (collectively, "STOCKHOLDERS" and each individually, a "STOCKHOLDER"), Applied Science and Technology, Inc., a Delaware corporation (the "COMPANY") and MKS Instruments, Inc., a Massachusetts corporation ("PARENT"). Capitalized terms used and not otherwise defined herein shall have the respective meanings assigned to them in the Merger Agreement referred to below.

WHEREAS, as of the date hereof, the Stockholders collectively own of record and beneficially shares of capital stock of the Company as set forth on Schedule I hereto (such shares, together with any other voting or equity of securities of the Company hereafter acquired by any Stockholder prior to the termination of this Agreement, being referred to herein collectively as the "SHARES");

WHEREAS, concurrently with the execution of this Agreement, Parent and the Company are entering into an Agreement and Plan of Merger, dated as of the date hereof (the "MERGER AGREEMENT"), pursuant to which, upon the terms and subject to the conditions thereof, a subsidiary of Parent will be merged with and into the Company, and the Company will be the surviving corporation as a wholly-owned subsidiary of the Parent (the "MERGER"); and

WHEREAS, as a condition to the willingness of Parent to enter into the Merger Agreement, Parent has required that the Stockholders agree, and in order to induce Parent to enter into the Merger Agreement the Stockholders are willing to agree, to vote in favor of adopting the Merger Agreement and approving the Merger, upon the terms and subject to the conditions set forth herein.

NOW, THEREFORE, in consideration of the foregoing and the mutual covenants and agreements contained herein, and intending to be legally bound hereby, the parties hereby agree, severally and not jointly, as follows:

SECTION 1. Voting of Shares.

(a) Each Stockholder covenants and agrees that until the termination of this Agreement in accordance with the terms hereof, at the Shareholders' Meeting or any other meeting of the stockholders of the Company, however called, and in any action by written consent of the stockholders of the Company, such Stockholder will vote, or cause to be voted, all of his respective Shares in favor of adoption of the Merger Agreement and approval of the Merger contemplated by the Merger Agreement, as the Merger Agreement may be modified or amended from time to time in a manner not adverse to the Stockholders.

(b) Each Stockholder hereby irrevocably grants to, and appoints, Parent, and any individual designated in writing by Parent, and each of them individually, as his proxy and attorney-in-fact (with full power of substitution), for and in his name, place and stead, to vote his Shares at the Shareholders' Meeting or any other meeting of the stockholders of the Company, however called, and in any action by written consent of the stockholders of the Company with respect to any of the matters specified in, and in accordance and consistent with, this Section 1. Each Stockholder understands and acknowledges that Parent is entering into the Merger Agreement in reliance upon the Stockholder's execution and delivery of this Agreement. Each Stockholder hereby affirms that the irrevocable proxy set forth in this Section 1(b) is given in connection with the execution of the Merger Agreement, and that such irrevocable proxy is given to secure the performance of the duties of such Stockholder under this Agreement. Except as otherwise provided for herein, each Stockholder hereby (i) affirms that the irrevocable proxy is coupled with an interest and may under no circumstances be revoked, (ii) ratifies and confirms all that the proxies appointed hereunder may lawfully do or cause to be done by virtue hereof and (iii) affirms that such irrevocable proxy is executed and intended to be irrevocable in accordance with the provisions of Section 212(e) of the Delaware General Corporation Law. Notwithstanding any

other provisions of this Agreement, the irrevocable proxy granted hereunder shall automatically terminate upon the termination of this Agreement.

SECTION 2. Representations and Warranties of the Stockholders. Each Stockholder on his own behalf hereby severally represents and warrants to Parent with respect to himself and his ownership of the Shares as follows:

(a) Ownership of Shares. On the date hereof, the Shares are owned beneficially by Stockholder or his nominee. Stockholder has sole voting power, without restrictions, with respect to all of the Shares.

(b) Power; Binding Agreement. Stockholder has the legal capacity, power and authority to enter into and perform all of his obligations, under this Agreement. The execution, delivery and performance of this Agreement by Stockholder will not violate any material agreement to which Stockholder is a party, including, without limitation, any voting agreement, stockholders' agreement, partnership agreement or voting trust. This Agreement has been duly and validly executed and delivered by Stockholder and constitutes a valid and binding obligation of Stockholder, enforceable against Stockholder in accordance with its terms, subject to applicable bankruptcy, insolvency, fraudulent conveyance, reorganization, moratorium and similar laws affecting creditors' rights and remedies generally and subject, as to enforceability, to general principles of equity (regardless of whether enforcement is sought in a proceeding at law or in equity).

(c) No Conflicts. The execution and delivery of this Agreement do not, and the consummation of the transactions contemplated hereby will not, conflict with or result in any violation of, or default (with or without notice or lapse of time, or both) under, or give rise to a right of termination, cancellation or acceleration of any obligation or to loss of a material benefit under, any provision of any loan or credit agreement, note, bond, mortgage, indenture, lease, or other agreement, instrument, permit, concession, franchise, license, judgment, order, decree, statute, law, ordinance, rule or regulation applicable to Stockholder or any of its properties or assets, other than such conflicts, violations or defaults or terminations, cancellations or accelerations which individually or in the aggregate do not materially impair the ability of Stockholder to perform its obligations hereunder.

SECTION 3. Termination. This Agreement shall terminate upon the earliest to occur of (i) the Effective Time (as such term is defined in the Merger Agreement) or (ii) any termination of the Merger Agreement in accordance with the terms thereof; provided that no such termination shall relieve any party of liability for a willful breach hereof prior to termination.

SECTION 4. Specific Performance. The parties hereto agree that irreparable damage would occur in the event any provision of this Agreement was not performed in accordance with the terms hereof and that the parties shall be entitled to specific performance of the terms hereof, in addition to any other remedy at law or in equity.

SECTION 5. Fiduciary Duties. Each Stockholder is signing this Agreement solely in such Stockholder's capacity as an owner of his respective Shares, and nothing herein shall prohibit, prevent or preclude such Stockholder from taking or not taking any action in his capacity as an officer or director of the Company, to the extent permitted by the Merger Agreement.

SECTION 6. Miscellaneous.

(a) This Agreement constitutes the entire agreement between the parties hereto with respect to the subject matter hereof and supersedes all prior agreements and understandings, both written and oral, between the parties with respect thereto. This Agreement may not be amended, modified or rescinded except by an instrument in writing signed by each of the parties hereto.

(b) If any term or other provision of this Agreement is invalid, illegal or incapable of being enforced by any rule of law, or public policy, all other conditions and provisions of this Agreement shall nevertheless remain in full force and effect. Upon such determination that any term or other provision is invalid, illegal or incapable of being enforced, the parties hereto shall negotiate in good faith to modify this Agreement so as to effect the original intent of the parties as closely as possible to the fullest extent

permitted by applicable law in a mutually acceptable manner in order that the terms of this Agreement remain as originally contemplated to the fullest extent possible.

(c) Whenever the context may require, any pronouns used in this Agreement shall include the corresponding masculine, feminine or neuter forms, and the singular form of nouns and pronouns shall include the plural, and vice versa.

(d) This Agreement shall be governed by and construed in accordance with the laws of the State of Delaware without regard to the principles of conflicts of law thereof.

(e) This Agreement may be executed in counterparts, each of which shall be deemed an original and all of which together shall constitute one and the same instrument.

IN WITNESS WHEREOF, each of the parties hereto has caused this Agreement to be signed individually or by its respective duly authorized officer as of the date first written above.

APPLIED SCIENCE AND TECHNOLOGY, INC.

By: /s/ RICHARD S. POST

Name: Richard S. Post
Title: Chairman and Chief Executive Officer

MKS INSTRUMENTS, INC.

By: /s/ JOHN R. BERTUCCI

Name: John R. Bertucci
Title: Chairman and Chief Executive Officer

STOCKHOLDERS:

/s/ RICHARD S. POST

Richard S. Post

/s/ JOHN M. TARRH

John M. Tarrh

STOCKHOLDER AGREEMENT

STOCKHOLDER AGREEMENT, dated as of October 2, 2000 (this "Agreement"), among the stockholders listed on the signature page(s) hereto (collectively, "Stockholders" and each individually, a "Stockholder"), Applied Science and Technology, Inc., a Delaware corporation (the "Company") and MKS Instruments, Inc., a Massachusetts corporation ("Parent"). Capitalized terms used and not otherwise defined herein shall have the respective meanings assigned to them in the Merger Agreement referred to below.

WHEREAS, as of the date hereof, the Stockholders collectively own of record and beneficially shares of capital stock of the Parent as set forth on Schedule I hereto (such shares, together with any other voting or equity of securities of the Parent hereafter acquired by any Stockholder prior to the termination of this Agreement, being referred to herein collectively as the "Shares");

WHEREAS, concurrently with the execution of this Agreement, Parent and the Company are entering into an Agreement and Plan of Merger, dated as of the date hereof (the "Merger Agreement"), pursuant to which, upon the terms and subject to the conditions thereof, a subsidiary of Parent will be merged with and into the Company, and the Company will be the surviving corporation as a wholly-owned subsidiary of the Parent (the "Merger"); and

WHEREAS, as a condition to the willingness of Company to enter into the Merger Agreement, Company has required that the Stockholders agree, and in order to induce Company to enter into the Merger Agreement the Stockholders are willing to agree, to vote in favor of adopting the Merger Agreement and approving the Merger, upon the terms and subject to the conditions set forth herein.

NOW, THEREFORE, in consideration of the foregoing and the mutual covenants and agreements contained herein, and intending to be legally bound hereby, the parties hereby agree, severally and not jointly, as follows:

Section 1. Voting of Shares.

(a) Each Stockholder covenants and agrees that until the termination of this Agreement in accordance with the terms hereof, at the Parent Shareholders' Meeting or any other meeting of the stockholders of the Parent, however called, and in any action by written consent of the stockholders of the Parent, such Stockholder will vote, or cause to be voted, all of his respective Shares in favor of the issuance of shares of Parent Common Stock pursuant to the Merger Agreement, as the Merger Agreement may be modified or amended from time to time in a manner not adverse to the Stockholders.

(b) Each Stockholder hereby irrevocably grants to, and appoints, Company, and any individual designated in writing by Company, and each of them individually, as his proxy and attorney-in-fact (with full power of substitution), for and in his name, place and stead, to vote his Shares at the Parent Shareholders' Meeting or any other meeting of the stockholders of the Parent, however called, and in any action by written consent of the stockholders of the Parent with respect to any of the matters specified in, and in accordance and consistent with, this Section 1. Each Stockholder understands and acknowledges that Company is entering into the Merger Agreement in reliance upon the Stockholder's execution and delivery of this Agreement. Each Stockholder hereby affirms that the irrevocable proxy set forth in this Section 1(b) is given in connection with the execution of the Merger Agreement, and that such irrevocable proxy is given to secure the performance of the duties of such Stockholder under this Agreement. Except as otherwise provided for herein, each Stockholder hereby (i) affirms that the irrevocable proxy is coupled with an interest and may under no circumstances be revoked, (ii) ratifies and confirms all that the proxies appointed hereunder may lawfully do or cause to be done by virtue hereof and (iii) affirms that such irrevocable proxy is executed and intended to be irrevocable in accordance with the provisions of Section 41 of Chapter 156B of the Massachusetts General Laws Notwithstanding any other provisions of this Agreement, the irrevocable proxy granted hereunder shall automatically terminate upon the termination of this Agreement.

Section 2. Representations and Warranties of the Stockholders. Each Stockholder on his own behalf hereby severally represents and warrants to Company with respect to himself and his ownership of the Shares as follows:

(a) Ownership of Shares. On the date hereof, the Shares are owned beneficially by Stockholder or his nominee. Stockholder has sole voting power, without restrictions, with respect to all of the Shares.

(b) Power; Binding Agreement. Stockholder has the legal capacity, power and authority to enter into and perform all of his obligations, under this Agreement. The execution, delivery and performance of this Agreement by Stockholder will not violate any material agreement to which Stockholder is a party, including, without limitation, any voting agreement, stockholders' agreement, partnership agreement or voting trust. This Agreement has been duly and validly executed and delivered by Stockholder and constitutes a valid and binding obligation of Stockholder, enforceable against Stockholder in accordance with its terms, subject to applicable bankruptcy, insolvency, fraudulent conveyance, reorganization, moratorium and similar laws affecting creditors' rights and remedies generally and subject, as to enforceability, to general principles of equity (regardless of whether enforcement is sought in a proceeding at law or in equity).

(c) No Conflicts. The execution and delivery of this Agreement do not, and the consummation of the transactions contemplated hereby will not, conflict with or result in any violation of, or default (with or without notice or lapse of time, or both) under, or give rise to a right of termination, cancellation or acceleration of any obligation or to loss of a material benefit under, any provision of any loan or credit agreement, note, bond, mortgage, indenture, lease, or other agreement, instrument, permit, concession, franchise, license, judgment, order, decree, statute, law, ordinance, rule or regulation applicable to Stockholder or any of its properties or assets, other than such conflicts, violations or defaults or terminations, cancellations or accelerations which individually or in the aggregate do not materially impair the ability of Stockholder to perform its obligations hereunder.

Section 3. Termination. This Agreement shall terminate upon the earliest to occur of (i) the Effective Time (as such term is defined in the Merger Agreement) or (ii) any termination of the Merger Agreement in accordance with the terms thereof; provided that no such termination shall relieve any party of liability for a willful breach hereof prior to termination.

Section 4. Specific Performance. The parties hereto agree that irreparable damage would occur in the event any provision of this Agreement was not performed in accordance with the terms hereof and that the parties shall be entitled to specific performance of the terms hereof, in addition to any other remedy at law or in equity.

Section 5. Fiduciary Duties. Each Stockholder is signing this Agreement solely in such Stockholder's capacity as an owner of his respective Shares, and nothing herein shall prohibit, prevent or preclude such Stockholder from taking or not taking any action in his capacity as an officer or director of the Parent, to the extent permitted by the Merger Agreement.

Section 6. Miscellaneous.

(a) This Agreement constitutes the entire agreement between the parties hereto with respect to the subject matter hereof and supersedes all prior agreements and understandings, both written and oral, between the parties with respect thereto. This Agreement may not be amended, modified or rescinded except by an instrument in writing signed by each of the parties hereto.

(b) If any term or other provision of this Agreement is invalid, illegal or incapable of being enforced by any rule of law, or public policy, all other conditions and provisions of this Agreement shall nevertheless remain in full force and effect. Upon such determination that any term or other provision is invalid, illegal or incapable of being enforced, the parties hereto shall negotiate in good faith to modify this Agreement so as to effect the original intent of the parties as closely as possible to the fullest extent permitted by applicable law in a mutually acceptable manner in order that the terms of this Agreement remain as originally contemplated to the fullest extent possible.

(c) Whenever the context may require, any pronouns used in this Agreement shall include the corresponding masculine, feminine or neuter forms, and the singular form of nouns and pronouns shall include the plural, and vice versa.

(d) This Agreement shall be governed by and construed in accordance with the laws of the State of Delaware without regard to the principles of conflicts of law thereof.

(e) This Agreement may be executed in counterparts, each of which shall be deemed an original and all of which together shall constitute one and the same instrument.

[Signature Page to follow]

IN WITNESS WHEREOF, each of the parties hereto has caused this Agreement to be signed individually or by its respective duly authorized officer as of the date first written above.

APPLIED SCIENCE AND TECHNOLOGY, INC.

By: /s/ RICHARD S. POST

Name: Richard S. Post
Title: Chairman and CEO

MKS INSTRUMENTS, INC.

By: /s/ JOHN R. BERTUCCI

Name: John R. Bertucci
Title: Chairman and CEO

STOCKHOLDERS:

/s/ JOHN R. BERTUCCI

John R. Bertucci

/s/ CLAIRE R. BERTUCCI

Claire R. Bertucci

Each of the following individuals is executing this Agreement in his or her capacity as a Trustee of those trusts listed on Schedule I hereto of which such person serves as a Trustee:

/s/ JOHN R. BERTUCCI

John R. Bertucci

/s/ CLAIRE R. BERTUCCI

Claire R. Bertucci

/s/ RICHARD S. CHUTE

Richard S. Chute

/s/ THOMAS K BELKNAP

Thomas K. Belknap

[Signature Page to Parent Stockholder Agreement]

SCHEDULE I

NAME -----	NUMBER OF SHARES -----
John R. Bertucci.....	5,825,694
Claire R. Bertucci.....	5,959,851
Claire R. Bertucci & Richard S. Chute as Trustees of the John R. Bertucci 2nd Family Trust of 12/15/86.....	739,028
FBO Carol B. Bertucci Claire R. Bertucci as Trustee, John R. Bertucci JCB Retained Annuity Trust of 1998.....	156,079
Claire R. Bertucci & Richard S. Chute as Trustees of the....	739,028
John R. Bertucci 2nd Family Trust of 12/15/86 FBO Janet C. Bertucci	
Claire R. Bertucci as Trustee, John R. Bertucci CBS Retained Annuity Trust of 1998.....	156,079
Claire R. Bertucci as Trustee, John R. Bertucci Family Retained Annuity Trust of 1998.....	156,079
Claire R. Bertucci & Richard S. Chute, Trustees, John R. Bertucci Family Retained Annuity Trust UA 08/19/99.....	95,145
Clair R. Bertucci & Richard S. Chute Trustees, John R. Bertucci CBS Retained Annuity Trust UA 08/19/99.....	95,145
John R. Bertucci & Thomas H. Belknap as Trustees of the Claire R. Bertucci 2nd Family Trust of 12/15/86 FBO Carol B. Bertucci.....	739,028
John R. Bertucci as Trustee, Claire R. Bertucci CBS Retained Annuity Trust of 1998.....	156,079
John R. Bertucci & Thomas H. Belknap, Trustees, Claire R. Bertucci JCB Retained Annuity Trust UA 08/19/99.....	95,145
Claire R. Bertucci & Richard S. Chute as Trustees, John R. Bertucci JCB Retained Annuity Trust of 08/19/99.....	95,145
John R. Bertucci & Thomas H. Belknap, Trustees, of the Claire R. Bertucci 2nd Family Trust of 12/15/86 FBO Janet C. Bertucci.....	739,028
John R. Bertucci, Trustee, Claire R. Bertucci JCB Retained Annuity Trust of 1998.....	156,079
John R. Bertucci & Thomas H. Belknap, Trustees, Claire R. Bertucci CBS Retained Annuity Trust UA 08/19/99.....	95,145

PART II

INFORMATION NOT REQUIRED IN PROSPECTUS

ITEM 20. INDEMNIFICATION OF DIRECTORS AND OFFICERS.

The Registrant is a Massachusetts corporation. Reference is made to Chapter 156B, Section 13 of the Massachusetts Business Corporation Law (the "MBCL"), which enables a corporation in its original articles of organization or an amendment thereto to eliminate or limit the personal liability of a director for monetary damages for violations of the director's fiduciary duty, except (i) for any breach of the director's duty of loyalty to the corporation or its stockholders, (ii) for acts or omissions not in good faith or which involve intentional misconduct or a knowing violation of law, (iii) pursuant to Sections 61 and 62 of the MBCL (providing for liability of directors for authorizing illegal distributions and for making loans to directors, officers and certain stockholders) or (iv) for any transaction from which a director derived an improper personal benefit.

Reference also is made to Chapter 156B, Section 67 of the MBCL, which provides that a corporation may indemnify directors, officers, employees and other agents and persons who serve at its request as directors, officers, employees or other agents of another organization or who serve at its request in any capacity with respect to any employee benefit plan, to the extent specified or authorized by the articles of organization, a by-law adopted by the stockholders or a vote adopted by the holders of a majority of the shares of stock entitled to vote on the election of directors. Such indemnification may include payment by the corporation of expenses incurred in defending a civil or criminal action or proceeding in advance of the final disposition of such action or proceeding, upon receipt of an undertaking by the person indemnified to repay such payment if he shall be adjudicated to be not entitled to indemnification under Section 67, which undertaking may be accepted without reference to the financial ability of such person to make repayment. Any such indemnification may be provided although the person to be indemnified is no longer an officer, director, employee or agent of the corporation or of such other organization or no longer serves with respect to any such employee benefit plan. No indemnification shall be provided, however, for any person with respect to any matter as to which he shall have been adjudicated in any proceeding not to have acted in good faith in the reasonable belief that his action was in the best interest of the corporation or to the extent that such matter relates to service with respect to any employee benefit plan, in the best interests of the participants or beneficiaries of such employee benefit plan.

In its Amended and Restated Articles of Organization (the "Articles of Organization"), the Registrant has elected to commit to provide indemnification to its directors and officers in specified circumstances. Generally, Article 6 of the Registrant's Articles of Organization provides that the Registrant shall indemnify directors and officers of the Registrant against liabilities and expenses arising out of legal proceedings brought against them by reason of their status as directors or officers or by reason of their agreeing to serve, at the request of the Registrant, as a director or officer with another organization. Under this provision, a director or officer of the Registrant shall be indemnified by the Registrant for all costs and expenses (including attorneys' fees), judgments, liabilities and amounts paid in settlement of such proceedings, even if he is not successful on the merits, if he acted in good faith in the reasonable belief that his action was in the best interests of the Registrant. The board of directors may authorize advancing litigation expenses to a director or officer at his request upon receipt of an undertaking by any such director or officer to repay such expenses if it is ultimately determined that he is not entitled to indemnification for such expenses.

Article 6 of the Registrant's Articles of Organization eliminates the personal liability of the Registrant's directors to the Registrant or its stockholders for monetary damages for breach of a director's fiduciary duty, except to the extent Chapter 156B of the Massachusetts General Laws prohibits the elimination or limitation of such liability.

The Registrant has obtained directors and officers liability insurance for the benefit of its directors and certain of its officers.

ITEM 21. EXHIBITS AND FINANCIAL STATEMENT SCHEDULES.

