

SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

FORM 8-K

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

Date of Report (Date of earliest event reported): March 19, 2002

ASPEN TECHNOLOGY, INC.
(Exact name of registrant as specified in its charter)

DELAWARE

0-24786

04-2739697

(State or other jurisdiction of
incorporation or organization)

(Commission
File Number)

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

Ten Canal Park, Cambridge, Massachusetts 02141

(Address of principal executive office and zip code)

(617) 949-1000

(Registrant's telephone number, including area code)

ITEM 5. OTHER EVENTS

A. ISSUANCE OF PREFERRED STOCK AND WARRANTS

On February 6, 2002, we issued and sold 30,000 shares of our Series B-1 convertible preferred stock and warrants to purchase 365,854 shares of common stock for an aggregate purchase price of \$30.0 million. On February 28, 2002, we issued and sold 20,000 shares of our Series B-2 convertible preferred stock and warrants to purchase 283,460 shares of common stock for an aggregate purchase price of \$20.0 million. The Series B-1 preferred and Series B-2 preferred and warrants were issued in private placements to three institutional investors. These issuances were the subject of earlier reports on Form 8-K that we filed on February 12, 2002 and March 5, 2002.

On March 19, 2002, we issued 30,000 outstanding shares of newly designated Series B-I convertible preferred stock in exchange for all of the 30,000 outstanding shares of Series B-1 convertible preferred stock and we issued 20,000 outstanding shares of newly designated Series B-II convertible preferred stock in exchange for all of the 20,000 outstanding shares of Series B-2 convertible preferred stock. The charter and contractual terms applicable to the Series B-I preferred and Series B-II preferred provide us with an option to issue shares of a newly created class of Series C preferred stock, in lieu of paying cash, in certain circumstances where the Series B-1 preferred and Series B-2 preferred would have required us to make cash payments to holders. We also entered into amendments to the warrants issued in the two earlier private placements in order to provide us with a similar option to issue shares of Series C preferred stock in certain circumstances.

In addition, on March 19, 2002, we issued an additional 10,000 shares of Series B-I preferred and warrants to purchase 141,730 shares of common stock for an aggregate purchase price of \$10.0 million to two of the three institutional investors who participated in the prior private placements of our preferred stock. These warrants are exercisable initially at a price of \$23.99 per share. The other terms of these warrants are substantially identical to the warrants, as amended, issued to the purchasers in the two earlier private placements. We intend to use our net proceeds from this placement for working capital and other general corporate purposes, which may include acquisitions of, or investments in, one or more new technologies, products or businesses.

The terms of the Series B-I, Series B-II and Series C preferred are set forth in certificates of designations that form a part of our charter. The terms of these series of preferred stock are summarized below in "Description of Capital Stock." In addition, some of our obligations to holders of Series B preferred and warrants are contained in an amended and restated securities purchase agreement and amended and restated registration rights agreement entered into on March 19, 2002. These agreements supercede the securities purchase agreement and registration rights agreement we entered into with the purchasers on February 6, 2002. The Certificate of Designations of the Series B-I preferred and Series B-II preferred, the Certificate of Designations of the Series C preferred stock, the amended and restated securities purchase agreement, the amended restated registration rights agreement and the forms of warrants and warrant amendments are attached as Exhibits 4.1, 4.2., 99.1, 99.2, 99.3, 99.4, 99.5 and 99.6 to this current report on Form 8-K.

In connection with the placement of the Series B-I preferred, Series B-II preferred and warrants pursuant to the amended and restated securities purchase agreement, we amended our rights agreement dated as of March 12, 1998 with American Stock Transfer & Trust Company, as rights agent, in order to exclude from the provisions of the rights agreement and beneficial ownership of common stock deemed to result from holdings of Series B-I preferred or Series B-II preferred and the warrants. A copy of the amendment is included as Exhibit 99.7 to this current report on Form 8-K.

B. DESCRIPTION OF CAPITAL STOCK

THE PURPOSE OF SECTION B OF THIS REPORT IS TO UPDATE THE DESCRIPTION OF THE CAPITAL STOCK OF ASPEN TECHNOLOGY, INC. WE ANTICIPATE INCORPORATING THIS DESCRIPTION BY REFERENCE INTO FILINGS THAT WE MAKE WITH THE SECURITIES AND EXCHANGE COMMISSION FROM TIME TO TIME, INCLUDING ANY REGISTRATION STATEMENTS ON FORM S-3 OR FORM S-8. THE FOLLOWING INFORMATION CONSTITUTES THE "DESCRIPTION OF SECURITIES" REQUIRED BY ITEM 202 OF REGULATION S-K.

DESCRIPTION OF CAPITAL STOCK

The following description summarizes the material terms of our common stock and preferred stock, as well as relevant provisions of our certificate of incorporation and bylaws and the Delaware General Corporation Law. For a complete description of the terms of our common stock and preferred stock, please refer to our certificate of incorporation and bylaws, each as amended and/or restated to date. While the terms summarized below will apply generally to any shares of common stock or preferred stock that we may offer in the future, we will describe the particular terms of any series of these securities in more detail in the applicable prospectus relating to the offering of these securities. The terms of any common stock or preferred stock that we offer pursuant to a prospectus may differ from the terms described below, and any such additional and/or different terms will be set forth in that prospectus.

Our authorized capital stock consists of 130,000,000 shares. These shares consist of 120,000,000 shares of common stock, par value, \$.10 par value per share, and 10,000,000 shares of preferred stock, \$.10 par value per share, of which 400,000 shares have been designated as Series A participating cumulative preferred stock, 40,000 shares have been designated Series B-I Convertible preferred stock, 20,000 shares have been designated Series B-II convertible preferred stock, and 60,000 have been designated Series C preferred stock.

COMMON STOCK

Voting. Each holder of common stock is entitled to one vote on all matters to be voted upon by stockholders for each share held on the record date for such vote.

DIVIDENDS. Subject to any preference rights of holders of preferred stock, the holders of common stock are entitled to receive dividends, when, as and if declared by the board of directors, out of fund legally available for dividends.

LIQUIDATION. Upon liquidation, dissolution or winding up, holders of common stock are entitled to share ratably in all of our assets available for distribution to stockholders in proportion to the amount of common stock they own. The amount available for common stockholders is calculated after our payment of liabilities. Holders of preferred stock will receive their preferential share of our assets before the holders of common stock receive any assets.

OTHER RIGHTS. Holders of the common stock have no right to

- o convert the common stock into any other security,
- o have the common stock redeemed or
- o purchase additional shares of common stock to maintain their proportionate ownership interest.