EXHIBIT NO. -----	TITLE -----
2.1	Agreement and Plan of Merger dated as of September 30, 2000 by and among the Registrant, Mango Subsidiary Corp., and Applied Science and Technology, Inc. (filed as Annex A to this joint proxy statement/prospectus, constituting a part of this Registration Statement)
3.1	Restated Articles of Organization
3.2 (1)	Amended and Restated By-Laws
4.1 (1)	Specimen certificate representing the common stock
4.2	Stockholder Agreement, dated as of October 2, 2000 among the Registrant, Richard Post and John M. Tarrh (filed as Annex C-1 to this joint proxy statement/prospectus, constituting a part of this Registration Statement)
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10.4 (1)	1999 Employee Stock Purchase Plan
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10.6 (1)	Amended and Restated Employment Agreement dated as of December 15, 1995 between John J. Sullivan and the Registrant
10.7 (1)	Amended and Restated Employment Agreement dated as of December 15, 1995 between Ronald C. Weigner and the Registrant
10.8 (1)	Amended and Restated Employment Agreement dated as of December 15, 1995 between William D. Stewart and the Registrant
10.9 (1)	Loan Agreement dated as of October 31, 1995 by and between the First National Bank of Boston and the Registrant
10.10(1)	Lease Agreement dated as of October 12, 1989, as extended November 1, 1998, by and between Aspen Industrial Park Partnership and the Registrant
10.11(1)	Loan Agreement dated as of November 1, 1993 between the First National Bank of Boston and the Registrant
10.12(1)	Lease dated as of September 21, 1995 by and between General American Life Insurance Company and the Registrant
10.13(1)	Revolving Credit Note (\$8,000,000) dated February 23, 1996 between Chemical Bank, The First National Bank of Boston and the Registrant
10.14(1)	Revolving Credit Note (\$12,000,000) dated February 23, 1996 between Chemical Bank, The First National Bank of Boston and the Registrant
10.15(1)**	Comprehensive Supplier Agreement #982812 dated October 23, 1998 by and between Applied Materials, Inc. and the Registrant
10.16(1)**	Management Incentive Program
10.17(1)	Lease dated as of January 1, 1996 between MiFuji Kanzai Co. Ltd. and the Registrant (covering Floor 5)
10.18(1)	Lease dated as of April 21, 1997 between MiFuji Kanzai Co. Ltd. and the Registrant (covering Floors 1 and 2)
10.19(1)	Split-Dollar Agreement dated as of September 12, 1991 between the Registrant, John R. Bertucci and Claire R. Bertucci and Richard S. Chute, Trustees of the John R. Bertucci Insurance Trust of January 10, 1986
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EXHIBIT
NO.

TITLE

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10.23(1)	Form of Contribution Agreement
10.24(2)	MKS Instruments, Inc. International Employee Stock Purchase Plan
10.25(3)	First Amended and Restated Loan Agreement dated as of January 1, 2000 between BankBoston, N.A., The Chase Manhattan Bank, and the Registrant
10.26(3)	Employment Agreement dated as of May 17, 1999 between Peter Younger and the Registrant
10.27(3)	Employment Agreement dated as of December 6, 1999 between Robert L. Klimm and the Registrant
10.28	Employment Agreement dated as of March 10, 2000 between the Registrant and Donald Smith
10.29	Employment Agreement dated October 18, 2000 between the Registrant and F. Thomas McNabb
10.30	Lease dated as of August 9, 2000 between Aspen Industrial Partnership, LLP and the Registrant
10.31	Letter Agreement dated as of October 13, 2000 by and between the Registrant and Applied Materials, Inc. amending Comprehensive Supplier Agreement #982812 dated October 23, 1998
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10.34(3)	Tenth Amendment dated as of January 1, 2000 to Loan Agreement dated as of November 1, 1993 between The First National Bank of Boston and the Registrant
10.35	Sixth Amendment dated as of September 1, 2000 to Loan Agreement dated as of October 31, 1995 between The First National Bank of Boston and the Registrant
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23.1	Consent of Hale and Dorr LLP (included in Exhibit 8.1)
23.2	Consent of Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C. (included in Exhibit 8.2)
23.3	Consent of PricewaterhouseCoopers LLP regarding the financial statements of the Registrant
23.4	Consent of KPMG LLP regarding the financial statements of Applied Science and Technology, Inc.
24.1	Power of Attorney (included in this signature page of this Registration Statement)
99.1	Form of proxy card of the Registrant
99.2	Form of proxy card of Applied Science and Technology, Inc.
99.3	Consent of Merrill Lynch, Pierce, Fenner & Smith Incorporated
99.4	Consent of CIBC World Markets Corp.

(1) Incorporated by reference to the Registration Statement on Form S-1 (file No. 333-71363) originally filed with the Securities and Exchange Commission on January 28, 1999, as amended.

(2) Incorporated by reference to the Registration Statement on Form S-8 (file No. 333-31224) filed with the Securities and Exchange Commission on February 28, 2000.

(3) Incorporated by reference to the Registrant's Annual Report on Form 10-K for the fiscal year ended December 31, 1999.

** Confidential materials omitted and filed separately with the Securities and Exchange Commission.

All schedules for which provision is made in the applicable accounting regulations of the Securities and Exchange Commission are not required under the related instructions or are not applicable, and, therefore, have been omitted.

ITEM 22. UNDERTAKINGS.

A. The undersigned Registrant hereby undertakes:

(1) To file, during any period in which offers or sales are being made, a post-effective amendment to this Registration Statement:

(i) To include any prospectus required by Section 10(a)(3) of the Securities Act;

(ii) To reflect in the prospectus any facts or events arising after the effective date of the Registration Statement (or the most recent post-effective amendment thereof) which, individually or in the aggregate, represents a fundamental change in the information set forth in the Registration Statement. Notwithstanding the foregoing, any increase or decrease in volume of securities offered (if the total dollar value of securities offered would not exceed that which was registered) and any deviation from the low or high end of the estimated maximum offering range may be reflected in the form of prospectus filed with the Commission pursuant to Rule 424(b) if, in the aggregate, the changes in volume and price represent no more than 20 percent change in the maximum aggregate offering price set forth in the "Calculation of Registration Fee" table in the effective registration statement;

(iii) To include any material information with respect to the plan of distribution not previously disclosed in the Registration Statement or any material change to such information in the Registration Statement.

(2) That, for the purpose of determining any liability under the Securities Act, each such post-effective amendment shall be deemed to be a new Registration Statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

(3) To remove from registration by means of a post-effective amendment any of the securities being registered which remain unsold at the termination of the offering.

B. The Registrant hereby undertakes that, for purposes of determining any liability under the Securities Act of 1933, as amended (the "Securities Act"), each filing of the Registrant's annual report pursuant to Section 13(a) or Section 15(d) of the Securities Exchange Act of 1934, as amended (the "Exchange Act") (and, where applicable, each filing of an employee benefit plan's annual report pursuant to Section 15(d) of the Exchange Act), that is incorporated by reference in this Registration Statement shall be deemed to be a new registration statement relating to the securities offered herein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

C. The Registrant hereby undertakes as follows:

(1) That prior to any public reoffering of the securities registered hereunder through use of a prospectus which is a part of this Registration Statement, by any person or party who is deemed to be an underwriter within the meaning of Rule 145(c), the Registrant undertakes that such reoffering prospectus will contain the information called for by the applicable registration form with respect to reofferings by persons who may be deemed underwriters, in addition to the information called for by the other Items of the applicable form.

(2) That every prospectus (i) that is filed pursuant to paragraph (1) immediately preceding, or (ii) that purports to meet the requirements of Section 10(a)(3) of the Securities Act and is used in connection with an offering of securities subject to Rule 415, will be filed as a part of an amendment to this Registration Statement and will not be used until such amendment is effective, and that, for purposes of determining any liability under the Securities Act, each such post-effective amendment shall be

deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

D. Insofar as indemnification for liabilities arising under the Securities Act may be permitted to directors, officers and controlling persons of the Registrant pursuant to the foregoing provisions, or otherwise, the Registrant has been advised that in the opinion of the Securities and Exchange Commission such indemnification is against public policy as expressed in the Securities Act and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the Registrant of expenses incurred or paid by a director, officer or controlling person of the Registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being registered, the Registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Securities Act and will be governed by the final adjudication of such issue.

E. The Registrant hereby undertakes to respond to requests for information that is incorporated by reference into the prospectus pursuant to Items 4, 10(b), 11, or 13 of this Form, within one business day of receipt of such request, and to send the incorporated documents by first class mail or other equally prompt means. This includes information contained in documents filed subsequent to the effective date of this Registration Statement through the date of responding to the request.

F. The Registrant hereby undertakes to supply by means of a post-effective amendment all information concerning a transaction, and the company being acquired involved therein, that was not the subject of and included in the Registration Statement when it became effective.

SIGNATURES

Pursuant to the requirements of the Securities Act, the Registrant has duly caused this registration statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the city of Andover, Commonwealth of Massachusetts, on the 9th day of November, 2000.

MKS INSTRUMENTS, INC.

By /s/ JOHN R. BERTUCCI

 John R. Bertucci
 Chairman of the Board of Directors
 and Chief Executive Officer

POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS, that each person whose signature appears below on this registration statement hereby constitutes and appoints John R. Bertucci, Ronald C. Weigner, Mark G. Borden and David A. Westenberg their true and lawful attorneys-in-fact and agents, with full power of substitution and resubstitution, for them and in their name, place and stead, in any and all capacities (unless revoked in writing) to sign any and all amendments to this registration statement to which this power of attorney is attached, including any post-effective amendments as well as any related registration statement (or amendment thereto) filed in reliance upon Rule 462(b) under the Securities Act of 1933, as amended, and to file the same, with all exhibits thereto, and other documents in connection therewith, with the Securities and Exchange Commission, granting to such 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 connection therewith, as fully to all intents and purposes as they might and could do in person, hereby ratifying and confirming all that said attorneys-in-fact and agents or any of them, or their substitute or substitutes, may lawfully do or cause to be done by virtue thereof.

Pursuant to the requirements of the Securities Act of 1933, as amended, this registration statement has been signed by the following persons in the capacities and on the dates indicated.

SIGNATURE -----	TITLE -----	DATE ----
/s/ JOHN R. BERTUCCI ----- John R. Bertucci	Chairman of the Board and Chief Executive Officer (Principal Executive Officer)	November 9, 2000
/s/ RONALD C. WEIGNER ----- Ronald C. Weigner	Vice President and Chief Financial Officer (Principal Financial and Accounting Officer)	November 9, 2000
/s/ RICHARD S. CHUTE ----- Richard S. Chute	Director	November 9, 2000
/s/ OWEN W. ROBBINS ----- Owen W. Robbins	Director	November 9, 2000
/s/ ROBERT J. THERRIEN ----- Robert J. Therrien	Director	November 9, 2000
/s/ LOUIS P. VALENTE ----- Louis P. Valente	Director	November 9, 2000

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- (3) Incorporated by reference to the Registrant's Annual Report on Form 10-K for the fiscal year ended December 31, 1999.

** Confidential materials omitted and filed separately with the Securities and Exchange Commission.

FEDERAL IDENTIFICATION
No. 04-2277512

THE COMMONWEALTH OF MASSACHUSETTS
William Francis Galvin
Secretary of the Commonwealth
One Ashburton Place, Boston, Massachusetts 02108-1512
RESTATED ARTICLES OF ORGANIZATION
(GENERAL LAWS, CHAPTER 156B, SECTION 74)

We, Joseph A. Maher, Jr., Vice President and
William P. Donlan, Assistant Clerk

of MKS Instruments, Inc.

(Exact name of corporation)

located at SIX SHATTUCK ROAD, ANDOVER, MASSACHUSETTS 01810 do hereby certify
that the following Restatement of the Articles of Organization was duly adopted
at a meeting held on February 17, 1999, by vote of the directors/or:

5,177,940 shares of CLASS A COMMON out of 5,177,940 shares outstanding,

(type, class &
series, if any)

6,857,500 shares of CLASS B COMMON out of 6,857,501 shares outstanding, and

(type, class &
series, if any)

_____ shares of _____ out of _____ shares outstanding,
(type, class &
series, if any)

being at least two-thirds of each type, class or series of stock outstanding and
entitled to vote thereon and of each type class or series of stock whose rights
are adversely affected thereby:

ARTICLE I

The name of the corporation is:

MKS Instruments, Inc.

ARTICLE II

The purpose of the corporation is to engage in the following
business activities :

C [] See Continuation Sheets 2A and 2B.

P []

M []

RA []

Note: If the space provided under any article or item on this form is
insufficient, additions shall be set forth on separate 8 1/2 x 11
sheets of paper with a left hand margin of at least 1 inch.
Additions to more than one article may be made on a single sheet
so long as each article requiring each such addition is clearly
indicated.

CONTINUATION SHEET 2A

2. THE PURPOSES FOR WHICH THE CORPORATION IS FORMED ARE AS FOLLOWS:

To design, manufacture, sell, lease and license instruments of all kinds, including electromechanical, electronic and mechanical gauges for the measurement of pressure, temperature, acceleration, flow and level of liquids and gases; to design, manufacture, sell, lease and license control systems incorporating measuring devices, and control systems separate from measuring devices, for the control of production processes and operations of all kinds; to design, manufacture, sell, lease and license instrumentation for military use; to design, manufacture, sell, lease and license instrumentation for use in research laboratories, in industry, in educational institutions, for medical purposes and for use elsewhere and for other purposes; and in general to design, manufacture, sell, lease and license electro-mechanical, electronic and mechanical devices of all kinds.

To buy and sell at wholesale and retail, or otherwise, to manufacture, produce, adapt, repair, dispose of, export, import and in any other manner to deal in goods, wares, merchandise, articles and things of manufacture or otherwise of all materials, supplies and other articles and things necessary or convenient for use in connection with any of said businesses or any other business or any part thereof; and to manufacture, repair, purchase, sell, lease, dispose of and otherwise deal in machinery, tools, and appliances which are or may be used in connection with the purchase, sale, production, adaption, repair, disposition of, export, import or other dealings in said goods, wares, merchandise, articles and things.

To purchase, lease or otherwise acquire as a going concern or otherwise all or any part of the franchises, rights, property, assets, business, good will or capital stock of any persons, firm, corporation, trust or association engaged in whole or in part in any business in which this corporation is empowered to engage, or in any other business; to pay for the same in whole or in part in cash, stock, bonds, notes, securities or other evidence of indebtedness of this corporation or in any other manner; to assume as part of the consideration or otherwise any and all debts, contracts or liabilities, matured or unmatured, fixed or contingent, of any such person, firm or corporation, trust or association; and to operate, manage, develop and generally to carry on the whole or any part of any such business under any name or names which it may select or designate.

CONTINUATION SHEET 2B

To construct, lease, hire, purchase or otherwise acquire and hold or maintain, and to rebuild, enlarge, improve, furnish, equip, alter, operate and dispose of warehouses, factories, offices and other buildings, real estate, structures or parts thereof, and appliances for the preparation, manufacture, purchase, sale and distribution of goods, wares, merchandise, things, and articles of all kinds.

To acquire, hold, use, sell, assign, lease, grant licenses in respect of, mortgage, or otherwise dispose of franchises, letters patent of the United States or of any foreign country, patent rights, licenses and privileges, inventions, improvements and processes, systems, copyrights, trade-marks and trade names, relating to, or useful in connection with, any business of this corporation.

To buy or otherwise acquire, to sell, assign, pledge, or otherwise dispose of and deal in stocks, bonds, securities, notes and other obligations of any person, firm or corporation, including this corporation, organized for or engaged in similar or cognate purposes; also stocks, bonds, securities, notes, and other obligations of any person, firm, or corporation, including this corporation, which it may be found or deemed necessary, valuable, or convenient for this corporation to acquire and deal in, in pursuance or furtherance of or in connection with the businesses herein specified, or any other business.

To borrow money and contract indebtedness for all proper corporate purposes, to issue bonds, notes, and other evidences of indebtedness, to secure the same by pledge, mortgage, or lien on all or any part of the property of the corporation, tangible or intangible; and to assume or guarantee or secure in like manner or otherwise, the leases, contracts, or other obligations, fixed or contingent, or the payment of any dividends on any stock or shares or of the principal or interest on any bonds, notes, or other evidences of indebtedness of any person, firm, corporation, trust, or association in which this corporation has a financial interest.

To enter into, make, and perform contracts of every name, nature, and kind with any person, firm, association, or corporation which may be deemed valuable, expedient, or convenient for this corporation in pursuance of or in furtherance of or in connection with any of the objects of incorporation of this corporation or in connection with any of the businesses or purposes herein specified.

The enumeration of specific powers herein shall not be construed as limiting or restricting in any way the general powers herein set forth, but nothing herein contained shall be construed as authorizing the business of banking.

ARTICLE III

State the total number of shares and par value, if any, of each class of stock which the corporation is authorized to issue:

WITHOUT PAR VALUE		WITH PAR VALUE		
TYPE	NUMBER OF SHARES	TYPE	NUMBER OF SHARES	PAR VALUE
Common	50,000,000	Common	2,000,000	\$0.01
Preferred		Preferred		

ARTICLE IV

If more than one class of stock is authorized, state a distinguishing designation for each class. Prior to the issuance of any shares of a class, if shares of another class are outstanding, the corporation must provide a description of the preferences, voting powers, qualifications, and special and relative rights or privileges of that class and of each other class of which shares are outstanding and of each series then established within any class.

See Continuation Sheets 4A, 4B and 4C

ARTICLE V

The restrictions, if any, imposed by the Articles of Organization upon the transfer of shares of stock of any class are:

None

ARTICLE VI

**Other lawful provisions, if any, for the conduct and regulation of the business and affairs of the corporation, for its voluntary dissolution, or for limiting, defining, or regulating the powers of the corporation, or of its directors or stockholders, or of any class of stockholders:

See Continuation Sheets 6A, 6B, 6C, 6D, 6E, 6F and 6G

**If there are no provisions state "None".

Note: the preceding six (6) articles are considered to be permanent and may ONLY be changed by filing appropriate Articles of Amendment.

CONTINUATION SHEET 4A

The total number of shares of all classes of stock which the corporation shall have authority to issue is 52,000,000 shares, consisting of (i) 50,000,000 shares of Common Stock, no par value per share ("Common Stock"), and (ii) 2,000,000 shares of Preferred Stock, \$0.01 par value per share ("Preferred Stock"). Upon the filing of the corporation's Restated Articles of Organization on March 24, 1999 (the "Mandatory Conversion Date") each share of Class A Common Stock, no par value per share, and each share of Class B Common Stock, no par value per share (together with the Class A Common Stock, the "Class Common Stock"), shall be converted into one share of Common Stock, no par value per share. All holders of record of shares of Class Common Stock shall be given written notice of the Mandatory Conversion Date and the place designated for mandatory conversion of all such shares of Class Common Stock pursuant to this provision. Such notice need not be given in advance of the occurrence of the Mandatory Conversion Date. Such notice shall be sent by first class or registered mail, postage prepaid, to each record holder of Class Common Stock at such holder's address last shown on the records of the transfer agent for the Class Common Stock (or the records of the corporation, if it serves as its own transfer agent). Upon receipt of such notice, each holder of shares of Class Common Stock shall surrender his or its certificate or certificates for all such shares to the corporation at the place designated in such notice, and shall thereafter receive certificates for the number of shares of Common Stock equal to the number of shares of Class Common Stock represented by such certificates. On the Mandatory Conversion Date, all rights with respect to the Class Common Stock so converted, including the rights, if any, to receive notices and vote (other than as a holder of Common Stock) will terminate, except only the rights of the holders thereof, upon surrender of their certificate or certificates therefor, to receive certificates for the number of shares of Common Stock into which such Class Common Stock has been converted, and payment of any declared but unpaid dividends thereon. If so required by the corporation, certificates surrendered for conversion shall be endorsed or accompanied by written instrument or instruments of transfer, in form satisfactory to the corporation, duly executed by the registered holder or by his or its attorney duly authorized in writing. As soon as practicable after the Mandatory Conversion Date and the surrender of the certificate or certificates for Class Common Stock, the corporation shall cause to be issued and delivered to such holder, or on his or its written order, a certificate or certificates for the number of full shares of Common Stock issuable on such conversion in accordance with the provisions hereof.

All certificates evidencing shares of Class Common Stock which are required to be surrendered for conversion in accordance with the provisions hereof shall, from and after the Mandatory Conversion Date, be deemed to have been retired and cancelled and the shares of Class Common Stock represented thereby converted into Common Stock for all purposes, notwithstanding the failure of the holder or holders thereof to surrender such certificates on or prior to such date.

CONTINUATION SHEET 4B

The following is a statement of the designation and the powers, privileges and rights, and the qualifications, limitations or restrictions thereof in respect of each class of capital stock of the corporation.

A. COMMON STOCK.

1. GENERAL. The voting, dividend and liquidation rights of the holders of the Common Stock are subject to and qualified by the rights of the holders of the Preferred Stock of any series as may be designated by the Board of Directors upon any issuance of the Preferred Stock of any series.

2. VOTING. The holders of the Common Stock are entitled to one vote for each share held at all meetings of stockholders (and written actions in lieu of meetings). There shall be no cumulative voting.

3. DIVIDENDS. Dividends may be declared and paid on the Common Stock from funds lawfully available therefor as and when determined by the Board of Directors and subject to any preferential dividend rights of any then outstanding Preferred Stock.

4. LIQUIDATION. Upon the dissolution or liquidation of the corporation, whether voluntary or involuntary, holders of Common Stock will be entitled to receive all assets of the corporation available for distribution to its stockholders, subject to any preferential rights of any then outstanding Preferred Stock.

B. PREFERRED STOCK.

Preferred Stock may be issued from time to time in one or more series, each of such series to have such terms as stated or expressed herein and in the resolution or resolutions providing for the issue of such series adopted by the Board of Directors of the corporation as hereinafter provided. Any shares of Preferred Stock which may be redeemed, purchased or acquired by the corporation may be reissued except as otherwise provided by law. Different series of Preferred Stock shall not be construed to constitute different classes of shares for the purposes of voting by classes unless expressly provided.

CONTINUATION SHEET 4C

Authority is hereby expressly granted to the Board of Directors from time to time to issue the Preferred Stock in one or more series, and in connection with the creation of any such series, by resolution or resolutions providing for the issue of the shares thereof, to determine and fix such voting powers, full or limited, or no voting powers, and such designations, preferences and relative participating, optional or other special rights, and qualifications, limitations or restrictions thereof, including without limitation thereof, dividend rights, conversion rights, redemption privileges and liquidation preferences, as shall be stated and expressed in such resolutions, all to the full extent now or hereafter permitted by Chapter 156B of the Massachusetts General Laws. Without limiting the generality of the foregoing, the resolutions providing for issuance of any series of Preferred Stock may provide that such series shall be superior or rank equally or be junior to the Preferred Stock of any other series to the extent permitted by law. No vote of the holders of the Preferred Stock or Common Stock shall be a prerequisite to the issuance of any shares of any series of the Preferred Stock authorized by and complying with the conditions of the Articles of Organization, the right to have such vote being expressly waived by all present and future holders of the capital stock of the corporation.

CONTINUATION SHEET 6A

6A. LIMITATION OF DIRECTOR LIABILITY

Except to the extent that Chapter 156B of the Massachusetts General Laws prohibits the elimination or limitation of liability of directors for breaches of fiduciary duty, no director of the corporation shall be personally liable to the corporation or its stockholders for monetary damages for any breach of fiduciary duty as a director, notwithstanding any provision of law imposing such liability. No amendment to or repeal of this provision shall apply to or have any effect on the liability or alleged liability of any director of the corporation for or with respect to any acts or omissions of such director occurring prior to such amendment.