The common stock does not have any cumulative voting rights, which means that the holders of a majority of the shares can elect all the directors and that the holders of the remaining shares will not be able to elect any directors. All outstanding shares of common stock are validly issued, fully paid and non-assessable. The rights, preferences and privileges of holders of common stock are subject to, and may be adversely affected by, the rights of the holders of shares of any series of preferred stock which we have designated and issued or may designate and issue in the future.

PREFERRED STOCK

Our certificate of incorporation authorizes the board of directors to issue, without any further action by the stockholders, the preferred stock in one or more series, to establish from time to time the number of shares to be included in each series, and to fix the designation, powers, preferences and rights of the shares of each series and the qualifications, limitations or restrictions thereof, including voting rights, dividend rights, conversion rights, liquidation preferences, redemption privileges and sinking fund terms. The rights, preferences and restrictions of the preferred stock of each series will be fixed by the certificate of designations relating to that series. Any or all of the rights of the preferred stock may be greater than the rights of the common stock. In addition, the preferred stock could have other rights, including economic rights senior to our common stock, so that the issuance of the preferred stock could adversely effect the market value of our common stock. The issuance of the preferred stock may also have the effect of delaying, deferring or preventing a change in control of us without any action by the stockholders.

SERIES B PREFERRED STOCK

Our certificate of incorporation authorizes two series of Series B preferred stock: Series B-I preferred stock and Series B-II preferred stock, which we collectively refer to as the Series B preferred stock.

VOTING. Each holder of Series B preferred stock is entitled to vote on all matters to be voted upon by stockholders and is entitled to a number of votes equal to the number of shares of common stock into which such holder's shares of Series B preferred stock are convertible as of the record date for such vote. Our certificate of incorporation also gives the holders of shares of Series B preferred stock the right to vote as a separate class on enumerated actions that if taken by us would impair their rights, preferences and privileges. Prior to us taking any such action, the affirmative vote of the holders of a majority of the outstanding shares of Series B Preferred Stock is required. Except as otherwise provided by Delaware law, the holders of Series B preferred stock vote with the holder of common stock as a single class on all other matters to be voted upon by stockholders.

DIVIDENDS. Holders of Series B preferred stock are entitled to receive, out of funds legally available for dividends, cumulative dividends at an annual rate of 4% of the stated value per share of such Series B preferred stock, payable quarterly, in either cash or common stock at our option (subject to our satisfaction of specified conditions set forth in our certificate of incorporation).

CONVERSION. Holders of Series B preferred stock may at any time convert their shares into common stock at their option. Shares of Series B preferred stock are convertible into a number of shares of common stock equal to the stated value of such shares of Series B preferred stock, divided by the then effective conversion price of such shares, which conversion price is subject to antidilution and other adjustments described in our certificate of incorporation. Subject

to conditions set forth in our certificate of incorporation, generally relating to the market price of our common stock, we may also require holders to convert their shares of Series B preferred into common stock.

REDEMPTION. Beginning August 6, 2003 until February 6, 2004, in the case of the Series B-I preferred stock, and August 28, 2003 until February 28, 2004, in the case of the Series B-II preferred stock, holders of shares of Series B preferred stock have the right to require us to redeem up to a specified aggregate amount of their shares upon the occurrence of events specified in our restated certificate of incorporation, including in certain circumstances where the average closing price of our common stock for specified periods is below the then-applicable conversion price for such Series of Series B preferred stock. Beginning on February 7, 2004, in the case of the Series B-I preferred stock and February 28, 2004, in the case of the Series B-II preferred stock, holders of Series B preferred stock may require that we redeem any or all of their shares. Any such redemption may be made in cash, common stock or Series C preferred stock (or a combination thereof), at our option (subject to our satisfaction of specified conditions set forth in our certificate of incorporation), at a price equal to the stated value of the Series B preferred stock, plus accrued but unpaid dividends.

We will be required to redeem all of the outstanding shares of Series B preferred stock on February 7, 2009 at a price equal to the stated value plus all accrued but unpaid dividends. The redemption price may be paid in cash, common stock or Series C preferred stock (or a combination thereof) at our option (subject to our satisfaction of specified conditions set forth in our certificate of incorporation).

REPURCHASE EVENTS. Upon the occurrence of specified "triggering events," each holder of Series B preferred stock may require that we repurchase all or any portion of the shares of Series B preferred stock then held by such holder at a price per share equal to 115% of the greater of:

- o the stated value of the shares, and

- o the market value of the common stock issuable upon conversion of the shares, together with all accrued and unpaid dividends. In addition, holders may require that we repurchase all or any portion of shares of common stock previously issued upon conversion of shares of Series B preferred stock, at a price per share equal to 115% of the market value of our common stock.

The triggering events are set forth in the certificate of designations and in general relate to:

- o bankruptcy-related events; o changes of control;
- o a suspension of trading of the common stock;
- o our failure to have sufficient authorized shares of common stock reserved for issuance upon conversions of Series B preferred stock or to deliver common stock certificates upon any such conversion;
- o our failure to cause a registration statement relating to the shares of common stock issuable upon conversion of the Series B preferred stock to be filed, or to be declared and maintained effective; or
- o our failure to make certain payments when due, or any other continuing default by us, under any of the documents delivered in connection with the issuance and sale of the Series B preferred stock.

CERTAIN EVENTS. In the event of a change of control as specified by our certificate of incorporation, a holder of Series B preferred stock may require that we redeem shares of Series B preferred stock in cash at a price equal to 115% of the stated value, plus accrued but unpaid dividends or require the successor corporation or surviving entity in the change of control to issue a new Series of preferred stock with a stated value equal to 115% of the stated value of the preferred stock, plus accrued but unpaid dividends thereon, and having terms substantially equivalent to the terms of the Series B preferred stock. In such an event, a holder alternatively may elect to convert shares of Series B preferred stock into the consideration that the holder would have received had the holder converted the shares of Series B preferred stock into common stock immediately before the change of control event. In the event of an event constituting an "organic event," (as described in our certificate of incorporation) other than a change of control, where common stockholders are entitled to receive securities or assets in exchange for their common stock, holders of Series B preferred stock are entitled to receive a new security with terms substantially equivalent to the Series B preferred stock, including liquidation preferences and stated value.

LIQUIDATION. In the event of any liquidation, dissolution or winding up, the holders of Series B preferred stock are entitled to receive, prior to any distribution to holders of common stock, an amount equal to the stated value, plus accrued but unpaid dividends.

SERIES C PREFERRED STOCK

VOTING. Holders of shares of Series C preferred stock have no voting rights except as otherwise provided by Delaware law and our certificate of incorporation. Our certificate of incorporation gives the holders of shares of Series C preferred stock the right to vote as a separate class on enumerated actions that if taken by us would impair their rights, preferences and privileges. Prior to us taking any such action, the affirmative vote of the holders of a majority of the outstanding shares of Series C Preferred Stock is required. In addition, we have agreed with the holders of the Series B preferred stock that the terms of the Series C preferred stock may not be amended or eliminated without the affirmative vote of the holders of a majority of the outstanding shares of Series B preferred stock. On such matters where the holders of Series C preferred stock are entitled to vote, they are entitled to one vote per share. If any shares of Series C preferred stock are outstanding, the holders, as a separate class, shall be entitled to elect the greater of (a) two directors or (b) 20% of the total number of directors on our board of directors, rounded up to the nearest whole number.

DIVIDENDS. Holders of Series C preferred stock are entitled to receive, out of funds legally available for dividends, cumulative dividends at an annual rate of 12% of the stated value per share of such Series C preferred stock, payable quarterly, in either cash or through an increase in the stated value per share, at our option (subject to our satisfaction of specified conditions set forth in our certificate of incorporation).

CONVERSION. Holders of Series C preferred stock have no right to convert their shares into any other security.

REDEMPTION. We may redeem the Series C Preferred Stock at any time at a price per share equal to the stated value, plus all accrued but unpaid dividends.

CERTAIN EVENTS. In the event of a change of control as specified by our certificate of incorporation, a holder of Series C preferred stock may require that we, at our option, either redeem shares of Series C preferred stock in cash at a price equal to the stated value, plus accrued but unpaid dividends or require the successor corporation or surviving entity in the change of control to issue a new Series of preferred stock with a stated value equal to the stated value of the Series C preferred stock, plus accrued but unpaid dividends, and having terms substantially

equivalent to the terms of the Series C preferred stock. In the event of an event constituting an "organic event," (as described in our certificate of incorporation) other than a change of control, where common stockholders are entitled to receive securities or assets in exchange for their common stock, holders of Series C preferred stock are entitled to receive a new security with terms substantially equivalent to the Series C preferred stock, including liquidation preferences and stated value.

LIQUIDATION. In the event of any liquidation, dissolution or winding up, the holders of Series C preferred stock are entitled to receive, prior to any distribution to holders of common stock, an amount equal to the stated value, plus accrued but unpaid dividends.

CERTAIN EFFECTS OF AUTHORIZED BUT UNISSUED STOCK

We have granted our board of directors the authority to issue preferred stock and to determine its rights and preferences in order to eliminate delays associated with a stockholder vote on specific issuances. The issuance of preferred stock, while providing desirable flexibility in connection with possible acquisitions and other corporate purposes, could have the effect of making it more difficult for a third party to acquire, or of discouraging a third party from acquiring, a majority of our outstanding voting stock. We have designated and reserved an aggregate of 400,000 shares of authorized but unissued preferred stock for issuance as Series A participating cumulative preferred stock pursuant to our Stockholder Rights Plan described below.

CERTAIN PROVISIONS OF THE CERTIFICATE OF INCORPORATION AND THE BY-LAWS

We must comply with Section 203 of the Delaware General Corporation Law, an anti-takeover law. In general, Section 203 prohibits a publicly-held Delaware corporation from engaging in a "business combination" with an "interested stockholder" for a period of three years following the date the person became an interested stockholder, unless the business combination is approved in a prescribed manner. Generally, a "business combination" includes mergers, asset sales and other transactions resulting in a financial benefit to the interested stockholder. Generally, an "interested stockholder" includes a person who, together with affiliates and associates, owns, or within three years did own, 15% or more of the corporation's outstanding voting stock. The existence of this provision generally will have an anti-takeover effect for transaction not approved in advance by the board of directors, including discouraging attempts that might result in a premium over the market price for the shares of common stock held by stockholders.

The Certificate of Incorporation of the Company provides for the division of the Board of Directors into three classes as nearly equal in size as possible with staggered three-year terms. In addition, the Certificate of Incorporation provides that directors may be removed only for cause by the affirmative vote of the holders of two-thirds of the shares of capital stock of the corporation entitled to vote. Under the Certificate of Incorporation, any vacancy on the Board of Directors, however occurring, including a vacancy resulting from an enlargement of the Board, may only be filled by vote of a majority of the directors then in office. The classification of the Board of Directors and the limitations on the removal of directors and filling of vacancies could have the effect of making it more difficult for a third party to acquire, or of discouraging a third party from acquiring, control of the Company.

Our certificate of incorporation also provides that any action required or permitted to be taken by our stockholders at any annual meeting or special meeting of stockholders may only be

taken if it is properly brought before such meeting and may not be taken by written consent in lieu of a meeting. Our certificate of incorporation further provides that special meetings of the stockholders may only be called by our chairman of the board of directors, our chief executive officer or, if none, our president or by the board of directors. Under our bylaws, in order for any matter to be considered properly brought before a meeting, a stockholder must comply with certain requirements regarding advance notice to us. The foregoing provisions could have the effect of delaying until the next stockholders' meeting stockholder actions which are favored by the holders of a majority of our outstanding voting securities. These provisions may also discourage another person from making a tender offer for our common stock, because such person, even if it acquired a majority of our outstanding voting securities, would be able to take action as a stockholder (such as electing new directors or approving a merger) only at a duly called stockholders' meeting, and not by written consent.

The Delaware General Corporation Law provides generally that the affirmative vote of a majority of the shares entitled to vote on any matter is required to amend a corporation's certificate of incorporation or by-laws, unless a corporation's certificate of incorporation or bylaws, as the case may be, requires a greater percentage. Our certificate of incorporation and bylaws require the affirmative vote of the holders of at least 75% of the voting power of all the shares of our capital stock issued, outstanding and entitled to vote to amend or repeal any of the provisions described in the prior two paragraphs.

Our certificate of incorporation contains certain provisions permitted under the Delaware General Corporation Law relating to the liability of directors. The provisions eliminate a director's liability for monetary damages for a breach of fiduciary duty, except in certain circumstances involving wrongful acts, such as the breach of a director's duty of loyalty or acts or omissions which involve intentional misconduct or a knowing violation of law. Further, our certificate of incorporation contains provisions to indemnify our directors and officers to the fullest extent permitted by the Delaware General Corporation Law.