6B. INDEMNIFICATION

1. ACTIONS, SUITS AND PROCEEDINGS. The corporation shall indemnify each person who was or is a party or is threatened to be made a party to any threatened, pending or completed action, suit or proceeding, whether civil, criminal, administrative or investigative, by reason of the fact that he is or was, or has agreed to become, a director or officer of the corporation, or is or was serving, or has agreed to serve, at the request of the corporation, as a director or officer of, or in a similar capacity with, another organization or in any capacity with respect to any employee benefit plan of the corporation (all such persons being referred to hereafter as an "Indemnitee"), or by reason of any action alleged to have been taken or omitted in such capacity, against all expenses (including attorneys' fees), judgments and fines incurred by him or on his behalf in connection with such action, suit or proceeding and any appeal therefrom, unless the Indemnitee shall be finally adjudicated in such action, suit or proceeding not to have acted in good faith in the reasonable belief that his action was in the best interests of the corporation or, to the extent such matter relates to service with respect to an employee benefit plan, in the best interests of the participants or beneficiaries of such employee benefit plan. Notwithstanding anything to the contrary in this Article, except as set forth in Section 6 below, the corporation shall not indemnify an Indemnitee seeking indemnification in connection with a proceeding (or part thereof) initiated by the Indemnitee unless the initiation thereof was approved by the Board of Directors of the

CONTINUATION SHEET 6B

corporation. Notwithstanding anything to the contrary in this Article, the corporation shall not indemnify an Indemnitee to the extent such Indemnitee is reimbursed from the proceeds of insurance, and in the event the corporation makes any indemnification payments to an Indemnitee and the Indemnitee is subsequently reimbursed from the proceeds of insurance, such Indemnitee shall promptly refund such indemnification payments to the corporation to the extent of such insurance reimbursement.

2. SETTLEMENTS AND COMPROMISE. The right to indemnification conferred in this Article shall include the right to be paid by the corporation for amounts paid in settlement or compromise of any such action, suit or proceeding and any appeal therefrom, and all expenses (including attorneys' fees) incurred in connection with such settlement or compromise, pursuant to a consent decree or otherwise, unless and to the extent it is determined pursuant to Section 5 below that the Indemnitee did not act in good faith in the reasonable belief that his action was in the best interests of the corporation or, to the extent such matter relates to service with respect to an employee benefit plan, in the best interests of the participants or beneficiaries of such employee benefit plan.

3. NOTIFICATION AND DEFENSE OF CLAIM. As a condition precedent to his right to be indemnified, the Indemnitee must notify the corporation in writing as soon as practicable of any action, suit, proceeding or investigation involving him for which indemnity will or could be sought. With respect to any action, suit, proceeding or investigation of which the corporation is so notified, the corporation will be entitled to participate therein at its own expense and/or to assume the defense thereof at its own expense, with legal counsel reasonably acceptable to the Indemnitee. After notice from the corporation to the Indemnitee of its election so to assume such defense, the corporation shall not be liable to the Indemnitee for any legal or other expenses subsequently incurred by the Indemnitee in connection with such claim, other than as provided below in this Section 3. The Indemnitee shall have the right to employ his own counsel in connection with such claim, but the fees and expenses of such counsel incurred after notice from the corporation of its assumption of the defense thereof shall be at the expense of the Indemnitee unless (i) the employment of counsel by the Indemnitee has been authorized by the corporation, (ii) counsel to the Indemnitee shall have reasonably concluded that there may be a conflict of interest or position on any significant issue

CONTINUATION SHEET 6C

between the corporation and the Indemnitee in the conduct of the defense of such action or (iii) the corporation shall not in fact have employed counsel to assume the defense of such action, in each of which cases the fees and expenses of counsel for the Indemnitee shall be at the expense of the corporation, except as otherwise expressly provided by this Article. The corporation shall not be entitled, without the consent of the Indemnitee, to assume the defense of any claim brought by or in the right of the corporation or as to which counsel for the Indemnitee shall have reasonably made the conclusion provided for in clause (ii) above.

4. ADVANCE OF EXPENSES. Subject to the provisions of Section 5 below, in the event that the corporation does not assume the defense pursuant to Section 3 of this Article of any action, suit, proceeding or investigation of which the corporation receives notice under this Article, any expenses (including attorneys' fees) incurred by an Indemnitee in defending a civil or criminal action, suit, proceeding or investigation or any appeal therefrom shall be paid by the corporation in advance of the final disposition of such matter; PROVIDED, HOWEVER, that the payment of such expenses incurred by an Indemnitee in advance of the final disposition of such matter shall be made only upon receipt of an undertaking by or on behalf of the Indemnitee to repay all amounts so advanced in the event that it shall ultimately be determined that the Indemnitee is not entitled to be indemnified by the corporation as authorized in this Article. Such undertaking shall be accepted without reference to the financial ability of the Indemnitee to make such repayment.

5. PROCEDURE FOR INDEMNIFICATION. In order to obtain indemnification or advancement of expenses pursuant to Section 1, 2 or 4 of this Article, the Indemnitee shall submit to the corporation a written request, including in such request such documentation and information as is reasonably available to the Indemnitee and is reasonably necessary to determine whether and to what extent the Indemnitee is entitled to indemnification or advancement of expenses. Any such indemnification or advancement of expenses shall be made promptly, and in any event within 60 days after receipt by the corporation of the written request of the Indemnitee, unless the corporation determines within such 60-day period that the Indemnitee did not meet the applicable standard of conduct set forth in Section 1 or 2, as the case may be. Such determination shall be made in each instance by (a) a majority vote of a quorum of the directors of the corporation, (b) a majority vote of a

CONTINUATION SHEET 6D

quorum of the outstanding shares of stock of all classes entitled to vote for directors, voting as a single class, which quorum shall consist of stockholders who are not at that time parties to the action, suit or proceeding in question, (c) independent legal counsel (who may, to the extent permitted by law, be regular legal counsel to the corporation), or (d) a court of competent jurisdiction.

6. REMEDIES. The right to indemnification or advances as granted by this Article shall be enforceable by the Indemnitee in any court of competent jurisdiction if the corporation denies such request, in whole or in part, or if no disposition thereof is made within the 60-day period referred to above in Section 5. Unless otherwise required by law, the burden of proving that the Indemnitee is not entitled to indemnification or advancement of expenses under this Article shall be on the corporation. Neither the failure of the corporation to have made a determination prior to the commencement of such action that indemnification is proper in the circumstances because the Indemnitee has met the applicable standard of conduct, nor an actual determination by the corporation pursuant to Section 5 that the Indemnitee has not met such applicable standard of conduct, shall be a defense to the action or create a presumption that the Indemnitee has not met the applicable standard of conduct. The Indemnitee's expenses (including attorneys' fees) incurred in connection with successfully establishing his right to indemnification, in whole or in part, in any such proceeding shall also be indemnified by the corporation.

7. SUBSEQUENT AMENDMENT. No amendment, termination or repeal of this Article or of the relevant provisions of Chapter 156B of the Massachusetts General Laws or any other applicable laws shall affect or diminish in any way the rights of any Indemnitee to indemnification under the provisions hereof with respect to any action, suit, proceeding or investigation arising out of or relating to any actions, transactions or facts occurring prior to the final adoption of such amendment, termination or repeal.

8. OTHER RIGHTS. The indemnification and advancement of expenses provided by this Article shall not be deemed exclusive of any other rights to which an Indemnitee seeking indemnification or advancement of expenses may be entitled under any law (common or statutory), agreement or vote of stockholders or directors or otherwise, both

CONTINUATION SHEET 6E

as to action in his official capacity and as to action in any other capacity while holding office for the corporation, and shall continue as to an Indemnitee who has ceased to be a director or officer, and shall inure to the benefit of the estate, heirs, executors and administrators of the Indemnitee. Nothing contained in this Article shall be deemed to prohibit, and the corporation is specifically authorized to enter into, agreement with officers and directors providing indemnification rights and procedures different from those set forth in this Article. In addition, the corporation may, to the extent authorized from time to time by its Board of Directors, grant indemnification rights to other employees or agents of the corporation or other persons serving the corporation and such rights may be equivalent to, or greater or less than, those set forth in this Article.

9. PARTIAL INDEMNIFICATION. If an Indemnitee is entitled under any provision of this Article to indemnification by the corporation for some or a portion of the expenses (including attorneys' fees), judgments, fines or amounts paid in settlement or compromise actually and reasonably incurred by him or on his behalf in connection with any action, suit, proceeding or investigation and any appeal therefrom but not, however, for the total amount thereof, the corporation shall nevertheless indemnify the Indemnitee for the portion of such expenses (including attorneys' fees), judgments, fines or amounts paid in settlement or compromise to which the Indemnitee is entitled.

10. INSURANCE. The corporation may purchase and maintain insurance, at its expense, to protect itself and any director, officer, employee or agent of the corporation or another organization or employee benefit plan against any expense, liability or loss incurred by him in any such capacity, or arising out of his status as such, whether or not the corporation would have the power to indemnify such person against such expense, liability or loss under Chapter 156B of the Massachusetts General Laws.

11. MERGER OR CONSOLIDATION. If the corporation is merged into or consolidated with another corporation and the corporation is not the surviving corporation, the surviving corporation shall assume the obligations of the corporation under this Article with respect to any action, suit, proceeding or investigation arising out of or relating to any actions, transactions or facts occurring prior to the date of such merger or consolidation.

CONTINUATION SHEET 6F

12. SAVINGS CLAUSE. If this Article or any portion hereof shall be invalidated on any ground by any court of competent jurisdiction, then the corporation shall nevertheless indemnify each Indemnitee as to any expenses (including attorneys' fees), judgments, fines and amounts paid in settlement or compromise in connection with any action, suit, proceeding or investigation, whether civil, criminal or administrative, including an action by or in the right of the corporation, to the fullest extent permitted by any applicable portion of this Article that shall not have been invalidated and to the fullest extent permitted by applicable law.

13. SUBSEQUENT LEGISLATION. If the Massachusetts General Laws are amended after adoption of this Article to expand further the indemnification permitted to Indemnitees, then the corporation shall indemnify such persons to the fullest extent permitted by the Massachusetts General Laws, as so amended.

6C. OTHER PROVISIONS

(a) The directors may make, amend, or repeal the By-Laws in whole or in part, except with respect to any provision of such By-Laws which by law or these Articles of Organization or the By-Laws requires action by the stockholders.

(b) Meetings of the stockholders of the corporation may be held anywhere in the United States.

(c) The corporation shall have the power to be a partner in any business enterprise which this corporation would have the power to conduct by itself.

(d) The corporation, by vote of at least sixty-six and two-thirds percent (66 2/3%) of the stock outstanding and entitled to vote thereon (or if there are two or more classes of stock entitled to vote as separate classes, then by vote of at least sixty-six and two-thirds percent (66 2/3%) of each such class of stock outstanding), may (i) authorize any amendment to its Articles of Organization pursuant to Section 71 of Chapter 156B of the Massachusetts General Laws, as amended from time to time, (ii) authorize the sale, lease or exchange of all or substantially all of its property and assets, including its goodwill, pursuant to Section 75 of Chapter 156B of the Massachusetts

CONTINUATION SHEET 6G

General Laws, as amended from time to time, and (iii) approve an agreement of merger or consolidation pursuant to Section 78 of Chapter 156B of the Massachusetts General Laws, as amended from time to time; PROVIDED, however, that if any such (i) amendment to its Articles of Organization, (ii) sale, lease, or exchange or (iii) merger or consolidation (each as more fully described above) has been approved by a majority of the Board of Directors of the corporation, then the corporation may authorize or approve such action by vote of a majority of the stock outstanding and entitled to vote thereon (or if there are two or more classes of stock entitled to vote as separate classes, then by vote of a majority of each such class outstanding).

(e) Chapter 110F of the Massachusetts General Laws, as it may be amended from time to time, shall not apply to the corporation.

ARTICLE VII

The effective date of the restated Articles of Organization of the corporation shall be the date approved and filed by the Secretary of the Commonwealth. If a later effective date is desired, specify such date which shall not be more than thirty days after the date of filing.

ARTICLE VIII

The information contained in Article VIII is not a permanent part of the Articles of Organization.

a. The street address (post office box are not acceptable) of the principle office of the corporation in Massachusetts is:

6 Shattuck Road, Andover, MA 01810

b. The name, residential address and post office address of each director and officer of the corporation is as follows.

	NAME	RESIDENTIAL ADDRESS	POST OFFICE ADDRESS
President:	John R. Bertucci	50 Hill Street Lexington, MA 02421	c/o MKS Instruments, Inc. 6 Shattuck Road Andover, MA 01810
Treasurer:	William Donlan	87 Warren Street Medford, MA 02115	c/o MKS Instruments, Inc. 6 Shattuck Road Andover, MA 01810
Clerk:	Richard S. Chute	108 Brattle Street Cambridge, MA 02138	c/o MKS Instruments, Inc. 6 Shattuck Road Andover, MA 01810
Directors:	John R. Bertucci	50 Hill Street Lexington, MA 02421	c/o MKS Instruments, Inc. 6 Shattuck Road Andover, MA 01810
	Richard S. Chute	108 Brattle Street Cambridge, MA 02138	c/o MKS Instruments, Inc. 6 Shattuck Road Andover, MA 01810
	Owen W. Robbins	199 Country Drive Weston, MA 02193	c/o MKS Instruments, Inc. 6 Shattuck Road Andover, MA 01810
	Robert J. Therrien	300 Boylston Street Apt. 702 Boston, MA 02116-3923	c/o MKS Instruments, Inc. 6 Shattuck Road Andover, MA 01810
	Louis P. Valente	44 Concord Road Weston, MA 02193	c/o MKS Instruments, Inc. 6 Shattuck Road Andover, MA 01810

c. The fiscal year (i.e., tax year) of the corporation shall end on the last day of the month of:

December

d. The name and business address of the resident agent, if any, of the corporation is:

Richard S. Chute, Hill & Barlow, One International Place, Boston, MA 02110

**We further certify that the foregoing Restated Articles of Organization affect no amendments to the Articles of Organization of the corporation as heretofore amended, except amendments to the following articles. Briefly describe amendments below:

See Continuation Sheet 8

SIGNED UNDER THE PENALTIES OF PERJURY, this 24th day of March, 1999.

/s/ Joseph A. Maher, Vice President

/s/ William P. Donlan, Assistant Clerk

*Delete the inapplicable words

**If there are no amendments, state "None."

Continuation Sheet 8

- Article 3. Is amended to: (i) eliminate authorized shares of Class A Common Stock, no par value per share ("Class A Common Stock"), and Class B Common Stock, no par value per share ("Class B Common Stock"); (ii) increase the authorized number of shares of Common Stock, no par value per share ("Common Stock") to 50,000,000 shares and; (iii) authorize issuance of up to 2,000,000 shares of Preferred Stock.
- Article 4. Is amended to: (i) delete any and all provisions describing or relating to rights and preferences of Class A Common Stock and Class B Common Stock; (ii) provide that each outstanding share of Class A Common Stock and Class B Common Stock has been converted into one share of Common Stock; (iii) provide a statement of the designation and the powers, privileges and rights, and the qualification, limitations or restrictions thereof in respect of each class of capital stock of the corporation; and (iv) authorize the Board of Directors to issue Preferred Stock in one or more series and create any such series of Preferred Stock without requiring a vote of the holders of Preferred Stock or Common Stock as a prerequisite to the issuance of any shares of any such Preferred Stock and restate Article 4 in its entirety.
- Article 6. Is amended to (i) delete the provision relating to limitation of director liability and replace it with Section 6A, "Limitation of Director Liability;" (ii) add Section 6B "Indemnification;" and (iii) add Section 6C "Other Provisions."

THE COMMONWEALTH OF MASSACHUSETTS
RESTATED ARTICLES OF ORGANIZATION
(General Laws, Chapter 156B, Section 74)

I hereby approve the within Restated Articles of Organization and, the filing fee in the amount of \$22,400 having been paid, said articles are deemed to have been filed with me this 24th day of March, 1999.

Effective date: _____

/s/ William Francis Galvin

WILLIAM FRANCIS GALVIN
Secretary of the Commonwealth

TO BE FILLED IN BY CORPORATION
Photocopy of document to be sent to:

Emma R. Petty, Corporate Paralegal

Hale and Dorr LLP
60 State Street

Boston, MA 02109

Telephone: 617-526-6000

HALE AND DORR LLP
COUNSELLORS AT LAW

WWW.HALEDORR.COM
60 STATE STREET - BOSTON, MA 02109
617-526-6000 - FAX 617-526-5000

Exhibit 5.1

November 9, 2000

MKS Instruments, Inc.
Six Shattuck Road
Andover, MA 01810

Re: Registration Statement on Form S-4

Ladies and Gentlemen:

This opinion is furnished to you in connection with a Registration Statement on Form S-4 (File No. 333-_____) (the "Registration Statement") filed with the Securities and Exchange Commission (the "Commission") under the Securities Act of 1933, as amended (the "Securities Act"), for the registration of an estimated 12,061,400 shares of Common Stock, no par value per share (the "Shares"), of MKS Instruments, Inc., a Massachusetts corporation (the "Buyer").

The Shares are to be issued by the Buyer pursuant to an agreement and plan of merger and reorganization (the "Merger Agreement") entered into by and among the Buyer, Mango Subsidiary Corp., a Delaware corporation and wholly owned subsidiary of the Buyer (the "Transitory Subsidiary"), and Applied Science and Technology, Inc. (the "Company"), a Delaware corporation. Capitalized terms used herein and not otherwise defined shall have the respective meanings ascribed to such terms as in the Merger Agreement.

We are acting as counsel for the Buyer and Transitory Subsidiary in connection with the issuance by the Buyer of the Shares. We have examined signed copies of the Registration Statement as filed with the Commission. We have also examined and relied upon the Merger Agreement, minutes of meetings of the stockholders and the Board of Directors of the Buyer as provided to us by the Buyer, stock record books of the Buyer as provided to us by the Buyer, the Amended and Restated Articles of Organization and By-Laws of the Buyer, each as restated and/or amended to date, and such other documents as we have deemed necessary for purposes of rendering the opinions hereinafter set forth.

In our examination of the foregoing documents, we have assumed the genuineness of all signatures, the authenticity of all documents submitted to us as

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originals, the conformity to original documents of all documents submitted to us as copies, the authenticity of the originals of such latter documents and the legal competence of all signatories to such documents.

We assume that the appropriate action will be taken, prior to the offer and sale of the Shares in accordance with the Merger Agreement, to register and qualify the Shares for sale under all applicable state securities or "blue sky" laws.

We express no opinion herein as to the laws of any state or jurisdiction other than the state laws of the Commonwealth of Massachusetts, the Delaware General Corporation Law statute and the federal laws of the United States of America. To the extent that any other laws govern the matters as to which we are opining herein, we have assumed that such laws are identical to the state laws of the Commonwealth of Massachusetts, and we are expressing no opinion herein as to whether such assumption is reasonable or correct.

Based upon and subject to the foregoing, we are of the opinion that the Shares have been duly authorized for issuance and, when the Shares are issued and paid for in accordance with the terms and conditions of the Merger Agreement, the Shares will be legally issued, fully paid and non-assessable.

It is understood that this opinion is to be used only in connection with the offer and sale of the Shares while the Registration Statement is in effect.

Please note that we are opining only as to the matters expressly set forth herein, and no opinion should be inferred as to any other matters. This opinion is based upon currently existing statutes, rules, regulations and judicial decisions, and we disclaim any obligation to advise you of any change in any of these sources of law or subsequent legal or factual developments which might affect any matters or opinions set forth herein.

We hereby consent to the filing of this opinion with the Commission as an exhibit to the Registration Statement in accordance with the requirements of Item 601(b)(5) of Regulation S-K under the Securities Act and to the use of our name therein and in the related Prospectus under the caption "Legal Matters." In giving such consent, we do not hereby admit that we are in the category of persons whose consent is required under Section 7 of the Securities Act or the rules and regulations of the Commission.

Very truly yours,

/s/ Hale and Dorr LLP

HALE AND DORR LLP

HALE AND DORR LLP
COUNSELLORS AT LAW

WWW.HALEDORR.COM
60 STATE STREET 0 BOSTON, MA 02109
617-526-6000 0 FAX 617-526-5000

Exhibit 8.1

November 9, 2000

MKS Instruments, Inc.
Six Shattuck Road
Andover, MA 01810

Re: Merger pursuant to Agreement and Plan of Merger among
MKS Instruments, Inc., Mango Subsidiary Corp. and
Applied Science and Technology, Inc.

Ladies and Gentlemen:

This opinion is being delivered to you in connection with the filing of a registration statement (the "Registration Statement") on Form S-4, which includes the Proxy Statement and Prospectus relating to the Agreement and Plan of Merger dated as of October 2, 2000, (the "Merger Agreement"), by and among MKS Instruments, Inc., a Massachusetts corporation ("Parent"), Mango Subsidiary Corp., a Delaware corporation and wholly owned subsidiary of Parent ("Sub"), and Applied Science and Technology, Inc., a Delaware corporation ("Target"). Pursuant to the Merger Agreement, Sub will merge with and into Target (the "Merger"). Except as otherwise provided, capitalized terms not defined herein have the meanings set forth in the Merger Agreement and the exhibits thereto or in the letters delivered to Hale and Dorr LLP by Parent and Target containing certain representations of Parent and Target relevant to this opinion (the "Representation Letters"). All section references, unless otherwise indicated, are to the United States Internal Revenue Code of 1986, as amended (the "Code").

In our capacity as counsel to Parent in the Merger, and for purposes of rendering this opinion, we have examined and relied upon the Registration Statement, the Merger Agreement and the exhibits thereto, the Representation Letters, and such other documents as we considered relevant to our analysis. In our examination of documents, we have assumed the authenticity of original documents, the accuracy of copies, the genuineness of signatures, and the legal capacity of signatories.

We have assumed that all parties to the Merger Agreement and to any other documents examined by us have acted, and will act, in accordance with the terms of such

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Merger Agreement and documents and that the Merger will be consummated at the Effective Time pursuant to the terms and conditions set forth in the Merger Agreement without the waiver or modification of any such terms and conditions. Furthermore, we have assumed that all representations contained in the Merger Agreement, as well as those representations contained in the Representation Letters, are, and at the Effective Time will be, true and complete in all material respects, and that any representation made in any of the documents referred to herein "to the best of the knowledge and belief" (or similar qualification) of any person or party is, and at the Effective Time will be, correct without such qualification. We have also assumed that as to all matters for which a person or entity has represented that such person or entity is not a party to, does not have, or is not aware of, any plan, intention, understanding, or agreement, there is no such plan, intention, understanding, or agreement. We have not attempted to verify independently such representations, but in the course of our representation, nothing has come to our attention that would cause us to question the accuracy thereof.