RIGHTS PLAN

On March 12, 1998, our board of directors adopted a stockholder rights agreement, which we refer to as the rights plan, and distributed one right for each then outstanding share of common stock. The rights were issued to holders of record of common stock outstanding on March 12, 1998. Each share of common stock issued after March 12, 1998 will also include one right, subject to certain limitations. Each right, when it becomes exercisable, will initially entitle the registered holder to purchase from us one one-hundredth (1/100th) of a share of Series A preferred stock at a purchase price of \$175.00.

Currently the rights are attached to our outstanding shares of common stock. The rights are not now exercisable and cannot be transferred separately. The rights will become exercisable and separately transferable when we learn that any person or group, other than an exempt person, has acquired beneficial ownership of 20% or more of the outstanding common stock or on such other date as may be designated by the board of directors following the commencement of, or first public disclosure of an intent to commence, a tender or exchange offer for our outstanding common stock that could result in the offeror becoming the beneficial owner of 15% or more of our outstanding common stock. In such circumstances, holders of the rights will be entitled to purchase, at the purchase price, a number of hundredths of a share of Series A preferred stock equivalent to the number of shares of common stock (or, in certain circumstances, other equity securities) having a market value of twice the purchase price. Beneficial holders of 15% or more of the outstanding common stock, however, would not be entitled to exercise their rights in such

circumstances. As a result, their voting and equity interests in us would be substantially diluted if the rights were to be exercised.

The rights expire in March 2008, but we may redeem them earlier at a price of \$.01 per right, in accordance with the rights plan.

TRANSFER AGENT AND REGISTRAR

The transfer agent and registrar for our common stock is American Stock Transfer & Trust Company.

NASDAQ NATIONAL MARKET LISTING

Our common stock has been approved for trading and quotation on the Nasdaq National Market under the symbol "AZPN."

ITEM 7. FINANCIAL STATEMENTS, PRO FORMA FINANCIAL INFORMATION AND EXHIBITS

(a) Financial Statements of Business Acquired

Not applicable.

(b) Pro Forma Financial Information

Not applicable.

(c) Exhibits

EXHIBIT NUMBER	DESCRIPTION
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4.1	Certificate of Designations of the Series B-I Convertible Preferred Stock and Series B-II Convertible Preferred Stock.
4.2	Certificate of Designations of the Series C Preferred Stock.
99.1	Amended and Restated Securities Purchase Agreement dated as of March 19, 2002 between Aspen Technology, Inc. and the Purchasers named therein.
99.2	Amended and Restated Registration Rights Agreement dated as of March 19, 2002 between Aspen Technology, Inc. and the Purchasers named therein.
99.3	Form of Warrant of Aspen Technology, Inc. dated as of February 6, 2002.
99.4	Form of Warrant of Aspen Technology, Inc. dated as of February 28, 2002.
99.5	Form of Amendment to Warrants of Aspen Technology, Inc. dated as of February 6, 2002 and February 28, 2002.
99.6	Form of Warrant of Aspen Technology, Inc. dated as of March 19, 2002.

- 99.7 Amendment No. 3, dated as of March 19, 2002, to Rights Agreement, dated as of March 12, 1998 between Aspen Technology, Inc. and American Stock Transfer & Trust Company, as Rights Agent (filed as Exhibit 4.6 to Amendment No. 4 to Form 8-A/A filed by Aspen Technology, Inc. on March 20, 2002 and incorporated herein by reference).
- 99.8 Amendment Agreement No. 4, dated as of March 19, 2002, to Credit Agreement dated as of October 27, 2000 between Aspen Technology, Inc. and Fleet National Bank.

SIGNATURE

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned thereunto duly authorized.

ASPEN TECHNOLOGY, INC.

Dated: March 19, 2002

By: /s/ Lisa W. Zappala

Lisa W. Zappala
Senior Vice President and
Chief Financial Officer

ASPEN TECHNOLOGY, INC.

CERTIFICATE OF DESIGNATIONS
OF
SERIES B-I CONVERTIBLE PREFERRED STOCK
AND
SERIES B-II CONVERTIBLE PREFERRED STOCK

(Pursuant to Section 151 of the Delaware General Corporation Law)

Aspen Technology, Inc., a Delaware corporation (the "Corporation"), in accordance with the provisions of Section 103 of the Delaware General Corporation Law (the "DGCL") does hereby certify that, in accordance with Section 141(c) of the DGCL, the following resolution was duly adopted by the Board of Directors of the Corporation as of March 14, 2002:

RESOLVED, that two series of Preferred Stock, Series B-I Convertible Preferred Stock, par value \$0.10 per share, and Series B-II Convertible Preferred Stock, par value \$0.10 per share, of the Corporation are hereby created and the designation, number of shares, powers, preferences, rights, qualifications, limitations and restrictions thereof (in addition to any provisions set forth in the Certificate of Incorporation of the Corporation which are applicable to the Preferred Stock of all classes and series) are as follows:

SERIES B-I CONVERTIBLE PREFERRED STOCK
AND
SERIES B-II CONVERTIBLE PREFERRED STOCK

1. Designation, Amount, Par Value and Stated Value. The following two series of preferred stock shall be designated as (i) the Corporation's Series B-I Convertible Preferred Stock (the "SERIES B-I PREFERRED STOCK"), and the number of shares so designated shall be 40,000, and (ii) the Corporation's Series B-II Convertible Preferred Stock (the "SERIES B-II PREFERRED STOCK"), and the number of shares so designated shall be 20,000. The Series B-I Preferred Stock and Series B-II Preferred Stock are sometimes collectively referred to as the "SERIES B PREFERRED STOCK." Each share of Series B Preferred Stock shall have a par value of \$0.10 per share and a stated value equal to \$1,000 plus any amount added to the Stated Value pursuant to Section 3(c) hereof or Section 2(f) of the Registration Rights Agreement (the "STATED VALUE").

2. Definitions. In addition to the terms defined elsewhere in this Certificate of Designations, (a) the terms set forth in Exhibit A hereto have the meanings indicated therein and (b) the following terms have the meanings indicated:

"CONVERSION PRICE" means the Initial Conversion Price as of the applicable Deemed Issue Date, as adjusted pursuant to Section 15 below.

"DEEMED ISSUE DATE" means (i) February 6, 2002, with respect to the 30,000 shares of Series B-I Preferred Stock originally issued on March 19, 2002 in exchange for shares of the Series B-1 Convertible Preferred Stock of the Corporation, (ii) March 19, 2002, with respect to the 10,000 shares of Series B-I originally issued on such date, and (iii) February 28, 2002, with respect to the Series B-II Preferred Stock, in each case regardless of the number of transfers of any particular shares of such Series B Preferred Stock and regardless of the number of certificates that may be issued to evidence such Series B Preferred Stock.

"EQUITY CONDITIONS" means, with respect to a specified issuance of shares of Common Stock, that each of the following conditions is satisfied: (i) the number of authorized but unissued and otherwise unreserved shares of Common Stock is sufficient for such issuance; (ii) such shares of Common Stock are registered for resale by the Holders and may be sold by the Holders pursuant to an effective Underlying Shares Registration Statement, such shares may be sold without volume restrictions pursuant to Rule 144(k) under the Securities Act or all Underlying Shares owned by each Holder may be sold without volume restrictions pursuant to Rule 144 under the Securities Act; (iii) the Common Stock is listed or quoted (and is not suspended from trading) on an Eligible Market and such shares of Common Stock are approved for listing upon issuance; (iv) such issuance would be permitted in full without violating Section 16 hereof or the rules or regulations of any Trading Market; (v) no Bankruptcy Event has occurred; (vi) the Corporation is not in default with respect to any material obligation hereunder or under any other Transaction Document; and (vii) none of the following events have occurred and are continuing (A) an event constituting a Triggering Event or (B) an event that with the passage of time and without being cured would constitute a Triggering Event other than a pending, proposed or intended Change of Control.

"HOLDER" means any holder of Series B Preferred Stock.

"INITIAL CONVERSION PRICE" means (i) in the case of Series B-I Preferred Stock, \$19.9703, and (ii) in the case of Series B-II Preferred Stock, \$17.66.

"INITIAL PURCHASE PRICE" means (i) in the case of Series B-I Preferred Stock, \$17.75, and (ii) in the case of Series B-II Preferred Stock, \$15.69.

"JUNIOR SECURITIES" means the Common Stock and all other equity or equity equivalent securities of the Corporation, other than Series C Preferred Stock.

"PURCHASE AGREEMENT" means the Amended and Restated Securities Purchase Agreement, dated March 19, 2002, among the Corporation and the original purchasers of the Series B Preferred Stock, as amended from time to time.

"SERIES C PREFERRED STOCK" means the Series C preferred stock of the Corporation to be authorized and issued as contemplated by the Purchase Agreement.

3. Dividends.

(a) Holders shall be entitled to receive, out of funds legally available therefor, and the Corporation shall pay, cumulative dividends on the Series B Preferred Stock at the rate per share (as a percentage of the Stated Value per share) of 4% per annum, payable quarterly in arrears commencing on June 30, 2002 and thereafter on each March 31, June 30, September 30 and December 31, except if such date is not a Trading Day, in which case such dividend shall be payable on the next succeeding Trading Day (each, a "DIVIDEND PAYMENT DATE"). Dividends on the Series B Preferred Stock shall be calculated on the basis of a 365-day year, shall accrue daily commencing on the Deemed Issue Date for the applicable shares of Series B Preferred Stock, and shall be deemed to accrue from such date whether or not earned or declared and whether or not there are profits, surplus or other funds of the Corporation legally available for the payment of dividends.

(b) Subject to the conditions and limitations set forth below, the Corporation may pay required dividends (i) in cash or (ii) in Common Stock. The Corporation must deliver written notice (the "DIVIDEND NOTICE") to the Holders indicating the manner in which it intends to pay dividends at least ten Trading Days prior to each Dividend Payment Date, but the Corporation may indicate in any such notice that the election contained therein shall continue for subsequent Dividend Payment Dates until revised.

Failure to timely provide such written notice shall be deemed an election by the Corporation to pay the dividend in Common Stock, unless payment of dividends in such manner is not permitted at the time of a dividend, in which case such dividend shall be payable in cash. All dividends payable in respect of the Series B Preferred Stock on any Dividend Payment Date must be paid in the same manner.

(c) Notwithstanding the foregoing, the Corporation may not pay dividends by issuing Common Stock unless, at such time, the Equity Conditions are satisfied with respect to such Common Stock dividend shares and all of the Underlying Shares then issuable upon conversion in full of all outstanding Series B Preferred Stock. If the Corporation is required to pay dividends in cash on any Dividend Payment Date and does not timely make such payment, any Holder may (but shall not be required to) treat such cash amount as if it had been added to the Stated Value as of such Dividend Payment Date. If the Corporation may not legally pay dividends on any Dividend Payment Date, such amount shall be added to the Stated Value as of such Dividend Payment Date.

(d) So long as any Series B Preferred Stock is outstanding, (i) neither the Corporation nor any Subsidiary shall, directly or indirectly, redeem, purchase or otherwise acquire any Junior Securities or set aside any monies for such a redemption, purchase or other acquisition in excess of \$10,000,000 per calendar year, provided that the Corporation shall be entitled to carry forward any amount not used in any calendar year to subsequent calendar years, and (ii) the Corporation shall not pay or declare any dividend or make any distribution on any Junior Securities, except pro rata stock dividends on the Common Stock payable in additional shares of Common Stock and dividends due and paid in the ordinary course on preferred stock of the Corporation, in each case only at such times as the Corporation is in compliance with its payment and other obligations hereunder.

(e) In the event that the Corporation elects to pay dividends in shares of Common Stock, the number of shares of Common Stock to be issued to each Holder as such dividend shall be (i) determined by dividing the total dividend then payable to such Holder by the Dividend Market Price (as defined below) as of the applicable Dividend Payment Date, and rounding up to the nearest whole share, and (ii) paid to such Holder in accordance with Section 3(f) below. The term "DIVIDEND MARKET PRICE" shall mean the average of the Volume Weighted Average Prices of Common Stock for the five consecutive Trading Days prior to the applicable Dividend Payment Date (not including such date).

(f) In the event that any dividends are paid in Common Stock the Corporation shall, on or before the third Trading Day following the payment date of such dividend, (i) issue and deliver to such Holder a certificate, registered in the name of the Holder or its designee, for the number of shares of Common Stock to which the Holder shall be entitled or (ii) if and when the applicable shares of Common Stock may be held in a balance account with The Depository Trust Corporation through its Deposit Withdrawal Agent Commission System and after the Holder has notified the Corporation that this clause (ii) shall apply, credit the number of shares of Common Stock to which the Holder shall be entitled to the Holder's or its designee's balance account with The Depository Trust Corporation through its Deposit Withdrawal Agent Commission System.

4. Registration of Series B Preferred Stock. The Corporation shall register shares of the Series B Preferred Stock, upon records to be maintained by the Corporation for that purpose (the "SERIES B PREFERRED STOCK REGISTER"), in the name of the record Holders thereof from time to time. The Corporation may deem and treat the registered Holder of shares of Series B Preferred Stock as the absolute owner thereof for the purpose of any conversion hereof or any distribution to such Holder, and for all other purposes, absent actual notice to the contrary.