The conclusions expressed herein represent our judgment as to the proper treatment of certain aspects of the Merger under the income tax laws of the United States based upon the Code, Treasury Regulations, case law, and rulings and other pronouncements of the Internal Revenue Service (the "IRS") as in effect on the date of this opinion. No assurances can be given that such laws will not be amended or otherwise changed prior to the Effective Time, or at any other time, or that such changes will not affect the conclusions expressed herein. Nevertheless, we undertake no responsibility to advise you of any developments after the Effective Time in the application or interpretation of the income tax laws of the United States.

Our opinion represents our best judgment of how a court would decide if presented with the issues addressed herein and is not binding upon either the IRS or any court. Thus, no assurances can be given that a position taken in reliance on our opinion will not be challenged by the IRS or rejected by a court.

This opinion addresses only the specific United States federal income tax consequences of the Merger set forth below, and does not address any other federal, state, local, or foreign income, estate, gift, transfer, sales, use, or other tax consequences that may result from the Merger or any other transaction (including any transaction undertaken in connection with the Merger). We express no opinion regarding the tax consequences of the Merger to shareholders of Target that are subject to special tax rules, and we express no opinion regarding the tax consequences of the Merger arising in connection with the ownership of options or warrants for Target stock.

On the basis of, and subject to, the foregoing, and in reliance upon the representations and assumptions described above, we are of the following opinion:

1. The Merger will constitute a reorganization within the meaning of Section 368(a); and
2. The discussion under the section "Material United States Federal Income Tax Considerations of the Merger" in the Registration Statement, subject to the limitations

and qualifications described therein, accurately describes the material federal income tax considerations relevant to Target stockholders receiving Buyer Common Stock in the Merger.

In rendering this opinion, we have assumed that Mintz, Levin, Cohn, Ferris, Glovsky & Popeo, P.C. has delivered, and has not withdrawn, an opinion that is substantially similar to this one. No opinion is expressed as to any federal income tax consequence of the Merger except as specifically set forth herein, and this opinion may not be relied upon except with respect to the consequences specifically discussed herein.

This opinion is intended solely for the purpose of inclusion as an exhibit to the Registration Statement. It may not be relied upon for any other purpose or by any other person or entity, and may not be made available to any other person or entity without our prior written consent. We hereby consent to the filing of this opinion as an exhibit to the Registration Statement and further consent to the use of our name in the Registration Statement in connection with references to this opinion and the tax consequences of the Merger. In giving this consent, however, we do not hereby admit that we are in the category of persons whose consent is required under Section 7 of the Securities Act of 1933, as amended.

Very truly yours,

/s/ Hale and Dorr LLP

HALE AND DORR LLP

Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C.

One Financial Center
Boston, Massachusetts 02111

617 542 6000
617 542 2241 fax

November 9, 2000

Applied Science and Technology, Inc.
90 Industrial Way
Wilmington, MA 01887

Re: Merger pursuant to Agreement and Plan of Merger among MKS Instruments,
Inc., Mango Subsidiary Corp., and Applied Science and Technology, Inc. .

Ladies and Gentlemen:

This opinion is being delivered to you in connection with the Agreement and Plan of Merger dated as of October 2, 2000 (the "Merger Agreement"), by and among MKS Instruments, Inc., a Massachusetts corporation ("Parent"), Mango Subsidiary Corp., a Delaware corporation and wholly owned subsidiary of Parent ("Sub"), and Applied Science and Technology, Inc., a Delaware corporation ("Target"). Pursuant to the Merger Agreement, Sub will merge with and into Target (the "Merger"). Except as otherwise provided, capitalized terms not defined herein have the meanings set forth in the Merger Agreement and the exhibits thereto or in the letters delivered to Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C. by Parent and Target containing certain representations of Parent and Target relevant to this opinion (the "Representation Letters"). All section references, unless otherwise indicated, are to the United States Internal Revenue Code of 1986, as amended (the "Code").

In our capacity as counsel to Target in the Merger, and for purposes of rendering this opinion, we have examined and relied upon the Merger Agreement and the exhibits thereto, the registration statement on Form S-4 that includes the Joint Proxy Statement and Prospectus relating to the Merger Agreement, the Representation Letters, and such other documents as we considered relevant to our analysis. In our examination of documents, we have assumed the authenticity of original documents, the accuracy of copies, the genuineness of signatures, and the legal capacity of signatories.

We have assumed that all parties to the Merger Agreement and to any other documents examined by us have acted, and will act, in accordance with the terms of such Merger Agreement and documents and that the Merger will be consummated at the Effective Time pursuant to the terms and conditions set forth in the Merger Agreement without the waiver or modification of any such terms and conditions. Furthermore, we have assumed that all representations contained in the Merger Agreement, as well as those representations contained in the Representation Letters, are, and

Boston New York Reston Washington

Applied Science and Technology, Inc.

November 9, 2000

Page 2

at the Effective Time will be, true and complete in all material respects, and that any representation made in any of the documents referred to herein "to the best of the knowledge and belief" (or similar qualification) of any person or party is, and at the Effective Time will be, correct without such qualification. We have also assumed that as to all matters for which a person or entity has represented that such person or entity is not a party to, does not have, or is not aware of, any plan, intention, understanding, or agreement, there is no such plan, intention, understanding, or agreement. We have not attempted to verify independently such representations, but in the course of our representation, nothing has come to our attention that would cause us to question the accuracy thereof.

The conclusions expressed herein represent our judgment as to the proper treatment of certain aspects of the Merger under the income tax laws of the United States based upon the Code, Treasury Regulations, case law, and rulings and other pronouncements of the Internal Revenue Service (the "IRS") as in effect on the date of this opinion. No assurances can be given that such laws will not be amended or otherwise changed after the Effective Time or that such changes will not affect the conclusions expressed herein. Nevertheless, we undertake no responsibility to advise you of any developments after the Effective Time in the application or interpretation of the income tax laws of the United States.

Our opinion represents our best judgment of how a court would decide if presented with the issues addressed herein and is not binding upon either the IRS or any court. Thus, no assurances can be given that a position taken in reliance on our opinion will not be challenged by the IRS or rejected by a court.

This opinion addresses only the specific United States federal income tax consequences of the Merger set forth below, and does not address any other federal, state, local, or foreign income, estate, gift, transfer, sales, use, or other tax consequences that may result from the Merger or any other transaction (including any transaction undertaken in connection with the Merger). We express no opinion regarding the tax consequences of the Merger to shareholders of Target that are subject to special tax rules, and we express no opinion regarding the tax consequences of the Merger arising in connection with the ownership of options or warrants for Target stock.

On the basis of, and subject to, the foregoing, and in reliance upon the representations and assumptions described above, we are of the following opinion:

1. The Merger will constitute a reorganization within the meaning of Section 368(a);
2. No gain or loss will be recognized by Parent, Sub, or Target as a result of the Merger;
3. No gain or loss will be recognized by the shareholders of Target upon the exchange of Target stock solely for shares of Parent stock in the Merger;
4. Cash received by the shareholders of Target in lieu of fractional shares of Parent stock will be treated as received as a distribution in redemption of such fractional shares, subject to the

Applied Science and Technology, Inc.

November 9, 2000

Page 3

provisions of Section 302, as if such fractional shares had been issued in the Merger and then redeemed by Parent;

5. The tax basis of the shares of Parent stock received by the shareholders of Target in the Merger will be equal to the tax basis of the shares of Target stock exchanged therefor in the Merger, reduced by any basis allocable to a fractional share of Parent stock treated as sold or exchanged under Section 302; and
6. The holding period for the shares of Parent stock received by the shareholders of Target will include the holding period for the shares of Target stock exchanged therefor in the Merger, provided that the shares of Target stock are held as capital assets at the Effective Time.

In rendering this opinion, we have assumed that Hale and Dorr LLP has delivered, and has not withdrawn, the opinion provided for in Section 8.2(c) of the Merger Agreement. No opinion is expressed as to any federal income tax consequence of the Merger except as specifically set forth herein, and this opinion may not be relied upon except with respect to the consequences specifically discussed herein.

This opinion is being delivered to you solely in connection with the Merger Agreement. It may not be relied upon for any other purpose or by any other person or entity, and may not be made available to any other person or entity without our prior written consent.

Very truly yours,

/s/ Mintz, Levin, Cohn,
Ferris, Glovsky and
Popeo, P.C.

MINTZ, LEVIN, COHN, FERRIS,
GLOVSKY and POPEO, P.C.

EMPLOYMENT AGREEMENT

EMPLOYMENT AGREEMENT dated March 10, 2000 ("Employment Agreement") by and between MKS Instruments, Inc., a Massachusetts corporation (the "Corporation"), and Donald Smith of Belmont, MA (the "Employee").

WHEREAS, the Corporation and the Employee desire to provide for the employment of the Employee by the Corporation:

NOW, THEREFORE, in consideration of the premises and the mutual promises contained herein, the Corporation and the Employee hereby agree as follows:

(1) TERM OF EMPLOYMENT: The Corporation hereby employs the Employee, and the Employee hereby accepts employment with the Corporation, for a period commencing as of March 10, 2000 and continuing from month to month thereafter until terminated as provided in this Section (1). The Corporation may terminate the employment of the Employee under this Employment Agreement at any time after September 10, 2000 by giving written notice to the Employee stating its election to terminate the employment of the Employee under this Employment Agreement. The employment of the Employee under this Employment Agreement shall terminate six (6) months after the date of receipt by the Employee of such notice; provided, however, that the employment of the Employee under this Employment Agreement is subject to prior termination as hereinafter provided in Section (5). The Employee may terminate his employment with the Corporation under this Employment Agreement at any time after September 10, 2000 by giving written notice to the Corporation stating his election to terminate his employment under this Employment Agreement, provided, however, that the employment of the Employee under this Employment Agreement is subject to prior termination as hereinafter provided in Section (5).

The employment of the employee under this Employment Agreement shall terminate between twelve (12) and six (6) months after the date of receipt by the Corporation of such notice as set forth below:

IF NOTICE IS RECEIVED BY THE CORPORATION:	DATE OF TERMINATION OF EMPLOYMENT OF EMPLOYEE:
: -----	: -----
Between September 10, 2000 and October 9, 2000	Twelve (12) months after date of receipt of written notice by Corporation

Between October 10, 2000 and November 9, 2000	Eleven (11) months after date of receipt of written notice by Corporation.
Between November 10, 2000 and December 9, 2000	Ten (10) months after date of receipt of written notice by Corporation
Between December 10, 2000 and January 9, 2001	Nine (9) months after date of receipt of written notice by Corporation
Between January 10, 2001 and February 9, 2001	Eight (8) months after date of receipt of written notice by Corporation
Between February 10, 2001 and March 9, 2001	Seven (7) months after date of receipt of written notice by Corporation
Anytime on or after March 10, 2001	Six (6) months after date of receipt of written notice by Corporation

(2) CAPACITY: The Employee shall be employed by the Corporation in the position of Vice President and Chief Technical Officer and shall perform such duties as shall be assigned to Employee by the President and Chief Operating Officer of the Corporation, or his designee.

(3) EXTENT OF SERVICES: During the term of employment of the Employee under this Employment Agreement, the Employee shall devote his full time to, and use his best efforts in the furtherance of, the business of the Corporation and shall not engage in any other business activity which interferes in any way with the Employee's performance of his duties to the Corporation, whether or not such business activity is pursued for gain or any other pecuniary advantage, without the prior written consent of the Corporation.

(4) COMPENSATION: In consideration of the services to be rendered by the Employee under this Employment Agreement, the Corporation agrees to pay, and the Employee agrees to accept, the following compensation:

(a) BASE SALARY: A base salary at the rate of \$150,000 per year for the term of employment of the Employee under this Employment Agreement. The base salary shall be payable in equal biweekly installments subject to usual withholding requirements. This salary will be reviewed annually according to the established practices of the company. No overtime pay will be paid to the Employee by the Corporation.

(b) INCENTIVE: For each calendar year of the corporation during the term of employment of the Employee under this Employment Agreement, the Employee shall be entitled to participate in a Management Incentive Program pursuant to the terms of which the Employee may receive compensation in addition to his base salary if the Corporation attains its consolidated financial goals during such calendar year of the Corporation. The "targeted" additional compensation goal for the Employee shall be 40% of his earnings. The Management Incentive Program, including the consolidated financial goals established by the Corporation for the calendar year and the formula to be used to determine the payment of amounts under the Management Incentive Program, will be communicated to the Employee in writing prior to the beginning of each calendar year of the Corporation.

If there shall be any disagreement between the Corporation and the Employee as to the calculation of the Management Incentive Bonus in any calendar year of the Corporation during the term of employment of the Employee under this Employment Agreement, the decision of the independent Public Accounting firm of the corporation as to the amount of the Management Incentive Bonus of the Corporation shall be conclusive and binding on the corporation and the Employee. The Employee shall be entitled to inspect any certificate of such independent public accounting firm as to the calculation of the Management Incentive Bonus of the Corporation in any calendar year of the Corporation during the term of employment of the Employee under this Employment Agreement.

Incentive payments shall be payable to the Employee on or before March 31 after the end of each calendar year of the Corporation during the term of employment of the Employee under this Employment Agreement.

The Employee will not receive any payment under the Management Incentive Program for any calendar year in which the Employee is not actively employed on the last day of that calendar year, but the Employee need not be actively employed at the time the payment is actually made.

(c) MKS INSTRUMENTS PROFIT SHARING AND RETIREMENT SAVINGS PLAN:

The Employee shall be eligible to become a participant under the profit sharing plan of the Corporation on fulfilling the conditions set forth in the MKS Instruments Profit Sharing and Retirement Savings Plan of the Corporation.

(d) VACATION: The Employee shall be entitled to an annual vacation leave of 20 days at full pay during each year of this Employment Agreement, subject to the Employee arranging such vacation so as not to affect adversely the ability of the Corporation to transact its necessary business. Vacation shall accrue at the rate of 13.33 hours per month.

(e) LIFE INSURANCE: The Corporation shall provide, and pay all of the premiums for, term life insurance in the amount of \$250,000 for the Employee during the term of employment of the Employee under this Employment Agreement in accordance with the term life insurance plan of the Corporation.

(f) MEDICAL/DENTAL INSURANCE: The Corporation shall provide group medical/dental insurance for the Employee and his eligible family members under the Plans of the Corporation applicable to the Employee during the term of employment of the Employee under this Employment Agreement. In addition, the Corporation shall provide to the Employee a supplemental medical/dental plan that will reimburse the Employee for the cost of any medically necessary services not paid under the primary medical/dental insurance plans, subject to an annual limit of \$2,500.

(g) OTHER BENEFITS: The Corporation shall provide other benefits for the employee under the Plans of the Corporation applicable to the Employee during the term of employment of the Employee under this Employment Agreement.

(5) TERMINATION: The employment of the Employee under this Employment Agreement shall terminate:

(a) On the expiration of the period of employment as provided in Section (1).

(b) Upon the death of the Employee.

(c) At the election of the Corporation (i) if the Employee shall fail, or refuse, to perform the services required of him under this Employment Agreement, or (ii) if the Employee shall fail, or refuse, to perform the other covenants and agreements required of him under this Employment Agreement, or (iii) "for cause", which term shall mean acts or actions detrimental to the best interests of the Corporation.

(6) PAYMENT UPON TERMINATION:

(a) If the employment of the Employee is terminated on the expiration of the period of employment as provided in Section (1), the Employee shall not be entitled to any compensation, and the Corporation shall have no obligation to pay the employee any compensation, except as is provided in this Employment Agreement.

(b) If the employment of the Employee is terminated by death, the Corporation shall pay to the estate of the Employee the compensation which would otherwise be payable to the Employee at the end of the month in which his death occurs.

(c) In the event the employment of the Employee is terminated at the election of the Corporation pursuant to Section (5) (c) hereof, the Employee shall only be entitled to his base salary through the last day of actual employment or the date of termination, whichever is earlier..

(7) TRADE SECRETS: The Employee covenants and agrees that he will communicate to the Corporation, and will not divulge or communicate to any other person, partnership, corporation or other entity without the prior written consent of the Corporation, any trade secrets of the Corporation or confidential information relating to the business of the Corporation or any one connected with the Corporation, and that such trade secrets and confidential information shall not be used by the Employee either on his own behalf or for the benefit of others or disclosed by the Employee to any one, except to the Corporation, during or after the term of employment of the Employee under this Employment Agreement.

(8) INVENTIONS AND PATENTS:

(a) The Employee shall make prompt full disclosure in writing to the Corporation of all inventions, improvements and discoveries, whether or not patentable, which the Employee conceives, devises, makes, discovers, develops, perfects or first reduces to practice, either alone or jointly with others, during the term of employment of the Employee under this Employment Agreement, which relate in any way to the fields, products or business of the Corporation, including development and research, whether during or out of the usual hours of work or on or off the premises of the Corporation or by use of the facilities of the Corporation or otherwise and whether at the request or suggestion of the Corporation or otherwise (all such inventions, improvements and discoveries being hereinafter called the "Inventions"), including any Inventions, whether or not patentable, conceived, devised, made, discovered, developed, perfected or first reduced to practice by the Employee after the employment of the Employee under this Employment Agreement is terminated if the Inventions were conceived by the Employee during the term of employment of the Employee under this Employment Agreement. Any Inventions, whether or not patentable which relate in any way to the fields, products or business of the Corporation, conceived, devised, made, discovered, developed, perfected or first reduced to practice by the Employee within six (6) months of the date of termination of the

employment of the Employee under this Employment Agreement shall be conclusively presumed to have been conceived during the term of employment of the Employee under this Employment Agreement.

(b) The Employee agrees that the Inventions shall be the sole and exclusive property of the Corporation.

(c) The Employee agrees to assist the Corporation and its nominees in every reasonable way (entirely at its or their expense) to obtain for the benefit of the Corporation letters patent for the Inventions and trademarks, trade names and copyrights relating to the Inventions, and any renewals, extensions or reissues thereof, in any and all countries, and agrees to make, execute, acknowledge and deliver, at the request of the Corporation, all written applications for letters patent, trademarks, trade names and copyrights relating to the Inventions and any renewals, extensions or reissues thereof, in any and all countries, and all documents with respect thereto, and all powers of attorney relating thereto and, without further compensation, to assign to the Corporation or its nominee all the right, title and interest of the Employee in and to such applications and to any patents, trademarks, trade names or copyrights which shall thereafter issue on any such applications, and to execute, acknowledge and deliver all other documents deemed necessary by the Corporation to transfer to or vest in the Corporation all of the right, title and interest of the Employee in and to the Inventions, and to such trademarks, trade names, patents and copyrights together with exclusive rights to make, use, license and sell them throughout the world.

(d) The Employee agrees that even though his employment is terminated under this Employment Agreement he will, at any time after such termination of employment, carry out and perform all of the agreements of Subsections (8) (a) and (8) (c) above, and will at any time and at all times cooperate with the Corporation in the prosecution and/or defense of any litigation which may arise in connection with the Inventions, provided, however, that should such services be rendered after termination of employment of the Employee under this Employment Agreement, the Employee shall be paid reasonable compensation on a per diem basis.

(e) The Employee agrees to make and maintain adequate and current written records of all Inventions in the form of notes, sketches, drawings, or reports relating thereto, which records shall be and remain the property of, and available to, the Corporation at all times.

(f) The Employee agrees that he will, upon leaving the employment of the Corporation, promptly deliver to the Corporation all originals and copies of disclosures, drawings, prints, letters, notes, and reports either typed, handwritten or otherwise memorialized, belonging to the Corporation which are in his possession or under his control and the Employee agrees that he will not retain or give away or make copies of the originals or copies of any such disclosures, drawings, prints, letters, notes or reports.

(9) PROPERTY OF CORPORATION: All files, records, reports, documents, drawings, specifications, equipment, and similar items relating to the business of the Corporation, whether prepared by the Employee or otherwise coming into his possession, shall remain the exclusive property of the Corporation and shall not be removed by the Employee from the premises of the Corporation under any circumstances whatsoever without the prior written consent of the Corporation. Provided, however, the Employee may remove such files and other items from the premises of the Corporation if required to do so during the course of his duties or if required to work at home.

(10) NON-COMPETITION:

(a) During the term of employment of the Employee under this Employment Agreement, and during a period of one (1) year after termination of employment of the Employee under this Employment Agreement without regard to the cause of termination of employment and whether or not such termination of employment was caused by the Employee or by the Corporation, (i) the Employee shall not engage, either directly or indirectly, in any manner or capacity, in any business or activity which is competitive with any business or activity conducted by the Corporation; (ii) the Employee shall not work for or employ, directly or indirectly, or cause to be employed by another, any person who was an employee, officer or agent of the Corporation or of any of its subsidiaries at any time during a period of twelve (12) months prior to the termination of the employment of the Employee under this Employment Agreement nor shall the Employee form any partnership with, or establish any business venture in cooperation with, any such person which is competitive with any business or activity of the Corporation; (iii) the Employee shall not give, sell or lease any goods or services competitive with the goods or services of the Corporation or its subsidiaries to any person, partnership, corporation or other entity who purchased goods or services from the Corporation or its subsidiaries within one (1) year before the termination of the employment of the Employee under this Employment Agreement; (iv) the Employee shall not have any financial interest, or participate as a director, officer, stockholder, partner, employee,

consultant or otherwise, in any corporation, partnership or other entity which is competitive with any business or activity conducted by the Corporation.

(b) The Corporation and the Employee agree that the services of the Employee are of a personal, special, unique and extraordinary character, and cannot be replaced by the Corporation without great difficulty, and that the violation by the Employee of any of his agreements under this Section (10) would damage the goodwill of the Corporation and cause the Corporation irreparable harm which could not reasonably or adequately be compensated in damages in an action at law, and that the agreements of the Employee under this Section (10) may be enforced by the Corporation in equity by an injunction or restraining order in addition to being enforced by the Corporation at law.

(c) In the event that this Section (10) shall be determined by any court of competent jurisdiction to be unenforceable by reason of its extending for too long a period of time or over too great a range of activities, it shall be interpreted to extend only over the maximum period of time or range of activities as to which it may be enforceable.