5. Registration of Transfers. The Corporation shall register the transfer of any shares of Series B Preferred Stock in the Series B Preferred Stock Register, upon surrender of certificates evidencing such shares to the Corporation at its address specified herein. Upon any such registration or transfer, a new

certificate evidencing the shares of Series B Preferred Stock so transferred shall be issued to the transferee and a new certificate evidencing the remaining portion of the shares not so transferred, if any, shall be issued to the transferring Holder.

6. Liquidation.

(a) In the event of any liquidation, dissolution or winding up of the Corporation, either voluntary or involuntary (a "LIQUIDATION EVENT"), the Holders of Series B Preferred Stock shall be entitled to receive, prior and in preference to any distribution of any of the assets or surplus funds of the Corporation to the holders of Junior Securities by reason of their ownership thereof, an amount per share in cash equal to the Stated Value for each share of Series B Preferred Stock then held by them (as adjusted for any stock splits, stock dividends, stock combinations and similar transactions with respect to the Series B Preferred Stock), plus all accrued but unpaid dividends on such Series B Preferred Stock as of the date of such event (the "SERIES B STOCK LIQUIDATION PREFERENCE"). If, upon the occurrence of a Liquidation Event, the assets and funds thus distributed among the Holders of the Series B Preferred Stock shall be insufficient to permit the payment to such Holders of the full Series B Stock Liquidation Preference, then the entire assets and funds of the Corporation legally available for distribution shall be distributed ratably among the Holders of the Series B Preferred Stock in proportion to the aggregate Series B Stock Liquidation Preference that would otherwise be payable to each of such Holders.

(b) In the event of a Liquidation Event, following completion of the distributions required by the first sentence of paragraph (a) of this Section 6, if assets or surplus funds remain in the Corporation, the holders of the Common Stock shall share ratably in all remaining assets of the Corporation, based on the number of shares of Common Stock then outstanding.

(c) The Corporation shall mail written notice of any Liquidation Event to each record Holder not less than 20 Trading Days prior to the payment date or effective date thereof.

7. Conversion.

(a) Conversion at Option of Holder. At the option of any Holder, any Series B Preferred Stock held by such Holder may be converted into Common Stock based on the applicable Conversion Price then in effect for such series of Series B Preferred Stock. A Holder may convert Series B Preferred Stock into Common Stock pursuant to this paragraph at any time and from time to time after the applicable Deemed Issue Date, by delivering to the Corporation a Conversion Notice, in the form attached hereto as Exhibit B, appropriately completed and duly signed, and the date any such Conversion Notice is delivered to the Corporation (as determined in accordance with the notice provisions hereof) is a "CONVERSION DATE."

(b) Conversion at Option of Corporation. If, at any time after the Effective Date, the Closing Price on each of 20 consecutive Trading Days (a "QUALIFYING PERIOD") exceeds 135% of the applicable Conversion Price for a series of Series B Preferred Stock (each, a "THRESHOLD PRICE"), the Corporation may require the Holders to convert the shares of such series into Common Stock based on the applicable Conversion Price. The Corporation may require a conversion pursuant to this paragraph by delivering irrevocable written notice of such election to the Holders, and the fifth Trading Day after the date any such notice is delivered to the Holders (as determined in accordance with the notice provisions hereof) will be the "CONVERSION DATE" for such required conversion. Notwithstanding the foregoing, (i) if the Corporation has publicly announced a pending, proposed or intended Change of Control and the Qualifying Period includes any Trading Days on or after the date of such public announcement, then to the extent that a Holder has not had the ability to sell all or a portion of the Underlying Shares pursuant to Rule 144 under the Securities Act or an effective Underlying Share Registration Statement for at least 20 Trading Days after the date of the public announcement of such Change of Control, the Conversion Date

with respect to those shares of Series B Preferred Stock that are convertible into the portion of the Underlying Shares that are not so saleable shall be deferred until the date on which such Underlying Shares shall have been so saleable for a period of 20 Trading Days from the date of such public announcement (and if no such period of 20 Trading Days occurs prior to the Change of Control with respect to any such Underlying Shares then the notice of conversion applicable to those shares of Series B Preferred Stock convertible into such Underlying Shares shall be void) and (ii) the Corporation may not require any conversion under this paragraph (and any notice thereof will be void), unless from the beginning of such period of 20 consecutive Trading Days through the Conversion Date, (A) the Equity Conditions are satisfied with respect to all of the Underlying Shares then issuable upon conversion in full of all outstanding Series B Preferred Stock, and (B) the Closing Price equals or exceeds the applicable Threshold Price.

8. Mechanics of Conversion.

(a) The number of Underlying Shares issuable upon any conversion of shares of either series of Series B Preferred Stock hereunder shall equal (i) the Stated Value of such share of Series B Preferred Stock to be converted, divided by the applicable Conversion Price on the Conversion Date, plus (ii) the amount of any accrued but unpaid dividends on such share of Series B Preferred Stock through the Conversion Date, divided by the applicable Conversion Price on the Conversion Date.

(b) Upon conversion of any Series B Preferred Stock, the Corporation shall promptly (but in no event later than three Trading Days after the Conversion Date) issue or cause to be issued and cause to be delivered to or upon the written order of the Holder and in such name or names as the Holder may designate a certificate for the Underlying Shares issuable upon such conversion, free of restrictive legends unless such Underlying Shares are not then freely transferable without volume restrictions pursuant to Rule 144(k) under the Securities Act. The Holder, or any Person so designated by the Holder to receive Underlying Shares, shall be deemed to have become holder of record of such Underlying Shares as of the Conversion Date. If and when such Underlying Shares may be freely transferred pursuant to Rule 144 under the Securities Act or pursuant to an effective Underlying Shares Registration Statement, the Corporation shall use its best efforts to deliver Underlying Shares hereunder electronically through the Depository Trust Corporation or another established clearing corporation performing similar functions, and shall issue such Underlying Shares in the same manner as dividend payment shares are issued pursuant to Section 3(f) above.

(c) A Holder shall not be required to deliver the original certificate(s) evidencing the Series B Preferred Stock being converted in order to effect a conversion of such Series B Preferred Stock. Execution and delivery of the Conversion Notice shall have the same effect as cancellation of the original certificate(s) and issuance of a new certificate evidencing the remaining shares of Series B Preferred Stock. Upon surrender of a certificate following one or more partial conversions, the Corporation shall promptly deliver to the Holder a new certificate representing the remaining shares of Series B Preferred Stock.

(d) The Corporation's obligations to issue and deliver Underlying Shares upon conversion of Series B Preferred Stock in accordance with the terms hereof are absolute and unconditional, irrespective of any action or inaction by any Holder to enforce the same, any waiver or consent with respect to any provision hereof, the recovery of any judgment against any Person or any action to enforce the same, or any setoff, counterclaim, recoupment, limitation or termination, or any breach or alleged breach by any Holder or any other Person of any obligation to the Corporation or any violation or alleged violation of law by any Holder or any other Person, and irrespective of any other circumstance which might otherwise limit such obligation of the Corporation to any Holder in connection with the issuance of such Underlying Shares.

9. Redemption Rights.

(a) Holders' Redemption Rights.

(i) Subject to the provisions of Section 9(a)(iii) below, if, at any time on or after August 7, 2003, in the case of the Series B-I Preferred Stock, and August 28, 2003, in the case of the Series B-II Preferred Stock (either such date being referred to as an "Initial Redemption Date"), the average of the Closing Prices for 20 consecutive Trading Days immediately preceding the applicable Initial Redemption Date or any date thereafter is below the applicable Conversion Price of such series of Series B Preferred Stock, the Holder of such Series B Preferred Stock, upon 15 Trading Days' advance notice (the "REDEMPTION NOTICE") to the Corporation, shall have the right to request the Corporation to redeem that number of shares of Series B Preferred Stock held by such Holders as is set forth in the Redemption Notice at a per share price (the "REDEMPTION PRICE") equal to the Stated Value of such shares of Series B Preferred Stock to be redeemed plus all accrued but unpaid dividends thereon to the date of payment.

(ii) Notwithstanding anything to the contrary in Section 9(a)(i), the Holders of the Series B Preferred Stock (x) may not deliver a Redemption Notice with respect to a particular series of Series B Preferred Stock until after the applicable Initial Redemption Date, (y) may not deliver a Redemption Notice covering in aggregate more than \$20,000,000 of Stated Value, with respect to the Series B-I Preferred Stock, until after February 7, 2004, and \$10,000,000 of Stated Value, with respect to the Series B-II Preferred Stock, until after February 28, 2004, and (z) may deliver a Redemption Notice with respect to a particular series of Series B Preferred Stock after February 7, 2004 or February 28, 2004, as applicable, irrespective of whether the average of the Closing Prices for the 20 consecutive Trading Days is below the applicable Conversion Price of such series of Series B Preferred Stock and without limit as to Stated Value.

(iii) Within three Trading Days of receipt of a Redemption Notice, the Corporation will deliver written notice to each Holder of the applicable series of Series B Preferred Stock (the "CORPORATION NOTICE"), confirming pursuant to the Redemption Notice the aggregate amount of such Series B Preferred Stock being redeemed, the Redemption Date (as defined below) and the applicable Redemption Prices. Notwithstanding the aggregate shares set forth in the Redemption Notice, each Holder of such series of Series B Preferred Stock shall have the right to elect to have all or any number of shares of the applicable series of Series B Preferred Stock held by such Holder redeemed on the Redemption Date at the applicable Redemption Price by notifying the Corporation within five Trading Days of receipt of the Corporation Notice of its election to do so, and specifying the number of shares as to which such election is made. In the event that the aggregate number of shares of Series B Preferred Stock to be redeemed on such Redemption Date exceeds the aggregate limitations set forth in Section 9(a)(ii), the number of shares to be redeemed from each Holder shall be reduced pro rata based upon the aggregate number of shares of the applicable series of Series B Preferred Stock held by each Holder requesting redemption.

(iv) The Redemption Notice will specify the effective date of the redemption, which must be a Trading Day at least 15 Trading Days after the date such notice is delivered (the "REDEMPTION DATE"), and the entire Redemption Price may be paid at the Corporation's option in cash, in Common Stock or in Series C Preferred Stock. The Corporation must deliver written notice to the Holders indicating the manner in which it intends to pay the Redemption Price at least three Trading Days after receipt of the Redemption Notice. Failure to timely provide such written notice shall be deemed an election by the Corporation to make the payment in Common Stock. Notwithstanding the foregoing, the Corporation (a) may not pay the Redemption Price by issuing Common Stock unless, at such time, the Equity Conditions are satisfied with respect to such

Common Stock and (b) may not pay the Redemption Price by issuing Series C Preferred Stock unless, at such time, the Equity Conditions are not satisfied.

(v) Upon receipt of payment of the Redemption Price, each Holder will deliver the original certificate(s) evidencing the Series B Preferred Stock so redeemed to the Corporation, unless such Holder is awaiting receipt of a new certificate evidencing such shares from the Corporation pursuant to another provision hereof. At any time on or prior to the Redemption Date, the Holders may convert any or all of the shares of Series B Preferred Stock, and the Corporation shall honor any such conversions in accordance with the terms hereof.

(vi) In the event that the Corporation elects to pay the Redemption Price in shares of Common Stock, the number of shares of Common Stock to be issued to each Holder as payment of the Redemption Price shall be determined by dividing the total Redemption Price then payable to such Holder by the Redemption Market Price (as defined below) as of the applicable Redemption Date, and rounding up to the nearest whole share. Such shares shall be issued to such Holder in the same manner as dividend payment shares are issued pursuant to Section 3(f) above. The term "REDEMPTION MARKET PRICE" shall mean the average of the Volume Weighted Average Prices of Common Stock for the ten consecutive Trading Days prior to the applicable Redemption Date (not including such date).

(vii) In the event that the Corporation elects to pay the Redemption Price in shares of Series C Preferred Stock, the number of shares of Series C Preferred Stock to be issued to each Holder in payment of the Redemption Price shall be determined by dividing the total Redemption Price then payable to such Holder with respect to all of such Holder's shares of Series B Preferred Stock by \$10,000 (the initial stated value per share of the Series C Preferred Stock) and rounding downward to the nearest whole number of shares of Series C Preferred Stock. In addition, the Corporation shall pay to Holder in cash the amount, if any, by which the Redemption Price payable to such Holder exceeds the aggregate stated value of the Series C Preferred Stock issued pursuant to the preceding sentence. If the total Redemption Price payable to a Holder is less than \$10,000, then the Corporation shall pay such amount to such Holder entirely in cash.