(11) NOTICE: Any and all notices under this Employment Agreement shall be in writing and, if to the Corporation, shall be duly given if sent to the Corporation by registered or certified mail, postage prepaid, return receipt requested, at the address of the Corporation set forth under its name below or at such other address as the Corporation may hereafter designate to the Employee in writing for the purpose, and if to the Employee, shall be duly given if delivered to the Employee by hand or if sent to the Employee by registered or certified mail, postage prepaid, return receipt requested, at the address of the Employee set forth under his name below or at such other address as the Employee may hereafter designate to the Corporation in writing for the purpose.

(12) ASSIGNMENT: The rights and obligations of the Corporation under this Employment Agreement shall inure to the benefit of, and shall be binding upon, the successors and assigns of the Corporation. The rights and obligations of the Employee under this Employment Agreement shall inure to the benefit of, and shall be binding upon, the heirs, executors and legal representatives of the Employee.

(13) ENTIRE AGREEMENT AND SEVERABILITY:

(a) This Employment Agreement and the MKS offer of employment

letter dated March 10, 2000 (and the documents referenced herein) supersede any and all other agreements, either oral or in writing, between the parties hereto with respect to the employment of the Employee by the Corporation and contain all of the covenants and agreements between the parties with respect to such employment. Each party to this Employment Agreement acknowledges that no representations, inducements, promises or agreements, oral or otherwise, have been made by any party, or any one acting on behalf of any party, which are not embodied herein, and that no other agreement, statement or promise not contained in this Employment Agreement or referenced herein, or as amended, shall be valid and binding. Any modification of this Employment Agreement will be effective only if it is in writing signed by both parties to this Employment Agreement.

(b) If any provision in this Employment Agreement is held by a court of competent jurisdiction to be invalid, void or unenforceable, the remaining provisions shall nevertheless continue in full force and effect without being impaired or invalidated in any way.

(c) All pronouns used herein shall include the masculine, feminine, and neuter gender as the context requires.

(14) GOVERNING LAW: This Employment Agreement shall be governed by, and construed and enforced in accordance with, the internal laws of The Commonwealth of Massachusetts without reference to conflict of laws principles.

IN WITNESS WHEREOF, the parties hereto have executed, in the Commonwealth of Massachusetts, this Employment Agreement as a sealed instrument, all as of the day, month and year first written above.

MKS INSTRUMENTS, INC.

By: /s/ Peter Younger

Peter Younger
President and Chief Operating Officer
6 Shattuck Road, Andover, MA 01810

/s/ Donald K. Smith

Donald Smith

Address: 10 Village Hill Rd.

Belmont, MA 02478

EMPLOYMENT AGREEMENT

EMPLOYMENT AGREEMENT dated October 18, 2000 ("Employment Agreement") by and between MKS Instruments, Inc., a Massachusetts Corporation (the "Corporation"), and F. Thomas McNabb of Westford, MA (the "Employee").

WHEREAS, the Corporation and the Employee desire to provide for the employment of the Employee by the Corporation:

NOW, THEREFORE, in consideration of the premises and the mutual promises contained herein, the Corporation and the Employee hereby agree as follows:

(1) Term of Employment: The Corporation hereby employs the Employee, and the Employee hereby accepts employment with the Corporation, for a period commencing as of October 18, 2000 and continuing thereafter until terminated as provided in this Section (1). Either the Corporation or the Employee may terminate the employment of the Employee under this Employment Agreement at any time after October 18, 2000 by giving written notice to the other party stating its or his election to terminate the employment of the Employee under this Employment Agreement. The employment of the Employee under this Employment Agreement shall terminate thirty (30) days after the date of receipt by the other party of such notice; provided, however, that the employment of the Employee under this Employment Agreement is subject to prior termination as hereinafter provided in Section (5).

(2) Capacity: The Employee shall be employed by the Corporation in the position of Corporate Vice President and General Manager of Pressure Products and shall perform such duties as shall be assigned to Employee by the President & COO of the Corporation.

(3) Extent of Services: During the term of employment of the Employee under this Employment Agreement, the Employee shall devote his full time to, and use his best efforts in the furtherance of, the business of the Corporation and

shall not engage in any other business activity which interferes in any way with the Employee's performance of his duties to the Corporation, whether or not such business activity is pursued for gain or any other pecuniary advantage, without the prior written consent of the Corporation.

(4) Compensation: In consideration of the services to be rendered by the Employee under this Employment Agreement, the Corporation agrees to pay, and the Employee agrees to accept, the following compensation:

(a) Base Salary: A base salary at the rate of one hundred ninety thousand dollars (\$190,000) per year for the term of employment of the Employee under this Employment Agreement. The base salary shall be payable in equal biweekly installments subject to usual withholding requirements. This salary will be reviewed annually according to the established practices of the company. No overtime pay will be paid to the Employee by the Corporation.

(b) Incentive: Beginning January 1, 2000 for each calendar year of the corporation during the term of employment of the Employee under this Employment Agreement, the Employee shall be entitled to participate in a Management Incentive Program pursuant to the terms of which the Employee may receive compensation in addition to his base salary if the Corporation attains its consolidated financial goals during such calendar year of the Corporation. The "targeted" additional compensation goal for the Employee shall be 40% of his earnings. The Management Incentive Program, including the consolidated financial goals established by the Corporation for the calendar year and the formula to be used to determine the payment of amounts under the Management Incentive Program, will be communicated to the Employee in writing prior to the beginning of each calendar year of the Corporation.

If there shall be any disagreement between the Corporation and the Employee as to the calculation of the Management Incentive Bonus in any calendar year of the Corporation during the term of employment of the Employee under this Employment Agreement, the decision of the independent Public

Accounting firm of the corporation as to the amount of the Management Incentive Bonus of the Corporation shall be conclusive and binding on the corporation and the Employee. The Employee shall be entitled to inspect any certificate of such independent public accounting firm as to the calculation of the Management Incentive Bonus of the Corporation in any calendar year of the Corporation during the term of employment of the Employee under this Employment Agreement.

Incentive payments shall be payable to the Employee on or before March 31 after the end of each calendar year of the Corporation during the term of employment of the Employee under this Employment Agreement.

The Employee will not receive any payment under the Management Incentive Program for any calendar year in which the Employee is not actively employed on the last day of that calendar year, but the Employee need not be actively employed at the time the payment is actually made.

(c) MKS Instruments Profit Sharing and Retirement Savings Plan: The Employee shall be eligible to become a participant under the profit sharing plan of the Corporation on fulfilling the conditions set forth in the MKS Instruments Profit Sharing and Retirement Savings Plan of the Corporation.

(d) Vacation: The Employee shall be entitled to an annual vacation leave of 15 days at full pay during each year of this Employment Agreement, subject to the Employee arranging such vacation so as not to affect adversely the ability of the Corporation to transact its necessary business. Vacation shall accrue at the rate of 1.25 days per month.

(e) Life Insurance: The Corporation shall provide, and pay all of the premiums for, term life insurance in the amount of \$250,000 for the Employee during the term of employment of the Employee under this Employment Agreement in accordance with the term life insurance plan of the Corporation.

(f) Medical/Dental Insurance: The Corporation shall provide group medical/dental insurance for the Employee and his eligible family members under the Plans of the Corporation applicable to the Employee during the term of employment of the Employee under this Employment Agreement. In addition, the Corporation shall provide to the Employee a supplemental medical/dental plan that will reimburse the Employee for the cost of any medically necessary services not paid under the primary medical/dental insurance plans, subject to an annual limit of \$2500.

(g) Stock Options: The Corporation hereby grants to the Employee an option to purchase 75,000 shares of common stock, no par value, of the Corporation at the fair market value of the stock at close of business on October 18, 2000. The foregoing options shall be issued pursuant to and subject to the terms of the Corporation's Amended and Restated 1995 Stock Incentive Plan.

(h) Company Car Allowance: The Corporation shall pay the Employee \$650 per month during the term of his employment as a company car allowance.

(i) Other Benefits: The Corporation shall provide other benefits for the employee under the Plans of the Corporation applicable to the Employee during the term of employment of the Employee under this Employment Agreement.

(5) Termination: The employment of the Employee under this Employment Agreement shall terminate:

(a) On the expiration of the period of employment as provided in Section (1).

(b) Upon the death of the Employee.

(c) At the election of the Corporation (i) if the Employee shall fail, or refuse, to perform the services required of him under this Employment Agreement, or (ii) if the Employee shall fail, or refuse, to

perform the other covenants and agreements required of him under this Employment Agreement, or (iii) "for cause", which term shall mean acts or actions detrimental to the best interests of the Corporation.

(6) Payment Upon Termination:

(a) (i) If the employment of the Employee is terminated by the Corporation "Without Cause", the Employee shall be entitled to a termination benefit of six (6) months compensation for the duration of this agreement.

(ii) If the Employee is terminated by the Corporation "Without Cause", the Employee will be paid all accrued , but unpaid, salary, bonus, vacation and other benefits.

(iii) If the Employee is terminated by the Corporation "Without Cause", the Corporation shall continue to provide the Employee life insurance, medical insurance, and dental insurance for the duration of the Employee's termination benefit.

(b) If the employment of the Employee is terminated by death, the Corporation shall pay to the estate of the Employee all accrued, but unpaid, salary, bonus, vacation and other benefits which would otherwise be payable to the Employee at the end of the month in which his death occurs.

(c) In the event the employment of the Employee is terminated at the election of the Corporation pursuant to Section (5) (c) hereof, the Employee shall be paid all accrued , but unpaid, salary, bonus, vacation and other benefits.

(d) If the Employee is terminated by voluntary resignation by the Employee, the Employee will be paid all accrued , but unpaid, salary, bonus, vacation and other benefits earned as of his effective date of termination.

(7) Trade Secrets: The Employee covenants and agrees that he will communicate to the Corporation, and will not divulge or communicate to any other

person, partnership, corporation or other entity without the prior written consent of the Corporation, any trade secrets of the Corporation or confidential information relating to the business of the Corporation or any one connected with the Corporation, and that such trade secrets and confidential information shall not be used by the Employee either on his own behalf or for the benefit of others or disclosed by the Employee to any one, except to the Corporation, during or after the term of employment of the Employee under this Employment Agreement.

(8) Inventions and Patents:

(a) The Employee shall make prompt full disclosure in writing to the Corporation of all inventions, improvements and discoveries, whether or not patentable, which the Employee conceives, devises, makes, discovers, develops, perfects or first reduces to practice, either alone or jointly with others, during the term of employment of the Employee under this Employment Agreement, which relate in any way to the fields, products or business of the Corporation, including development and research, whether during or out of the usual hours of work or on or off the premises of the Corporation or by use of the facilities of the Corporation or otherwise and whether at the request or suggestion of the Corporation or otherwise (all such inventions, improvements and discoveries being hereinafter called the "Inventions"), including any Inventions, whether or not patentable, conceived, devised, made, discovered, developed, perfected or first reduced to practice by the Employee after the employment of the Employee under this Employment Agreement is terminated if the Inventions were conceived by the Employee during the term of employment of the Employee under this Employment Agreement. Any Inventions, whether or not patentable, conceived, devised, made, discovered, developed, perfected or first reduced to practice by the Employee within six (6) months of the date of termination of the employment of the Employee under this Employment Agreement shall be conclusively presumed to have been conceived during the term of employment of the Employee under this Employment Agreement.

(b) The Employee agrees that the Inventions shall be the sole and exclusive property of the Corporation.

(c) The Employee agrees to assist the Corporation and its nominees in every reasonable way (entirely at its or their expense) to obtain for the benefit of the Corporation letters patent for the Inventions and trademarks, trade names and copyrights relating to the Inventions, and any renewals, extensions or reissues thereof, in any and all countries, and agrees to make, execute, acknowledge and deliver, at the request of the Corporation, all written applications for letters patent, trademarks, trade names and copyrights relating to the Inventions and any renewals, extensions or reissues thereof, in any and all countries, and all documents with respect thereto, and all powers of attorney relating thereto and, without further compensation, to assign to the Corporation or its nominee all the right, title and interest of the Employee in and to such applications and to any patents, trademarks, trade names or copyrights which shall thereafter issue on any such applications, and to execute, acknowledge and deliver all other documents deemed necessary by the Corporation to transfer to or vest in the Corporation all of the right, title and interest of the Employee in and to the Inventions, and to such trademarks, trade names, patents and copyrights together with exclusive rights to make, use, license and sell them throughout the world.

(d) The Employee agrees that even though his employment is terminated under this Employment Agreement he will, at any time after such termination of employment, carry out and perform all of the agreements of Subsections (8) (a) and (8) (c) above, and will at any time and at all times cooperate with the Corporation in the prosecution and/or defense of any litigation which may arise in connection with the Inventions, provided, however, that should such services be rendered after termination of employment of the Employee under this Employment Agreement, the Employee shall be paid reasonable compensation on a per diem basis.

(e) The Employee agrees to make and maintain adequate and current written records of all Inventions in the form of notes, sketches,

drawings, or reports relating thereto, which records shall be and remain the property of, and available to, the Corporation at all times.

(f) The Employee agrees that he will, upon leaving the employment of the Corporation, promptly deliver to the Corporation all originals and copies of disclosures, drawings, prints, letters, notes, and reports either typed, handwritten or otherwise memorialized, belonging to the Corporation which are in his possession or under his control and the Employee agrees that he will not retain or give away or make copies of the originals or copies of any such disclosures, drawings, prints, letters, notes or reports.

(9) Property of Corporation: All files, records, reports, documents, drawings, specifications, equipment, and similar items relating to the business of the Corporation, whether prepared by the Employee or otherwise coming into his possession, shall remain the exclusive property of the Corporation and shall not be removed by the Employee from the premises of the Corporation under any circumstances whatsoever without the prior written consent of the Corporation. Provided, however, the Employee may remove such files and other items from the premises of the Corporation if required to do so during the course of his duties or if required to work at home.

(10) Non-Competition:

(a) During the term of employment of the Employee under this Employment Agreement, and during a period of one (1) year after termination of employment of the Employee under this Employment Agreement without regard to the cause of termination of employment and whether or not such termination of employment was caused by the Employee or by the Corporation, (i) the Employee shall not engage, either directly or indirectly, in any manner or capacity, in any business or activity which is competitive with any business or activity conducted by the Corporation; (ii) the Employee shall not work for or employ, directly or indirectly, or cause to be employed by another, any person who was an employee, officer or agent of the Corporation or of any of its

subsidiaries at any time during a period of twelve (12) months prior to the termination of the employment of the Employee under this Employment Agreement nor shall the Employee form any partnership with, or establish any business venture in cooperation with, any such person which is competitive with any business or activity of the Corporation; (iii) the Employee shall not give, sell or lease any goods or services competitive with the goods or services of the Corporation or its subsidiaries to any person, partnership, corporation or other entity who purchased goods or services from the Corporation or its subsidiaries within one (1) year before the termination of the employment of the Employee under this Employment Agreement; (iv) the Employee shall not have any financial interest, or participate as a director, officer, stockholder, partner, employee, consultant or otherwise, in any corporation, partnership or other entity which is competitive with any business or activity conducted by the Corporation.

(b) The Corporation and the Employee agree that the services of the Employee are of a personal, special, unique and extraordinary character, and cannot be replaced by the Corporation without great difficulty, and that the violation by the Employee of any of his agreements under this Section (10) would damage the goodwill of the Corporation and cause the Corporation irreparable harm which could not reasonably or adequately be compensated in damages in an action at law, and that the agreements of the Employee under this Section (10) may be enforced by the Corporation in equity by an injunction or restraining order in addition to being enforced by the Corporation at law.

(c) In the event that this Section (10) shall be determined by any court of competent jurisdiction to be unenforceable by reason of its extending for too long a period of time or over too great a range of activities, it shall be interpreted to extend only over the maximum period of time or range of activities as to which it may be enforceable.

(11) Notice: Any and all notices under this Employment Agreement shall be in writing and, if to the Corporation, shall be duly given if sent to the

Corporation by registered or certified mail, postage prepaid, return receipt requested, at the address of the Corporation set forth under its name below or at such other address as the Corporation may hereafter designate to the Employee in writing for the purpose, and if to the Employee, shall be duly given if delivered to the Employee by hand or if sent to the Employee by registered or certified mail, postage prepaid, return receipt requested, at the address of the Employee set forth under his name below or at such other address as the Employee may hereafter designate to the Corporation in writing for the purpose.

(12) Assignment: The rights and obligations of the Corporation under this Employment Agreement shall inure to the benefit of, and shall be binding upon, the successors and assigns of the Corporation. The rights and obligations of the Employee under this Employment Agreement shall inure to the benefit of, and shall be binding upon, the heirs, executors and legal representatives of the Employee.

(13) Entire Agreement and Severability:

(a) This Employment Agreement and the MKS offer of employment letter dated 9/7/2000 (and the documents referenced herein) supersede any and all other agreements, either oral or in writing, between the parties hereto with respect to the employment of the Employee by the Corporation and contain all of the covenants and agreements between the parties with respect to such employment. Each party to this Employment Agreement acknowledges that no representations, inducements, promises or agreements, oral or otherwise, have been made by any party, or any one acting on behalf of any party, which are not embodied herein, and that no other agreement, statement or promise not contained in this Employment Agreement or referenced herein, or as amended, shall be valid and binding. Any modification of this Employment Agreement will be effective only if it is in writing signed by both parties to this Employment Agreement.

(b) If any provision in this Employment Agreement is held by a court of competent jurisdiction to be invalid, void or unenforceable, the remaining provisions shall nevertheless continue in full force and effect without being impaired or invalidated in any way.

(c) All pronouns used herein shall include the masculine, feminine, and neuter gender as the context requires.

(14) Governing Law: This Employment Agreement shall be governed by, and construed and enforced in accordance with, the internal laws of The Commonwealth of Massachusetts without reference to conflict of laws principles.

IN WITNESS WHEREOF, the parties hereto have executed, in the Commonwealth of Massachusetts, this Employment Agreement as a sealed instrument, all as of the day, month and year first written above.

MKS INSTRUMENTS, INC.

By: /s/ Peter R. Younger

Peter R. Younger, President & COO
6 Shattuck Road
Andover, MA 01810

/s/ F. Thomas McNabb

F. Thomas McNabb

Address: 22 Lakeside Terrace

Westford, MA 01886

LEASE AGREEMENT

This Lease Agreement is made as of the 9th day of August, 2000, by and between ASPEN INDUSTRIAL PARK PARTNERSHIP, LLLP, a Colorado limited liability limited partnership ("Landlord"), and MKS INSTRUMENTS, INC., a Massachusetts corporation authorized to do business in Colorado ("Tenant").

I. LEASE OF LEASED PREMISES

A. LEASE.

1. Landlord leases to Tenant and Tenant leases from Landlord the space depicted and described on Exhibit A attached hereto (the "Leased Premises" are located in Landlord's building located at 5360 Sterling Drive, Boulder, Colorado [the "Building"], and the Building is situated on Lot 3, Aspen Industrial Park Subdivision, City of Boulder, Colorado [the "Land"]).

2. The Leased Premises contain approximately 32,626 square feet of rentable floor area (as set forth in Article IV).

B. USE OF COMMON AREAS.

1. Tenant, along with other Tenants, shall have and is hereby granted the non-exclusive right to use the Common Areas. Landlord shall have the right to establish and enforce reasonable rules and regulations applicable to all tenants concerning the maintenance, management, use, and operation of the Common Areas.

2. The term "Common Areas" means all areas or facilities outside Leased Premises within the Building and within the exterior boundaries of the Land as are provided and designated by Landlord from time to time for the general use and convenience of Tenant and of other tenants of the Building. Facilities in the Common Areas include, without limitation, restrooms, pedestrian walkways, stairways, hallways, entryways, elevator, landscaped areas, sprinkler systems, machine room, sidewalks, service corridors, lighting fixtures, trash enclosures, loading areas, parking areas, and roads.

II. TERM

A. COMMENCEMENT.

The term shall commence at 12:01 a.m. on September 1, 2000, and, unless terminated as herein provided for, the term of the Lease shall be for five years from the commencement date.

B. POSSESSION.

1. Possession shall be delivered on the commencement date of the Lease.

2. In the event that Landlord shall permit Tenant to occupy the Leased Premises prior to the commencement date of the term, such occupancy shall be subject to all the provisions of this Lease. Early possession shall not advance the termination date hereinabove provided.

III. COMPLETION

1. On commencement of the term, the Leased Premises shall be in good condition and Landlord shall have substantially completed the construction of the Building and the Leased Premises. Tenant's taking possession of the Leased Premises on commencement of the term shall constitute Tenant's acknowledgment that the Leased Premises are in good condition.

2. With the express written permission of Landlord, Tenant shall be allowed to install tenant finish in the Leased Premises in addition to that performed by Landlord prior to the commencement date. However, if Landlord, at any time and at its reasonable discretion, determines that Tenant's activities interfere with construction efforts by Landlord or its contractors, then Tenant, upon receiving written notice from Landlord, must immediately vacate the Leased Premises and discontinue all tenant finish activities. Such written notice by Landlord shall remain in effect until the commencement date unless modified to an earlier date by Landlord.

3. Tenant shall be given an "allowance" of \$20.00 a square foot for tenant finish to be paid for by Landlord. The detail, terms and conditions of the tenant finish allowance are set forth on Exhibit A to this Lease.

IV. RENT AND OPERATING EXPENSES

A. BASE RENT.

1. Tenant shall pay for the first two years of this Lease, a base rent of \$13.65 a square foot for 32,626 square feet, for a base rent of \$890,689.80 for the first two years.

2. The base rent for each of the third, fourth and fifth years of this lease (September 1, 2002 to September 1, 2005) shall be increased by five percent (5 %) over the base rent for the preceding year's rent.

3. The total base rent for the full five year term of the Lease is \$2,364,732.48.

4. All base rent payable hereunder shall be paid in equal monthly installments, without setoff or deduction, in advance, on or before the first day of each month during the term of this Lease at the address of the Landlord set forth in Article XXII, or such other address or addresses as Landlord may hereafter determine by notice to the Tenant.

5. Rent for any period during the term hereof which is for less than one (1) month shall be a prorated portion of the monthly installment herein, based on a thirty (30) day month.

B. OPERATING EXPENSES.

1. Tenant shall pay Landlord its proportional share of Operating Expenses of the Building and the Common Areas equal to eighty-seven and 7/10 percent (87.7%) of Operating Expenses paid or incurred by Landlord for the operation and/or maintenance of the Building and the Common Areas. Such additional rent shall be paid at monthly intervals in advance upon receipt of statements of estimated charges from Landlord. At the end of each quarter, Landlord shall provide an accounting (including copies of any invoices requested by Tenant) of Tenant's share of Operating Expenses, and Tenant's payments toward such amount during the year or interval. During the thirty (30) day period following such accounting, Landlord shall pay any excess to Tenant if payments exceed expenses, and Tenant shall pay additional rent to Landlord if expenses exceed payments.

2. The term Operating Expenses is defined as direct costs of operation and maintenance, as determined by standard practices, and shall include the following costs by way of illustration, but not be limited to: real property taxes and assessments; water and sewer charges; security systems and alarms; insurance premiums; utilities; janitorial services; snow removal; labor; window cleaning; air conditioning and heating maintenance; elevator maintenance; supplies; materials, equipment, and tools; including maintenance, costs, and upkeep of all Common Areas, landscaping, parking areas, sidewalks, and all Building repairs except repair of structural defects. Notwithstanding the foregoing, Tenant shall not be responsible for any penalties or late fees in association with Operating Expenses.

3. Operating Expenses shall not include depreciation on the Building of which the Leased Premises are a part or equipment therein, loan payments, executive salaries or real estate brokers' commissions. All Operating Expenses over which Landlord has any control shall be reasonable and competitive with such costs and expenses in similar buildings in Boulder, Colorado.

V. TAXES - PERSONAL PROPERTY RESPONSIBILITY

Tenant shall be responsible and pay for any and all taxes and/or assessments levied and/or assessed against any furniture, fixtures, equipment and items of a similar nature installed and/or located in or about the leased Leased Premises by Tenant.

VI. USE

A. PERMITTED USES.

Tenant shall use the Leased Premises for any manufacturing and office-warehouse use permitted by the City of Boulder on such Leased Premises.

B. LIMITATIONS ON USE.

1. Tenant shall not do, bring, or keep anything in or about the Leased Premises that will cause a cancellation of any insurance covering the Leased

Premises. If the rate of any insurance carried by Landlord is increased as a result of Tenant's use, Tenant shall pay to Landlord within 10 days before the date Landlord is obligated to pay a premium on the insurance, a sum equal to the difference between the original premium and the increased premium.

2. Tenant shall comply with all laws concerning the Leased Premises or Tenant's use of the Leased Premises. Landlord warrants conformance with all such laws at the commencement date of this Lease.

3. Tenant shall not use the Leased Premises in any manner that will constitute waste or nuisance in the Building in which the Leased Premises are located, nor shall Tenant overload the floors or any part of the Leased Premises in a manner exceeding the floor loading restrictions of the Uniform Building Code as adopted by the City of Boulder.

VII. MAINTENANCE

A. LANDLORD'S MAINTENANCE.

Landlord, at its cost, shall maintain, in good condition, (i) the structural parts of the Building and other improvements in the Building, which structural parts include only the foundations, bearing and exterior walls (including glass and doors), sub-flooring, and roof; (ii) the unexposed electrical, plumbing, and sewage systems, including, without limitation, the lighting fixtures installed by Landlord (but not including replacement of bulbs, tubes or ballasts) and including those portions of the systems lying outside the Leased Premises; and (iii) window frames, gutters, and roof drains on the Building and other improvements in the Building; provided however, if the maintenance or repairs are required in part or in whole by the neglect, fault or omission of any duty by the Tenant, its agents, servants, employees, and invitees, the Tenant shall, at Tenant's sole cost and expense, make such repairs and maintenance as are necessary to restore the Leased Premises to a good condition.

B. TENANT'S MAINTENANCE.

Except as provided in the previous subparagraph, Tenant, at its cost, shall maintain, in good condition, all portions of the Leased Premises, including, without limitation, all Tenant's personal property, carpet, and flooring. Tenant shall be liable to any damage to the Building resulting from the acts or omissions of Tenant or its authorized representatives.

VIII. ALTERATIONS

Tenant shall not make any structural or exterior alterations to the Leased Premises without Landlord's consent. Tenant, at its cost, shall have the right to make non-structural alterations to the interior of the Leased Premises as part of its initial tenant finish that Tenant requires in order to conduct its business on the Leased Premises. Tenant shall submit reasonably detailed final plans and specifications and working drawings of the proposed Tenant finish five days before it intends to commence the alterations. The alterations shall be approved by all appropriate governmental agencies and all applicable permits and authorizations shall be obtained before commencement. Any alterations made shall

remain on and be surrendered with the Leased Premises on expiration or termination of the term of this Lease, unless otherwise agreed in writing.

IX. MECHANIC'S LIENS

A. TENANT'S OBLIGATIONS.

Subsequent to the completion of the tenant finish referred to in Section III above, Tenant shall pay all costs for construction done by it or caused to be done by it on the Leased Premises as permitted by this Lease. Tenant shall keep the Leased Premises, the Building, other improvements, and the Land free and clear of all mechanic's liens resulting from construction by or for Tenant. Tenant shall have the right to contest the correctness or validity of any such lien if, upon demand by Landlord, Tenant procures a bond in an amount equal to one and one-half times the amount of the claim of lien or makes some other financial arrangement acceptable to Landlord to protect Landlord's interests. Landlord shall require a bond, or other financial arrangement with Tenant, only at such time that the lien claimant commences a foreclosure action on the lien. Tenant shall be responsible for removing any filed liens affecting the property from the real estate records.

B. TENANT'S CONTRACTORS.

Landlord shall have the right to require Tenant's contractor(s) to furnish to both Tenant and Landlord adequate lien waivers on work completed. Landlord reserves the right to post notices in Leased Premises that Landlord is not responsible for payment of work performed and that Landlord's interest is not subject to any lien.

X. UTILITIES

Tenant shall pay its proportionate share of all gas and electric utilities and services supplied to the Building, together with any taxes thereon. Tenant's share of common area electric and gas services shall be paid pursuant to paragraph IV.B hereof. The Building shall have separate meters in various locations in the Building which Landlord may use in determining utility allocations to each Tenant in the Building. Tenant shall make all arrangements for and pay all costs of telephone services furnished to or used by it. Tenant's own premises shall be metered separately.

XI. LIABILITY, INDEMNITY AND INSURANCE

A. INDEMNITY.

Tenant will indemnify and hold Landlord harmless from and against any and all claims, losses, expenses, costs, judgments, and/or demands arising from the conduct of Tenant in or about the Leased Premises and/or on account of any operation or action by Tenant and/or from and against all claims arising from any breach or default on the part of Tenant or any act of negligence of Tenant, its agents, contractors, servants, employees, licensees, or invitees, or any accident, injury or death of any person or damage to any property in or about the Leased Premises. Tenant's obligation to indemnify and hold Landlord harmless shall include Landlord's reasonable attorney's fees, and shall be limited to the

sum that exceeds the amount of insurance proceeds, if any, received by Landlord.

B. PUBLIC LIABILITY AND PROPERTY DAMAGE INSURANCE.

Tenant, at its costs, shall maintain general liability insurance, with liability limits of not less than \$1,000,000.00 for each occurrence of bodily injury and \$200,000.00 property damage, insuring against all liability of Tenant and its authorized representatives arising out of any connection with Tenant's use or occupancy of the Leased Premises. All general liability insurance shall ensure performance by Tenant of the indemnity provisions of this Article. Both parties shall be named as co-insureds, and the Tenant shall deliver certificates of insurance to the Landlord.

C. TENANT'S FIRE INSURANCE.

Tenant, at its cost, shall maintain on all of its personal property in, on or about the Leased Premises, a policy of standard fire and extended coverage insurance, to the extent it deems necessary and appropriate. Tenant understands that Landlord has no insurance covering Tenant's personal property.

D. FIRE INSURANCE ON BUILDING AND OTHER IMPROVEMENTS.

Landlord shall maintain on the Building and other improvements in which the Leased Premises are located a policy of standard fire and all risks coverage insurance to the extent of at least one hundred percent (100%) of full replacement value. The insurance policy shall be issued in the names of Landlord, and Landlord's lender, as their interests appear. The insurance policy shall also provide coverage for rental value insurance, including all operating expenses, for a period of one year. The insurance policy shall provide that all proceeds shall be made payable to Landlord. The cost of such insurance shall be passed on to Tenant as part of the Direct operating expenses for the Building pursuant to Article IV, paragraph B.1.

E. WAIVER OF SUBROGATION.

The parties release each other, and their respective authorized representatives, from any claims for damages to any person or to the Leased Premises and the Building or other improvements in which the Leased Premises are located, and to the fixtures, personal property, Tenant's improvements, and alterations of either Landlord or Tenant in or on the Leased Premises and the Building or other improvements in which the Leased Premises are located that are caused by or result from risks insured against under any insurance policies carried by the parties and in force at the time of such damage. Each party shall cause each insurance policy obtained by it to provide that the insurance company waives all rights of recovery by way of subrogation against either party in connection with any damage covered by any policy.

F. OTHER INSURANCE REQUIREMENTS.

All the insurance required under this Lease shall be issued with insurance companies authorized to do business in the State of Colorado, and shall contain an endorsement requiring thirty (30) days' written notice from the insurance

company to both parties and to Landlord's lender before cancellation or change in the coverage, scope, or amount of any policy. Each policy, or a certificate of the policy, together with evidence of payment of premiums, shall be deposited with the other party at the commencement of the Lease, and on renewal of the policy not less than twenty (20) days before expiration of the term of the policy.

XII. PROTECTIVE COVENANTS

Tenant shall faithfully observe and comply with the covenants, conditions, and restrictions set forth in a Declaration of Covenants of Aspen Industrial Park Subdivision recorded with the Boulder County Clerk and Recorder on November 11, 1979 (the "Covenants") as Reception No. 363409, as amended. Tenant hereby acknowledges having received a copy of such Covenants with the execution of this Lease. Landlord reserves the right from time to time to make all reasonable modifications to said Covenants. The additions and modifications to those Covenants shall be binding upon Tenant upon delivery of a copy of them to Tenant. Landlord shall not be responsible to Tenant for the nonperformance of any said Covenants by any other tenants or occupants.

XIII. DESTRUCTION

A. RISK COVERED BY INSURANCE.

1. If, during the term, the Leased Premises or the Building and other improvements in which the Leased Premises are located are totally or partially destroyed from a risk covered by the insurance described in Article XI, rendering the Leased Premises totally or partially inaccessible or unusable, Landlord shall restore the Leased Premises or the Building and other improvements in which the Leased Premises are located to substantially the same condition as they were in immediately before destruction. Such destruction shall not terminate this Lease. If the existing laws do not permit the restoration, either party can terminate this Lease immediately by giving notice to the other party. Furthermore, if such restoration can not be accomplished within 90 days from the date of destruction, either party shall have the option to terminate this Lease immediately by giving notice to the other party.

2. If the projected cost of restoration exceeds the amount of proceeds received from the insurance required under Article XI, Landlord can elect to terminate this Lease by giving notice to Tenant within fifteen (15) days after determining that projected restoration costs will exceed the insurance proceeds. In the case of destruction to the Leased Premises only, if Landlord elects to terminate this Lease, Tenant, within fifteen (15) days after receiving Landlord's notice to terminate, can elect to pay to Landlord, at the time Tenant notifies Landlord of its election, the difference between the amount of insurance proceeds and the cost of restoration, in which case Landlord shall restore the Leased Premises. Landlord shall give Tenant satisfactory evidence that all sums contributed by Tenant as provided in this paragraph have been expended by Landlord in paying the cost of restoration. If Landlord elects to terminate this Lease and Tenant does not elect to contribute toward the cost of restoration as provided in this paragraph, this Lease shall terminate.

B. RISK NOT COVERED BY INSURANCE.

1. If, during the term, the Leased Premises or the Building are totally or partially destroyed from a risk not covered by the insurance described in Article XI, rendering the Leased Premises totally or partially inaccessible or unusable, Landlord shall restore the Leased Premises or the Building to substantially the same condition as they were in immediately before destruction. Such destruction shall not terminate this Lease. If the existing laws do not permit the restoration, either party can terminate this Lease immediately by giving notice to the other party. Furthermore, if such restoration can not be accomplished within 90 days from the date of destruction, either party shall have the option to terminate this Lease immediately by giving notice to the other party.

2. If the projected cost of restoration exceeds ten percent (10%) of the projected value following restoration of the Leased Premises or the Building are destroyed, Landlord can elect to terminate this Lease by giving notice to Tenant within fifteen (15) days after determining projected restoration costs and replacement value.

3. In the case of destruction to the Leased Premises only, if Landlord elects to terminate this Lease, Tenant, within fifteen (15) days after receiving Landlord's notice to terminate, can elect to pay to Landlord, at the time Tenant notifies Landlord of its election, the difference between ten percent (10%) of the projected value of the Leased Premises following destruction and the actual costs of restoration, in which case Landlord shall restore the Leased Premises. Landlord shall give Tenant satisfactory evidence that all sums contributed by Tenant as provided in this paragraph have been expended by Landlord in paying the cost of restoration.

4. If Landlord elects to terminate this Lease and Tenant does not elect to perform the restoration or contribute toward the cost of restoration as provided in this paragraph, this Lease shall terminate.

C. RIGHT TO TERMINATE ON PARTIAL DESTRUCTION.

If there is destruction to the Building that exceeds thirty-three and one-third percent (33 1/3%) of the then replacement value of the Building and other improvements from any risk, Landlord can elect to terminate this Lease whether or not the Leased Premises are destroyed, as long as Landlord terminates the leases of all tenants in the Building.

D. ABATEMENT OR REDUCTION OF RENT.

In the event of destruction of the Leased Premises or the Building, there shall be an abatement or reduction of rent, between the date of destruction and the date of completion of restoration, based on the extent to which the destruction interferes with Tenant's use of the Leased Premises.

XIV. CONDEMNATION

A. TOTAL TAKING.

If, during the term or during the period of time between the execution of the Lease and the date the term commences, there is any transfer by Landlord to any condemning governmental agency, either under threat of condemnation, during legal proceedings for condemnation, or by exercise of the power of condemnation, and the Leased Premises are totally taken by such condemnation, this Lease shall terminate on the date of taking.

B. PARTIAL TAKING.

1. If any portion of the Leased Premises including the Common Areas is taken by condemnation, this Lease shall remain in effect, except that Tenant can elect to terminate this Lease if the remaining portion is rendered unsuitable for Tenant's continued use of the Leased Premises. If Tenant elects to terminate this Lease Tenant must exercise its right to terminate by giving notice to Landlord within thirty (30) days after Landlord has given notice to Tenant of the nature and the extent of the taking. If Tenant does not terminate this Lease within the thirty-day period, this Lease shall continue in full force and effect, except that minimum monthly rent shall be reduced pursuant to this Article.

2. Subject to the preceding paragraph, if the Building or other improvements which are a part of the Leased Premises is taken by condemnation, this Lease shall remain in full force and effect, except that if fifty percent (50%) or more of the Building or other improvements which are a part of the Leased Premises is taken by condemnation, Landlord shall have the election to terminate this Lease pursuant to this paragraph. If Landlord elects to terminate this Lease, it must terminate by giving notice to Tenant within thirty (30) days after the nature and the extent of the taking have been finally determined. If this Lease is not terminated within the thirty-day period, it shall continue in full force and effect, except minimum monthly rent shall be reduced pursuant to this Article.

3. Nothing in this paragraph shall preclude Tenant from making an independent claim against the condemning authority for damages resulting from condemnation.

C. EFFECT ON RENT.

If any portion of the Leased Premises is taken by condemnation and this Lease remains in full force and effect, on the date of taking the base monthly rent shall be reduced by an amount that is in the same ratio to base monthly rent as the total number of square feet in the Leased Premises taken bears to the total number of square feet in the Leased Premises immediately before the date of taking.

D. DISTRIBUTION OF AWARD.

All compensation, sums, or anything of value awarded, paid or received on a total or partial condemnation shall belong to and be paid to Landlord. Nothing in this paragraph shall preclude Tenant from making its own independent claim

for a condemnation award from the condemning authority.

XV. ENVIRONMENTAL MATTERS

A. DEFINITIONS.

1. HAZARDOUS MATERIAL. Hazardous Material means any substance:

(a) which is or becomes defined as a "hazardous material," "hazardous waste," "hazardous substance," "regulated substance," pollutant or contaminant under any federal, state or local statute, regulation, rule, order, or ordinance or amendments thereto, including petroleum and petroleum products; or

(b) the presence of which on the Leased Premises causes or threatens to cause a nuisance upon the Leased Premises or to adjacent properties or poses or threatens to pose a hazard to the health or safety of persons on or about the Leased Premises or requires investigation or remediation under any federal, state or local statute, regulation, rule, order, or ordinance or amendments thereto.

2. ENVIRONMENTAL REQUIREMENTS. Environmental Requirements means all applicable present and future statutes, regulations, rules, ordinances, codes, licenses, permits, orders, approvals, plans, authorization, concessions, franchises, and similar items, of all governmental agencies, departments, commissions, boards, bureaus, or instrumentalities, of the United States, states and political subdivisions thereof and all applicable judicial, administrative, and regulatory decrees, judgments, and orders relating to the protection of human health or the environment.

3. ENVIRONMENTAL DAMAGES. Environmental Damages means all claims, judgments, injuries, damages (including without limitation damages for diminution in the value of the Leased Premises and adjoining property and for the loss of business from the Leased Premises and adjoining property), losses, penalties, fines, liabilities (including strict liability), encumbrances, liens, costs, and expenses of investigation and defense of any claim, and of any good faith settlement of judgment, or whatever kind or nature, contingent or otherwise, matured or unmatured, foreseeable or unforeseeable, including without limitation reasonable attorney's fees and disbursements and consultants' fees, any of which are incurred at any time as a result of the existence of "Hazardous Material" upon, about, beneath the Leased Premises or migrating or threatening to migrate to or from the Leased Premises or the existence of a violation of "Environmental Requirements" pertaining to the Leased Premises.

B. OBLIGATION TO INDEMNIFY DEFEND AND HOLD HARMLESS.

1. Tenant, its successors, assigns and guarantors, agree to indemnify, defend, reimburse and hold harmless the following persons from and against any and all "Environmental Damages" arising from activities of Tenant or its employees, agents, or invitees which (a) result in the presence of "Hazardous Materials" upon, about or beneath the Leased Premises or migrating to or from the Leased Premises, or (b) result in the violation of any "Environmental Requirements" pertaining to the Leased Premises and the activities thereon:

(a) Landlord;

(b) directors, officers, shareholders, employees and partners of the Landlord only.

2. This obligation shall include, but not be limited to, the burden and expense of defending all claims, suits and administrative proceedings (with counsel reasonably approved by the indemnified parties), and conducting all negotiations of any description, and paying and discharging, when and as the same become due, any and all judgments, penalties or other sums due against such indemnified persons. Tenant, at its sole expense, may employ additional counsel of its choice to associate with counsel representing Landlord.

3. The obligations of Tenant in this section shall survive the expiration or termination of this Lease.

C. NOTIFICATION.

If Tenant shall become aware of or receive notice or other communication concerning any actual, alleged, suspected or threatened violation of "Environmental Requirements," or liability of Tenant for "Environmental Damages" in connection with the Leased Premises or past or present activities of any person thereon, or that any representation set forth in this Agreement is not or is no longer accurate, then Tenant shall deliver to Landlord, within ten days of the receipt of such notice, or communication or correcting information by Tenant, a written description of such information or condition, together with copies of any documents evidencing same.

D. NEGATIVE COVENANTS.

1. NO HAZARDOUS MATERIAL ON LEASED PREMISES. Except in strict compliance with all Environmental Requirements, Tenant shall not cause, permit or suffer any "Hazardous Material" to be brought upon, treated, kept, stored, disposed of, discharged, released, produced, manufactured, generated, refined or used upon, about or beneath the Leased Premises or any portion thereof by Tenant, its agents, employees, contractors, tenants or invitees, or any other person without prior written consent of Landlord.

2. NO VIOLATIONS OF ENVIRONMENTAL REQUIREMENTS. Tenant shall not cause, permit or suffer the existence or the commission by Tenant, its agents, employees, contractors, or invitees, or by any other person of a violation of any "Environmental Requirements" upon, about or beneath the Leased Premises or any portion thereof.

E. RIGHT TO INSPECT.

Subject to the notice, accompaniment, and confidentiality provisions contained herein, Landlord shall have the right in its sole and absolute discretion, but not the duty, to enter and conduct an inspection of the Leased Premises at any reasonable time to determine whether Tenant is complying with the terms of this Lease, including but not limited to the compliance of the Leased Premises and the activities thereon with "Environmental Requirements" and

the existence of "Environmental Damages." Tenant hereby grants to Landlord the right to enter the Leased Premises during normal business hours and to perform such tests on the Leased Premises as are reasonably necessary in the opinion of Landlord to conduct such reviews and investigations. Landlord shall use reasonable efforts to minimize interference with the business of Tenant but Landlord shall not be liable for any interference caused thereby. Tenant shall provide to Landlord copies of all manifests, permits, reports, test results, and analyses submitted to any environmental agency within ten (10) days of submittal.

F. RIGHT TO REMEDIATE.

Should Tenant fail to perform or observe any of its obligations or agreements pertaining to "Hazardous Materials" or "Environmental Requirements," then Landlord shall have the right, but not the duty, without limitation upon any of the rights of Landlord pursuant to this Lease, to enter the Leased Premises personally or through its agents, consultants or contractors and perform the same. Tenant agrees to indemnify Landlord for the costs thereof and liabilities therefrom as set forth in section A above.

XVI. ASSIGNMENT/SUBLEASE

A. PROHIBITION.

Tenant shall not voluntarily assign or encumber its interest in this Lease or in the Leased Premises, or sublease all or any part of the Leased Premises, or allow any other person or entity (except Tenant's authorized representatives) to occupy or use all or any part of the Leased Premises, without first obtaining the Landlord's written consent, which shall not be unreasonably withheld. Any assignment, encumbrance, or sublease without Landlord's consent shall be voidable and, at Landlord's election, shall constitute a default. No consent to any assignment, encumbrance or sublease shall constitute a further waiver of the provisions of this paragraph.

B. INVOLUNTARY ASSIGNMENT.

No interest of Tenant in this Lease shall be assignable by operation of law (including, without limitation, the transfer of this Lease by will or intestacy), by assignment for the benefit of creditors, by a writ of attachment or execution, or by any proceeding or action to which Tenant is a party in which a receiver is appointed with authority to take possession of the Leased Premises. Any of such actions shall constitute a default by Tenant and Landlord shall have the right to elect to terminate this Lease, in which case this Lease shall not be treated as an asset of Tenant.

XVII. DEFAULT

A. TENANT'S DEFAULT.

The occurrence of any of the following shall constitute a default by Tenant:

1. Failure to pay rent when due, if the failure continues for five (5) business days after notice has been given to Tenant.

2. Failure to perform any other provision of this Lease if the failure to perform is not cured within thirty (30) days after notice has been given to Tenant. If the default cannot reasonably be cured within thirty days, Tenant shall not be in default of this Lease if Tenant commences to cure the default within the thirty day period and diligently and in good faith continues to cure the default.

Notices given under this paragraph shall specify the alleged default and the applicable Lease provisions, and shall demand that Tenant perform the provisions of this Lease or pay the rent that is in arrears, as the case may be, within the applicable period of time, or quit the Leased Premises. No such notice shall be deemed a forfeiture or a termination of this Lease unless Landlord so elects in the notice.

B. LANDLORD'S REMEDIES.

Landlord shall have the following remedies if Tenant commits a default. These remedies are not exclusive; they are cumulative in addition to any remedies now or later allowed by law.

1. TENANT'S RIGHT TO POSSESSION NOT TERMINATED. Landlord can continue this Lease in full force and effect, and the Lease will continue in effect as long as Landlord does not terminate Tenant's right to possession, and Landlord shall have the right to collect rent when due. During the period Tenant is in default, Landlord can enter the Leased Premises and relet them, or any part of them, to third parties for Tenant's account. Tenant shall be liable immediately to Landlord for all reasonable costs Landlord incurs in re-letting the Leased Premises, including, without limitation, broker's commissions, expenses of remodeling the Leased Premises required by the reletting, and like costs. Re-letting can be for a period shorter or longer than the remaining term of this Lease. Tenant shall pay to Landlord the rent due under this Lease on the dates the rent is due, less the rent Landlord receives from any re-letting. No act by Landlord allowed by this paragraph shall terminate this Lease unless Landlord notifies Tenant that Landlord elects to terminate this Lease. After Tenant's default and for as long as Landlord does not terminate Tenant's right to possession of the Leased Premises, if Tenant obtains Landlord's consent, Tenant shall have the right to assign or sublet its interest in this Lease, but Tenant shall not be released from liability. Landlord's consent to a proposed assignment or subletting shall not be unreasonably withheld.

2. TERMINATION OF TENANT'S RIGHT TO POSSESSION. Landlord can terminate Tenant's right to possession of the Leased Premises at any time during default. No act by Landlord other than giving notice to Tenant shall terminate this Lease. Landlord's efforts to re-let the Leased Premises shall not constitute a termination of Tenant's right to possession. On termination, Landlord has the right to recover from Tenant: (a) the worth at the time of the award of the unpaid rent that had been earned at the time of the termination of lease; (b) the worth at the time of the award of the amount by which the unpaid rent that would have been earned after the date of the termination of this Lease until the time of the award exceeds the amount of the loss of rent that Tenant proves could have been reasonably avoided; (c) the worth at the time of the award of the amount by which the unpaid rent for the balance of the term after the time of the award exceeds the amount of loss of rent that Tenant proves could have been reasonably avoided; and

(d) courts costs.

3. LANDLORD'S RIGHT TO CURE. Landlord, at any time after Tenant commits a default, can cure the default at Tenant's cost. If Landlord at any time, by reason of Tenant's default, pays any sum or does any act that requires the payment of any sum, the sum paid by Landlord shall be due immediately from Tenant to Landlord at the time the sum is paid, and if paid at a later date shall bear interest at the rate of twelve percent (12%) per annum from the date the sum is paid by Landlord until Landlord is reimbursed by Tenant. The sum, together with interest on it, shall be additional rent.

C. LATE CHARGES. Tenant hereby acknowledges that late payment by Tenant to Landlord of rent or other sums due will cause Landlord to incur costs not contemplated by this Lease, the exact amount of which will be extremely difficult to ascertain. The costs include, but are not limited to, processing and accounting charges, and late charge which may be imposed upon Landlord by terms of any mortgage or trust deed covering the Leased Premises. Accordingly, if any installment of rent or of a sum due from Tenant shall not be received by Landlord or Landlord's designee within fifteen (15) days after the amount is due, Tenant shall pay Landlord a late charge equal to five percent (5%) multiplied by the amount of past due sums. The parties agree that the late charges represent a fair and reasonable estimate of the cost that Landlord will incur by reason of the late payment by Tenant. Acceptance of such late charges by the Landlord shall in no event constitute a waiver of Tenant's default with respect to such overdue amount, nor prevent Landlord from exercising any of the other rights and remedies granted under of this Lease or by operation of law, including Landlord's right to collect interest on past due sums.

C. INTEREST ON UNPAID RENT. Rent not paid when due shall bear interest at a rate of twelve percent (12%) per annum from the due date until paid.

D. TENANT'S RIGHT TO CURE LANDLORD'S DEFAULT. Landlord shall be in default of this Lease if it fails or refuses to perform any provision of this Lease that it is obligated to perform if the failure to perform is not cured within thirty (30) days after notice of the default has been given by Tenant to Landlord. If the default cannot reasonably be cured within thirty days, Landlord shall not be in default of this Lease if Landlord commences to cure the default within the thirty day period and diligently and in good faith continues to cure the default.

Tenant, at any time after Landlord commits a default, can cure the default at Landlord's cost. If Tenant, at any time, by reason of Landlord's default, pays any sum or does any act that requires the payment of any sum, the sum paid by Tenant shall be due immediately from Landlord to Tenant at the time the sum is paid, and if paid at a later date shall bear interest at the rate of twelve percent (12%) per annum from the date the sum is paid by Tenant until Tenant is reimbursed by Landlord. Tenant shall have no right to withhold from future rent due any sums Tenant has paid.

XVIII. SIGNS

All signs and advertising displayed in and about the Leased Premises, including signs and advertising displayed in, or visible through, windows shall be such only as to advertise the business carried on upon the Leased Premises, and Landlord shall control the character and size thereof. No sign or advertising shall be displayed prior to written consent by Landlord and no

awning shall be installed or used on the exterior of the Building in which the Leased Premises are a part without prior written consent of Landlord. Tenant shall not install any exterior signs nor any interior signs intended to be displayed through exterior windows. Landlord shall install and maintain a main building directory and the expenses of such directory shall be passed on to Tenant as part of the Operating Expenses for the Building pursuant to Article IV, paragraph B.

XIX. LANDLORD'S ACCESS

Tenant shall permit Landlord, Landlord's mortgagees and their agents to enter the Leased Premises at reasonable times for the purpose of inspecting the same, of making repairs, additions, or alterations thereto or to the Building, and of showing the Leased Premises to prospective purchasers and lenders, and to prospective tenants during the last ninety (90) days of Tenant's lease term. At any time during the last ninety (90) days of Tenant's lease term Landlord may place signs upon the Leased Premises advertising the availability of the same. Landlord acknowledges that Tenant's business involves proprietary information, materials, and processes of a highly confidential nature. Accordingly, any entry into the Leased Premises by Landlord or anyone claiming by, through, or under Landlord, shall require at least twenty-four (24) hours' advance notice to Tenant with the names and business affiliations of those persons who desire to enter the Leased Premises. All persons entering the Leased Premises may be required to sign in and provide appropriate identification, and may be escorted by a representative of Tenant. Tenant shall have the right to deny entry to any individual based upon Tenant's reasonable belief that permitting entry by such individual could compromise Tenant's confidential or proprietary information. Landlord reserves the right of free access at all times to the roof of the Building and to the Common Areas. Tenant shall not use the roof for any purpose without the written consent of the Landlord.

XX. SUBORDINATION AND ESTOPPEL

A. SUBORDINATION ATTORNMENT.

Upon request of the Landlord, Tenant will, in writing, subordinate its rights hereunder to the lien of any first mortgage or first deed of trust to any bank, insurance company or other lending institution, now or hereafter in force against the land and Building of which the Leased Premises are a part, and upon any building hereafter placed upon the land of which the Leased Premises are a part, and to all advances made or hereafter to be made upon the security thereof.

In the event any proceedings are brought for foreclosure or in the event of the exercises of the power of sale under any mortgage or deed of trust made by the Landlord covering the Leased Premises, the Tenant shall attorn to the purchaser upon any such foreclosure of sale and recognize such purchases as the Landlord under this Lease.

The provisions of this Article to the contrary notwithstanding, and so long as Tenant is not in default hereunder and attorns to the purchaser, this Lease shall remain in full force and effect for the full term hereof, and tenant shall peacefully and quietly have, hold and enjoy the Leased Premises free from claims of Landlord, or those claiming under Landlord, subject to the provisions of this Lease.

B. ESTOPPEL CERTIFICATES.

Each party, within ten (10) days after notice from the other party, shall execute and deliver to the other party, in recordable form, a certificate stating that this Lease is unmodified and in full force and effect or in full force and effect as modified, and stating the modifications. The certificate also shall state the amount of minimum monthly rent, the dates to which the rent has been paid in advance, and the amount of any security deposit or prepaid rent.

XXI. FINANCIAL STATEMENTS

A current financial statement of Tenant shall be provided to Landlord upon execution hereof and annually thereafter if so requested by Landlord.

XXII. NOTICE

Any notice or communication that either party desires or is required to give to the other party shall be in writing and either served personally or sent prepaid by first class mail. All notices and demands by the Landlord to the Tenant shall be sent addressed to the Tenant, MKS Instruments, Inc., Attention, Ed Fisher, at 5330 Sterling Drive, Boulder, Colorado 80301-2351, and to MKS Instruments, Inc., Attention, Ronald Weigner, at 6 Shattuck Road, Andover, Massachusetts 01810, or to such other place as Tenant may from time to time designate in a notice to Landlord. All notices and communications by the Tenant to the Landlord shall be sent addressed to the Landlord: Aspen Industrial Park Partnership, LLLP, ATTN: Christopher F. Stewart, 560 University Avenue, Boulder, Colorado 80302, or to such other place as Landlord may from time to time designate in a notice to Tenant. Notice shall be deemed communicated within forty-eight (48) hours from the time of mailing if mailed as provided in this paragraph.

XXIII. WAIVER

No delay or omission in the exercise of any right or remedy of Landlord on any default of Tenant shall impair such a right or remedy or be construed as a waiver. The receipt and acceptance by Landlord of delinquent rent shall not constitute a waiver of any other default; it shall constitute only a waiver of timely payment for the particular rent payment involved. No act or conduct of Landlord, including, without limitation, the acceptance of the keys to the Leased Premises, shall constitute an acceptance of the surrender of the Leased Premises by Tenant before the expiration of the term. Only a notice from Landlord to Tenant shall constitute acceptance of the surrender of the Leased Premises and accomplish a termination of the Lease. Any waiver by Landlord of any default must be in writing and shall not be deemed a waiver of any other default concerning the same or any other provision of this Lease.

XXIV. SALE OF LEASED PREMISES

In the event of any sale of the Building and Land, Landlord shall be and is hereby entirely freed and relieved of, all liability under any and all of its covenants and obligations contained in or derived from this Lease arising out of any act, occurrence or omission occurring after the consummation of such sale; and the purchaser, at such sale or any subsequent sale of the Building and Land shall be deemed, without any further agreement between the parties or their

successors in interest or between the parties and any such purchaser, to have assumed and agreed to carry out any and all of the covenants and obligations of the Landlord under this Lease.

XXV. ATTORNEY'S FEES

If either party commences an action against the other party arising out of or in connection with this Lease, the prevailing party shall be entitled to have and recover from the losing party reasonable attorneys fees and costs of suit.

XXVI. SURRENDER OF LEASED PREMISES AND HOLDING OVER

On expiration of the term, Tenant shall surrender to Landlord the Leased Premises and all Tenant's improvements and alterations in good condition (ordinary wear and tear excepted), except for alterations that Tenant is obligated to remove. Tenant shall perform all restoration made necessary by the removal of any alterations prior to the expiration of the term.

If Tenant, with Landlord's consent, remains in possession of the Leased Premises after expiration of the term, or after the date in any notice given by Landlord to Tenant terminating this Lease, such possession by Tenant shall be deemed to be a month-to-month tenancy terminable on thirty (30) days' notice given at any time by either party. During any such month-to-month tenancy, Tenant shall pay all rent required by this Lease, and all provisions of this Lease except those pertaining to term and rent shall apply to the month-to-month tenancy.

If Tenant shall remain in possession of the Leased Premises after the termination of this Lease, whether by expiration of the Lease term or otherwise, without any written agreement to such possession, then Tenant shall be deemed a month-to-month tenant and rent rate during such holdover tenancy shall be equivalent to double the monthly rent paid for the last month of tenancy under this Lease. No holding over by Tenant shall operate to renew or extend this Lease without the written consent of Landlord to such renewal or extension having been first obtained. Tenant shall indemnify Landlord against loss or liability resulting from the delay by Tenant in surrendering possession of the Leased Premises, including, without limitation, any claims made with regard to any succeeding occupancy bounded by such holdover period.

XXVII. NOTICE OF AVAILABILITY

In the event any additional space within the Building becomes available for rent by Landlord, Landlord agrees to give Tenant written notice of the availability of such space.

XXVIII. ACTS OR OMISSIONS OF OTHERS

Landlord, or its employees or agents, or any of them, shall not be responsible or liable to Tenant or to Tenant's guests, invitees, employees, agents or any other person or entity, for any loss or damage that may be caused by the acts or omissions of other tenants, their guests or invitees, occupying any other part of the Building or by persons who are trespassers on or in the Building, or for any loss or damage caused by or resulting from the bursting, stoppage, backing up, or leaking of water, gas, electricity or sewers or caused in any other manner whatsoever, unless such loss or damage is caused by or

results from the negligent acts of the Landlord, its agents or contractors.

XXIX. MISCELLANEOUS PROVISIONS

A. AUTHORITY OF PARTIES.

1. CORPORATE AUTHORITY. If Tenant is a corporation, each individual executing this Lease on behalf of said corporation represents and warrants that he or she is duly authorized to execute and deliver this Lease on behalf of the corporation, in accordance with a duly adopted resolution of the board of directors of said corporation or in accordance with the bylaws of said corporation, and that this Lease is binding upon said corporation in accordance with its terms.

2. LIMITED PARTNERSHIPS. If the Landlord herein is a limited partnership, it is understood and agreed that any claims by Tenant on Landlord shall be limited to the assets of the limited partnership, and furthermore, Tenant expressly waives any and all rights to proceed against the individual partners or the officers, directors or shareholders of any corporate partner, except to the extent of their interest in said limited partnership.

B. NAME.

Tenant shall not use the name of the Building or of the development in which the Building is situated for any purpose OTHER than as an address of the business to be conducted by the Tenant in the Leased Premises.

C. CONSTRUCTION OF TERMS.

Time shall be of the essence of each provision of this Lease. This Lease shall be construed and interpreted in accordance with the laws of the State of Colorado. This Lease contains all the agreements of the parties and cannot be modified or amended except by a written agreement.

D. REPRESENTATIONS.

Tenant declares that in entering into this Lease, it relied solely upon the statements contained in this Lease and fully understands that no agents or representatives of the Landlord have authority to in any manner change, add to, or detract from the terms of this Lease. Tenant acknowledges and agrees that it has not relied on any statements, representations, agreements, or warranties, except as are expressed herein.

E. RIGHTS UNDER THIS LEASE.

If any term, covenant, or provision of this Lease shall to any extent be invalid or unenforceable, the remainder of this Lease shall nevertheless be valid and enforceable. All of the rights given herein are cumulative and are given without any other rights or of remedies of Landlord.

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

LANDLORD:

ASPEN INDUSTRIAL PARK
PARTNERSHIP, LLLP, a Colorado
limited liability limited partnership

By: /s/ Christopher F. Stewart

Christopher F. Stewart
General Partner

Date: August 14, 2000

TENANT:

MKS INSTRUMENTS, INC.
a Massachusetts corporation

By: /s/ Ronald Weigner

VP & CFO

Date: August 9, 2000

EXHIBIT A Tenant Finish

TENANT FINISH ALLOWANCE DEFINED: Tenant Finish Allowance is the maximum dollar amount Landlord will pay for finishing building shell excluding common area. If full amount of allowance is not utilized, it cannot be used as a reduction in rent.

RENTABLE SPACE: 28,805 sq ft + 3,821 common sq ft = 32,626 total sq ft

TENANT FINISH: 28,805 sq ft x \$20 = \$576,100 allowance on non-common area

TENANT FINISH DETAIL:

1. Tenant Finish and Machine Shop HVAC	- \$205,000
2. Heavy Electrical	- \$62,000
3. Flooring	- \$165,000
4. Offices, Cleanroom Walls (Drywall office doors)	
5. Kitchen Area (Drywall office doors)	- \$92,700
6. Special Store Front Door	- \$9,083
7. Additional Elevator Door	- \$7,300
8. Drop Ceiling above Shop (Noise Abatement)	- \$29,700
9. STG Card Reader with Installation	- \$22,000
10. Painting	- \$6,500

1. Machine Shop has large heat load and requires air to be exchanged every 15 minutes.
2. Heavy Electrical requirements with expandable bus ducts for movable machining areas.
3. Flooring is heavy duty stonehard laid on top of cement to provide maintenance, particle free, clean look which will withstand weight of the CNC machines.

APPLIED MATERIALS

[APPLIED MATERIALS LOGO]

DATE: October 13, 2000
TO: Rick Siptrott
FROM: Mike Berkaw
SUBJECT: Contract Extension

Dear Rick,

I would like to extend the expiration date on our contracts 982812 and 947024 from their current expiration date to 12/29/00. All terms and conditions will remain in full effect. Please confirm your acceptance of this extension by signing below and returning this letter to my attention via fax number (512) 272-3908.

/s/ R.P. Siptrott

accepted for MKS Instruments

October 13, 2000

date

Sincerely,

/s/ Mike Berkaw
Mike Berkaw
Chemical Delivery SMO

MKS INSTRUMENTS, INC.

FIRST AMENDMENT

TO FIRST AMENDED AND RESTATED LOAN AGREEMENT

This First Amendment (the "Amendment") dated as of September 1, 2000 concerns the First Amended and Restated Loan Agreement dated as of January 1, 2000 (the "Loan Agreement"), among MKS Instruments, Inc. (the "Borrower") and Fleet National Bank (f/k/a BankBoston, N.A., "Fleet"), The Chase Manhattan Bank ("Chase"; hereinafter Fleet and Chase may be referred to individually as a "Lender" or collectively as the "Lenders"), and Fleet in its capacity as agent for the Lenders (in such capacity, together with any successor agent, the "Agent"). Capitalized terms used herein but not otherwise defined shall have the meanings assigned to them in the Loan Agreement.

WHEREAS, the Borrower has requested that the Lenders agree to change certain provisions of the Loan Agreement; and

WHEREAS, the Lenders are willing, on the terms, subject to the conditions and to the extent set forth below, to amend the Loan Agreement to effect such changes;

NOW, THEREFORE, the Lenders and the Borrower agree as follows:

Section 1. AMENDMENT OF THE LOAN AGREEMENT. Section 7.1(b) of the Loan Agreement is hereby amended and restated as follows:

(b) Mergers, Etc. Neither the Borrower nor any Subsidiary will consolidate with or merge into any other Person or permit any other Person to consolidate with or merge into it, or acquire all or substantially all of the capital stock or assets of any Person, or sell, assign, lease or otherwise dispose of (whether in one transaction or in a series of transactions) all or substantially all of its assets to any Person, except that

(1) a Subsidiary may consolidate with or merge into the Borrower or another Subsidiary; and

(2) the Borrower or any of its Subsidiaries may acquire all or substantially all of the capital stock or assets of any Person or consolidate or merge with any Person provided (i) such Person is engaged in a line of business substantially similar to one or more of Borrower's existing lines of business, (ii) the aggregate purchase price liability incurred in calendar year 2000, including all contingent liabilities, when aggregated with all such acquisitions and any Investments permitted under Section 7.4(3) in such calendar year shall not exceed \$80,000,000 and (iii) based on a pro forma calculation of the ratios set forth in Section 7.7 as of the date such acquisition is closed, assuming consolidation of the acquired business

with the Borrower for the four full fiscal quarters ended immediately preceding such closing and pro forma debt and debt service payments based on scheduled principal payments, including acquisition borrowings, if any, and pro forma interest on total debt at then prevailing borrowing rates, Borrower is in compliance with the financial covenants set forth in Section 7.7.

Section 2. REPRESENTATIONS AND WARRANTIES. The Borrower hereby represents and warrants as follows:

(a) The execution and delivery of this Amendment and the performance of this Amendment, the Loan Agreement as amended hereby and each of the other Loan Documents, and the transactions contemplated hereby and thereby, have been authorized by all necessary corporate actions of the Borrower. This Amendment, the Loan Agreement as amended hereby and each of the other Loan Documents constitute the legal, valid and binding obligations of the Borrower, enforceable against the Borrower in accordance with their respective terms.

(b) The Borrower has all requisite corporate power and authority to execute, deliver and perform its obligations under this Amendment, the Loan Agreement as amended hereby and each of the other Loan Documents. Neither the authorization, execution, delivery or performance by the Borrower of this Amendment nor the performance of the Loan Agreement as amended hereby or any other Loan Document nor the performance of the transactions contemplated hereby or thereby violates or will violate any provision of the corporate charter or by-laws of the Borrower, or does or will, with the passage of time or the giving of notice or both, result in a breach of or a default under, or require any consent under or result in the creation of any lien, charge or encumbrance upon any property or assets of the Borrower pursuant to, any material instrument, agreement or other document to which the Borrower is a party or by which the Borrower or any of its properties may be bound or affected.

(c) The execution and delivery by the Borrower of this Amendment and the performance by the Borrower of the Loan Agreement as amended hereby and the Loan Documents do not and will not violate any provision of law or regulation applicable to the Borrower, or any writ, order or decree of any court or governmental or regulatory authority or agency applicable to the Borrower.

Section 3. LOAN DOCUMENTS. This Amendment shall be a Loan Document for all purposes.

Section 4. CONDITIONS TO EFFECTIVENESS. The effectiveness of this Amendment is conditioned on the following:

(a) The Borrower and the Lenders shall each have executed and delivered a counterpart of this Amendment;

(b) The representations and warranties contained in Article IV of the Loan Agreement shall be true and correct in all material respects as of the date hereof as though made on and as of the date hereof;

(c) No Default or Event of Default under the Loan Agreement shall have occurred and be continuing;

(d) The conditions set forth in Section 5.1(b) - (e) of the Loan Agreement shall have been met as of the date hereof, provided that for purposes thereof and Section 4.5 of the Loan Agreement, the "Balance Sheet Date" shall mean June 30, 2000 and the financial statements referred to therein shall mean the unaudited statements for the period ended June 30, 2000, that have been furnished to the Lender.

Section 5. MISCELLANEOUS.

(a) On and after the date hereof, each reference in the Loan Agreement to "this Agreement" or words of like import shall mean and be deemed to be a reference to the Loan Agreement as amended hereby.

(b) Except as amended and modified hereby, the Loan Agreement is in all respects ratified and confirmed as of the date hereof, and the terms, covenants and agreements therein shall remain in full force and effect.

(c) This Amendment and the modifications to the Loan Agreement set forth herein shall be deemed to be a document executed under seal and shall be governed by and construed in accordance with the laws of The Commonwealth of Massachusetts.

(d) This Amendment may be executed in counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same document.

IN WITNESS WHEREOF, the parties have caused this Amendment to be duly executed as of the date and the year first above written.

MKS INSTRUMENTS, INC.

By: /s/ William P. Donlan

Title: Treasurer

FLEET NATIONAL BANK

By: /s/ Sharon A. Stone

Title: Director

THE CHASE MANHATTAN BANK

By: /s/ A. Neil Sweeny

Title: Vice President

MKS INSTRUMENTS, INC.

SIXTH AMENDMENT

TO LOAN AGREEMENT

This Sixth Amendment (the "Amendment") dated as of September 1, 2000 concerns the Loan Agreement dated as of October 31, 1995 (the "Loan Agreement"), between MKS Instruments, Inc. (the "Borrower") and Fleet National Bank (f/k/a BankBoston, N.A. and The First National Bank of Boston, the "Lender"), as amended on February 23, 1996, February 4, 1997, February 3, 1998, January 28, 1999 and January 1, 2000. Capitalized terms used herein but not otherwise defined shall have the meanings assigned to them in the Loan Agreement.

WHEREAS, the Borrower has requested that the Lender agree to change certain provisions of the Loan Agreement; and

WHEREAS, the Lender is willing, on the terms, subject to the conditions and to the extent set forth below, to amend the Loan Agreement to effect such changes;

NOW, THEREFORE, the Lender and the Borrower agree as follows:

Section 1. AMENDMENT OF THE LOAN AGREEMENT. Section 7.1(b) of the Loan Agreement is hereby amended and restated as follows:

(b) Mergers, Etc. Neither the Borrower nor any Subsidiary will consolidate with or merge into any other Person or permit any other Person to consolidate with or merge into it, or acquire all or substantially all of the capital stock or assets of any Person, or sell, assign, lease or otherwise dispose of (whether in one transaction or in a series of transactions) all or substantially all of its assets to any Person, except that

(1) a Subsidiary may consolidate with or merge into the Borrower or another Subsidiary; and

(2) the Borrower or any of its Subsidiaries may acquire all or substantially all of the capital stock or assets of any Person or consolidate or merge with any Person provided (i) such Person is engaged in a line of business substantially similar to one or more of Borrower's existing lines of business, (ii) the aggregate purchase price liability incurred, including all contingent liabilities, when aggregated with all such acquisitions and any Investments permitted under Section 7.4(3), in calendar year 2000 shall not exceed \$80,000,000 and in any other calendar year shall not exceed 25% of Consolidated Tangible Net Worth as of the end of the most recent fiscal quarter or, if 80% or more of the purchase price is paid in capital stock of the Borrower, 50% of Consolidated Tangible Net Worth as of the end of the most recent fiscal quarter and (iii) based on a

pro forma calculation of the ratios set forth in Section 7.7 as of the date such acquisition is closed, assuming consolidation of the acquired business with the Borrower for the four full fiscal quarters ended immediately preceding such closing and pro forma debt and debt service payments based on scheduled principal payments, including acquisition borrowings, if any, and pro forma interest on total debt at then prevailing borrowing rates, Borrower is in compliance with the financial covenants set forth in Section 7.7.

Section 2. REPRESENTATIONS AND WARRANTIES. The Borrower hereby represents and warrants as follows:

(a) The execution and delivery of this Amendment and the performance of this Amendment, the Loan Agreement as amended hereby and each of the other Loan Documents, and the transactions contemplated hereby and thereby, have been authorized by all necessary corporate actions of the Borrower. This Amendment, the Loan Agreement as amended hereby and each of the other Loan Documents constitute the legal, valid and binding obligations of the Borrower, enforceable against the Borrower in accordance with their respective terms.

(b) The Borrower has all requisite corporate power and authority to execute, deliver and perform its obligations under this Amendment, the Loan Agreement as amended hereby and each of the other Loan Documents. Neither the authorization, execution, delivery or performance by the Borrower of this Amendment nor the performance of the Loan Agreement as amended hereby or any other Loan Document nor the performance of the transactions contemplated hereby or thereby violates or will violate any provision of the corporate charter or by-laws of the Borrower, or does or will, with the passage of time or the giving of notice or both, result in a breach of or a default under, or require any consent under or result in the creation of any lien, charge or encumbrance upon any property or assets of the Borrower pursuant to, any material instrument, agreement or other document to which the Borrower is a party or by which the Borrower or any of its properties may be bound or affected.

(c) The execution and delivery by the Borrower of this Amendment and the performance by the Borrower of the Loan Agreement as amended hereby and the Loan Documents do not and will not violate any provision of law or regulation applicable to the Borrower, or any writ, order or decree of any court or governmental or regulatory authority or agency applicable to the Borrower.

Section 3. LOAN DOCUMENTS. This Amendment shall be a Loan Document for all purposes.

Section 4. CONDITIONS TO EFFECTIVENESS. The effectiveness of this Amendment is conditioned on the following:

(a) The Borrower and the Lender shall each have executed and delivered a counterpart of this Amendment;

(b) The representations and warranties contained in Article IV of the Loan Agreement shall be true and correct in all material respects as of the date hereof as though made on and as of the date hereof;

(c) No Default or Event of Default under the Loan Agreement shall have occurred and be continuing;

(d) The conditions set forth in Sections 5.2-5.5 of the Loan Agreement shall have been met as of the date hereof, provided that for purposes thereof and Section 4.5 of the Loan Agreement, the "Balance Sheet Date" shall mean June 30, 2000 and the financial statements referred to therein shall mean the unaudited statements for the period ended June 30, 2000, that have been furnished to the Lender.

Section 5. MISCELLANEOUS.

(a) On and after the date hereof, each reference in the Loan Agreement to "this Agreement" or words of like import shall mean and be deemed to be a reference to the Loan Agreement as amended hereby.

(b) Except as amended and modified hereby, the Loan Agreement is in all respects ratified and confirmed as of the date hereof, and the terms, covenants and agreements therein shall remain in full force and effect.

(c) This Amendment and the modifications to the Loan Agreement set forth herein shall be deemed to be a document executed under seal and shall be governed by and construed in accordance with the laws of The Commonwealth of Massachusetts.

(d) This Amendment may be executed in counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same document.

IN WITNESS WHEREOF, the parties have caused this Amendment to be duly executed as of the date and the year first above written.

MKS INSTRUMENTS, INC.

By: /s/ William P. Donlan

Title: Treasurer

FLEET NATIONAL BANK

By: /s/ Sharon A. Stone

Title: Director

MKS INSTRUMENTS, INC.

ELEVENTH AMENDMENT

TO LOAN AGREEMENT

This Eleventh Amendment (the "Amendment") dated as of September 1, 2000 concerns the Loan Agreement dated as of November 1, 1993 (the "Loan Agreement"), between MKS Instruments, Inc. (the "Borrower") and Fleet National Bank (f/k/a BankBoston, N.A. and The First National Bank of Boston; the "Lender"), as amended. Capitalized terms used herein but not otherwise defined shall have the meanings assigned to them in the Loan Agreement.

WHEREAS, the Borrower has requested that the Lender agree to change certain provisions of the Loan Agreement; and

WHEREAS, the Lender is willing, on the terms, subject to the conditions and to the extent set forth below, to amend the Loan Agreement to effect such changes;

NOW, THEREFORE, the Lender and the Borrower agree as follows:

Section 1. AMENDMENT OF THE LOAN AGREEMENT. Section 8.1(b) of the Loan Agreement is hereby amended and restated as follows:

(b) Mergers, Etc. Neither the Borrower nor any Subsidiary will consolidate with or merge into any other Person or permit any other Person to consolidate with or merge into it, or acquire all or substantially all of the capital stock or assets of any Person, or sell, assign, lease or otherwise dispose of (whether in one transaction or in a series of transactions) all or substantially all of its assets to any Person, except that

(1) a Subsidiary may consolidate with or merge into the Borrower or another Subsidiary; and

(2) the Borrower or any of its Subsidiaries may acquire all or substantially all of the capital stock or assets of any Person or consolidate or merge with any Person provided (i) such Person is engaged in a line of business substantially similar to one or more of Borrower's existing lines of business, (ii) the aggregate purchase price liability incurred in calendar year 2000, including all contingent liabilities, when aggregated with all such acquisitions and any Investments permitted under Section 8.4(3) in any calendar year shall not exceed \$80,000,000 and (iii) based on a pro forma calculation of the ratios set forth in Section 8.7 as of the date such acquisition is closed, assuming consolidation of the acquired business with the Borrower for the four full fiscal quarters ended immediately preceding such closing and pro forma debt and debt service payments based on scheduled principal payments, including acquisition

borrowings, if any, and pro forma interest on total debt at then prevailing borrowing rates, Borrower is in compliance with the financial covenants set forth in Section 8.7.

Section 2. REPRESENTATIONS AND WARRANTIES. The Borrower hereby represents and warrants as follows:

(a) The execution and delivery of this Amendment and the performance of this Amendment, the Loan Agreement as amended hereby and each of the other Loan Documents, and the transactions contemplated hereby and thereby, have been authorized by all necessary corporate actions of the Borrower. This Amendment, the Loan Agreement as amended hereby and each of the other Loan Documents constitute the legal, valid and binding obligations of the Borrower, enforceable against the Borrower in accordance with their respective terms.

(b) The Borrower has all requisite corporate power and authority to execute, deliver and perform its obligations under this Amendment, the Loan Agreement as amended hereby and each of the other Loan Documents. Neither the authorization, execution, delivery or performance by the Borrower of this Amendment nor the performance of the Loan Agreement as amended hereby or any other Loan Document nor the performance of the transactions contemplated hereby or thereby violates or will violate any provision of the corporate charter or by-laws of the Borrower, or does or will, with the passage of time or the giving of notice or both, result in a breach of or a default under, or require any consent under or result in the creation of any lien, charge or encumbrance upon any property or assets of the Borrower pursuant to, any material instrument, agreement or other document to which the Borrower is a party or by which the Borrower or any of its properties may be bound or affected.

(c) The execution and delivery by the Borrower of this Amendment and the performance by the Borrower of the Loan Agreement as amended hereby and the Loan Documents do not and will not violate any provision of law or regulation applicable to the Borrower, or any writ, order or decree of any court or governmental or regulatory authority or agency applicable to the Borrower.

Section 3. LOAN DOCUMENTS. This Amendment shall be a Loan Document for all purposes.

Section 4. CONDITIONS TO EFFECTIVENESS. The effectiveness of this Amendment is conditioned on the following:

(a) The Borrower and the Lender shall each have executed and delivered a counterpart of this Amendment;

(b) The representations and warranties contained in Article V of the Loan Agreement shall be true and correct in all material respects as of the date hereof as though made on and as of the date hereof;

(c) No Default or Event of Default under the Loan Agreement shall have occurred and be continuing; and

(d) The conditions set forth in clauses (b) - (e) of Section 6.1 of the Loan Agreement shall have been met as of the date hereof, provided that for purposes thereof and Section 5.5 of the Loan Agreement, the "Balance Sheet Date" shall mean June 30, 2000 and the financial statements referred to therein shall mean the unaudited statements for the period ended June 30, 2000, that have been furnished to the Lender.

Section 5. MISCELLANEOUS.

(a) On and after the date hereof, each reference in the Loan Agreement to "this Agreement" or words of like import shall mean and be deemed to be a reference to the Loan Agreement as amended hereby.

(b) Except as amended and modified hereby, the Loan Agreement is in all respects ratified and confirmed as of the date hereof, and the terms, covenants and agreements therein shall remain in full force and effect.

(c) This Amendment and the modifications to the Loan Agreement set forth herein shall be deemed to be a document executed under seal and shall be governed by and construed in accordance with the laws of The Commonwealth of Massachusetts.

(d) This Amendment may be executed in counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same document.

IN WITNESS WHEREOF, the parties have caused this Amendment to be duly executed as of the date and the year first above written.

MKS INSTRUMENTS, INC.

By: /s/ William P. Donlan

Title: Treasurer

FLEET NATIONAL BANK

By: /s/ Sharon A. Stone

Title: Director

EXHIBIT 21. LIST OF SUBSIDIARIES

Subsidiary	Place of Organization
MKS International, Inc.	Massachusetts
MKS Instruments Deutschland GmbH	Germany
MKS Instruments France S.A.	France
MKS Instruments Canada Ltd.	Canada
MKS Instruments, U.K. Limited	United Kingdom
MKS East, Inc.	Massachusetts
MKS Japan, Inc.	Japan
MKS Korea Co., Ltd.	Korea
MKS FSC, Inc.	Barbados
D.I.P., Inc.	Ohio
MKS MCS, Inc.	Massachusetts
Compact Instrument Technology, LLC	Massachusetts
Spectra International, LLC	California
Telvac Engineering Limited	United Kingdom

CONSENT OF INDEPENDENT ACCOUNTANTS

We hereby consent to the incorporation by reference in this Registration Statement on Form S-4 of MKS Instruments, Inc. of our report dated January 28, 2000, relating to the financial statements, which appears in MKS Instruments, Inc.'s 1999 Annual Report to Stockholders, which is incorporated by reference in its Annual Report on Form 10-K for the year ended December 31, 1999. We also consent to the incorporation by reference of our report dated January 28, 2000 relating to the financial statement schedule, which appears in such Annual Report on Form 10-K. We also consent to the references to us under the headings "Experts" and "Selected Financial Data" in such Registration Statement.

/s/ PricewaterhouseCoopers LLP

PricewaterhouseCoopers LLP

Boston, Massachusetts
November 8, 2000

CONSENT OF INDEPENDENT ACCOUNTANTS

The Board of Directors
Applied Science and Technology, Inc.:

We consent to the use of our report incorporated herein by reference and to the reference to our firm under the heading "Experts" in the joint proxy statement/prospectus.

/s/ KPMG LLP

Boston, Massachusetts
November 9, 2000

THE PROXY IS SOLICITED ON BEHALF OF THE BOARD OF DIRECTORS

MKS INSTRUMENTS, INC.

SPECIAL MEETING OF STOCKHOLDERS

_____, 200_

The undersigned stockholder of MKS Instruments, Inc., a Massachusetts corporation (the "Company"), hereby acknowledges receipt of the Notice of Special Meeting of Stockholders and Proxy Statement, each dated _____, 200_, and hereby appoints John R. Bertucci, Richard S. Chute, and Ronald C. Weigner, and each of them acting singly, proxies and attorneys-in-fact, with full power to each of substitution, on behalf and in the name of the undersigned, to represent the undersigned at the Special Meeting of Stockholders of the Company to be held on _____, 200_, at 10:00 a.m. at Hale and Dorr LLP, 60 State Street, Boston, Massachusetts, 02109, and at any adjournment(s) thereof, and to vote all shares of Common Stock which the undersigned would be entitled to vote if then and there personally present, on the matters set forth on the reverse side, and, in their discretion, upon any other matters which may properly come before the meeting.

[X] PLEASE MARK
VOTES AS IN
THIS EXAMPLE.

This proxy, when properly executed, will be voted as directed below, or, if no contrary direction is indicated, will be voted FOR proposal 1 and as said proxies deem advisable on such other matters as may properly come before the meeting.

1. To approve the issuance of Common Stock of the Company to the stockholders of Applied Science and Technology, Inc. ("ASTeX") pursuant to the Merger Agreement by and among the Company, a wholly owned subsidiary of the Company and ASTeX, dated October 2, 2000, whereby each outstanding share of ASTeX Common Stock will convert into the right to receive 0.7669 share of Common Stock of the Company.

FOR	AGAINST	ABSTAIN
[]	[]	[]

2. To transact such other business as may properly come before the meeting or

any postponements or adjournments thereof.

FOR	AGAINST	ABSTAIN
[]	[]	[]

TO ENSURE YOUR REPRESENTATION AT THE SPECIAL MEETING, PLEASE MARK, SIGN AND DATE THIS PROXY AND RETURN IT AS PROMPTLY AS POSSIBLE.

(This proxy should be marked, dated and signed by the stockholder(s) exactly as his or her name appears hereon, and returned promptly in the enclosed envelope. When shares are held by joint tenants, both should sign. When signing as attorney, as executor, administrator, trustee or guardian, please give full title as such. If a corporation, please sign in full corporate name by president or other authorized officer. If a partnership, please sign in partnership name by authorized person, who should state his or her title.)

Signature: _____ Date: _____

Signature: _____ Date: _____

APPLIED SCIENCE AND TECHNOLOGY, INC.
PROXY FOR ANNUAL MEETING OF STOCKHOLDERS

_____, _____, 200_

THIS PROXY IS SOLICITED ON BEHALF OF THE BOARD OF DIRECTORS

The undersigned does hereby appoint Richard S. Post and John E. Ross, and each of them acting singly, the attorneys and proxies of the undersigned, with full power of substitution, with all the powers which the undersigned would possess if personally present, to vote all of the shares of capital stock of Applied Science and Technology, Inc. (the "Company") that the undersigned is entitled to vote at the Annual Meeting of Stockholders of the Company to be held at the offices of Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C., located at One Financial Center, Boston, Massachusetts 02111 on _____, _____, 200_, at 10:00 a.m., and at any and all adjournments thereof, hereby acknowledging receipt of the Proxy Statement for such meeting and revoking any proxy heretofore given with respect to such shares.

THIS PROXY WHEN PROPERLY EXECUTED WILL BE VOTED IN THE MANNER DIRECTED BY THE UNDERSIGNED STOCKHOLDER(S). IF NO SPECIFICATION IS MADE, THIS PROXY WILL BE VOTED FOR THE PROPOSAL TO ADOPT THE MERGER AGREEMENT, FOR THE NOMINEES FOR DIRECTORS AND FOR THE PROPOSAL TO RATIFY KPMG LLP AS THE COMPANY'S INDEPENDENT PUBLIC ACCOUNTANTS FOR THE FISCAL YEAR ENDING JULY 1, 2001. IN THEIR DISCRETION, THE PROXIES ARE ALSO AUTHORIZED TO VOTE UPON SUCH MATTERS AS MAY PROPERLY COME BEFORE THE MEETING.

(CONTINUED AND TO BE SIGNED ON REVERSE SIDE)

SEE REVERSE SIDE

PLEASE DATE, SIGN AND MAIL YOUR PROXY CARD BACK AS SOON AS POSSIBLE!

ANNUAL MEETING OF STOCKHOLDERS

APPLIED SCIENCE AND TECHNOLOGY, INC.

_____, _____, 200_

Please Detach and Mail in the Envelope Provided

1. To consider and vote on a proposal to adopt an Agreement and Plan of Merger dated as of October 2, 2000 (the "Merger Agreement") pursuant to which a wholly-owned subsidiary of MKS Instruments, Inc. will be merged (the "Merger") with and into the Company and each stockholder of the Company (other than shares held by the Company in treasury, shares held by any wholly-owned subsidiary of the Company, and shares held by MKS Instruments, Inc. and its wholly-owned subsidiaries) will become entitled to receive 0.7669 share of MKS Common Stock in exchange for each outstanding share of common stock, \$.01 par value, of the Company owned by such stockholder immediately prior to the effective time of the Merger. A copy of the Merger Agreement is attached as Annex A to and is described in the accompanying proxy statement/prospectus.

For Against Abstain

2. To elect Dr. Richard S. Post and Mr. Robert R. Anderson as directors of the Company, each to serve until the earlier of the expiration of a three year term and the completion of the merger.

For the nominees listed above (except those crossed out)
 Withhold authority to vote for all nominees

3. To ratify the appointment of KPMG LLP as independent auditors of the Company for the fiscal year ending July 1, 2001.

For Against Abstain

4. To vote in their discretion on such other matters as may properly come before the Annual Meeting.

Copies of the Notice of Annual Meeting and of the proxy statement/prospectus have been received by the undersigned.

PLEASE DATE, SIGN AND PROMPTLY RETURN THIS PROXY IN THE ENCLOSED ENVELOPE.

Signature(s) ----- Date -----

Note: This proxy should be dated, signed by the stockholder(s) exactly as his or her name appears hereon, and returned promptly in the enclosed envelope. Persons signing in a fiduciary capacity should so indicate. If shares are held by joint tenants or as community property, both should sign.

PLEASE DATE, SIGN AND MAIL YOUR PROXY CARD BACK AS SOON AS POSSIBLE!

[LETTERHEAD OF MERRILL LYNCH, PIERCE, FENNER & SMITH INCORPORATED]

CONSENT OF MERRILL LYNCH, PIERCE,
FENNER & SMITH INCORPORATED

We hereby consent to the inclusion of our opinion letter dated September 30, 2000 to the Board of Directors of MKS Instruments, Inc. ("MKS") as an Annex to the joint proxy statement/prospectus relating to the proposed merger of MKS and Applied Science and Technology, Inc. and to the references thereto in such joint proxy statement/prospectus under the captions "SUMMARY --- Opinions of Financial Advisors" and "THE MERGER --- Opinion of MKS' Financial Advisor." In giving this consent, we do not admit that we come within the category of persons whose consent is required under, and we do not admit that we are "experts" for purposes of, the Securities Act of 1933 and the rules and regulations promulgated thereunder.

New York, New York
November 13, 2000

/s/ Merrill Lynch, Pierce, Fenner & Smith Incorporated

MERRILL LYNCH, PIERCE, FENNER & SMITH INCORPORATED

[LETTERHEAD OF CIBC WORLD MARKETS CORP.]

The Board of Directors
Applied Science and Technology, Inc.
90 Industrial Way
Wilmington, MA 01887

Members of the Board:

CIBC World Markets Corp. ("CIBC World Markets") hereby consents to the inclusion of the opinion letter of CIBC World Markets to the Board of Directors of Applied Science and Technology, Inc. ("ASTeX") as Annex B-2 to, and to the reference thereto under the captions "SUMMARY - Opinion of ASTeX Financial Advisor" and "THE MERGER - Opinion of ASTeX's Financial Advisor" in, the joint Proxy Statement/Prospectus of ASTeX and MKS Instruments, Inc. ("MKS") relating to the proposed merger transaction involving ASTeX and MKS. In giving such consent, we do not admit that we come within the category of persons whose consent is required under, and we do not admit that we are "experts" for purposes of, the Securities Act of 1933, as amended, and the rules and regulations promulgated thereunder.

By: /s/ CIBC World Markets Corp.

CIBC WORLD MARKETS CORP.

November 13, 2000