(b) Mandatory Redemption. On February 7, 2009 (the "MANDATORY REDEMPTION DATE"), the Corporation shall redeem all of the then outstanding Series B Preferred Stock at a price equal to 100% of the Stated Value of such shares of Series B Preferred Stock plus all accrued but unpaid dividends thereon to the date of payment in cash, Common Stock or Series C Preferred Stock (or a combination thereof) at the election of the Corporation. The Corporation must deliver written notice to the Holders indicating the manner in which it intends to pay the Redemption Price at least 20 Trading Days prior to the Mandatory Redemption Date. Failure to timely provide such written notice shall be deemed an election by the Corporation to make the payment in Common Stock. Notwithstanding the foregoing, the Corporation (i) may not pay the Redemption Price by issuing Common Stock unless, at such time, the Equity Conditions are satisfied with respect to such Common Stock and (ii) may not pay the Redemption Price by issuing Series C Preferred Stock unless, at such time, the Equity Conditions are not satisfied. Upon receipt of payment of the Redemption Price, each Holder will deliver the original certificate(s) evidencing the Series B Preferred Stock so redeemed to the Corporation, unless such Holder is awaiting receipt of a new certificate evidencing such shares from the Corporation pursuant to another provision hereof. In the event that the Corporation elects to pay the Redemption Price in shares of Common Stock or Series C Preferred Stock, the number of such shares shall be determined in the manner described in Section 9(a)(vi) or (vii), as the case may be. At any time on or prior to the Mandatory Redemption Date, the Holders may convert any or all of the shares of Series B Preferred Stock, and the Corporation shall honor any such conversions in accordance with the terms hereof.

10. Triggering Events. At any time or times following the occurrence of a Triggering Event (other than a Change of Control), each Holder shall have the option to elect, by notice to the Corporation (an "EVENT NOTICE"), to require the Corporation to repurchase all or any portion of (i) the Series B Preferred Stock then held by such Holder, at a price per share equal to the greater of (A) 115% of the Stated Value plus all accrued but unpaid dividends thereon through the date of payment, or (B) the Event Equity Value of the Underlying Shares issuable upon conversion of such Series B Preferred Stock (including such accrued but unpaid dividends thereon), and (ii) any Underlying Shares issued to such Holder upon conversion of Series B Preferred Stock, at a price per share equal to the Event Equity Value of such Underlying Shares. The aggregate amount payable pursuant to the preceding sentence is referred to as the "EVENT PRICE." The Corporation shall pay the aggregate Event Price to each Holder in cash or Series C Preferred Stock (or a combination thereof), at the election of the Corporation, by no later than the third Trading Day following the date of delivery of the Event Notice, and upon receipt thereof such Holder shall deliver original certificates evidencing the shares of Series B Preferred Stock and Underlying Shares so repurchased to the Corporation (to the extent such certificates have been delivered to the Holder). In the event that the Corporation elects to pay the Redemption Price in shares of Series C Preferred Stock, the number of such shares shall be determined in the manner described in Section 9(a)(vii).

11. Voting Rights. Except as otherwise provided herein or as required by applicable law, the Holders of the Series B Preferred Stock shall be entitled to vote on all matters on which holders of Common Stock are entitled to vote, including, without limitation, the election of directors. For such purposes, each Holder shall be entitled to a number of votes in respect of the shares of Series B Preferred Stock owned by it equal to the number of shares of Common Stock into which such shares of Series B Preferred Stock are convertible as of the record date for the determination of stockholders entitled to vote on such matter, or if no record date is established, at the date such vote is taken or any written consent of stockholders is solicited. Except as otherwise provided herein, in any relevant agreement or as required by applicable law, the holders of the Series B Preferred Stock and Common Stock, respectively, shall vote together as a single class on all matters submitted to a vote or consent of stockholders; provided that so long as any shares of Series B Preferred Stock are outstanding, the Corporation shall not, without the affirmative vote of the Holders of a majority of the shares of Series B Preferred Stock then outstanding, (a) alter or change adversely the powers, preferences or rights given to the Series B Preferred Stock or alter or amend this Certificate of Designations (whether by merger, reorganization, consolidation or otherwise), (b) authorize or create any class of stock ranking as to dividends or distribution of assets upon a Liquidation Event or Change of Control senior to the Series B Preferred Stock, (c) amend its certificate of incorporation or bylaws so as to affect adversely any rights of the Holders (whether by merger, reorganization, consolidation or otherwise), (d) increase the authorized number of shares of Series B Preferred Stock, or (e) enter into any agreement with respect to the foregoing.

12. Charges, Taxes and Expenses. Issuance of certificates for shares of Series B Preferred Stock and for Underlying Shares issued on conversion of (or otherwise in respect of) the Series B Preferred Stock shall be made without charge to the Holders for any issue or transfer tax, withholding tax, transfer agent fee or other incidental tax or expense in respect of the issuance of such certificates, all of which taxes and expenses shall be paid by the Corporation; provided, however, that the Corporation shall not be required to pay any tax that may be payable in respect of any transfer involved in the registration of any certificates for Common Stock or Series B Preferred Stock in a name other than that of the Holder. The Holder shall be responsible for all other tax liability that may arise as a result of holding or transferring the Series B Preferred Stock or receiving Underlying Shares in respect of the Series B Preferred Stock.

13. Replacement Certificates. If any certificate evidencing Series B Preferred Stock or Underlying Shares is mutilated, lost, stolen or destroyed, the Corporation shall issue or cause to be issued in exchange and substitution for and upon cancellation hereof, or in lieu of and substitution for such

certificate, a new certificate, but only upon receipt of evidence reasonably satisfactory to the Corporation of such loss, theft or destruction and customary and reasonable indemnity, if requested. Applicants for a new certificate under such circumstances shall also comply with such other reasonable regulations and procedures and pay such other reasonable third-party costs as the Corporation may prescribe.

14. Reservation of Underlying Shares. The Corporation covenants that it shall at all times reserve and keep available out of the aggregate of its authorized but unissued and otherwise unreserved Common Stock, solely for the purpose of enabling it to issue the Underlying Shares as required hereunder (i) a sufficient number of authorized but unissued and otherwise unreserved shares of Common Stock available to issue Underlying Shares upon any conversion of Shares or, if the number of shares so reserved is insufficient to make available a sufficient number of authorized but unissued and otherwise unreserved shares of Common Stock for such issuance within 60 days after the occurrence of such deficiency, and (ii) at least 6,401,394 authorized but unissued and otherwise unreserved shares of Common Stock (as adjusted for any stock splits, stock combinations or similar events) less any shares of Common Stock issued upon conversion of the Shares, as dividends on the Shares, upon exercise of the Warrants or upon a redemption of the Shares. The Corporation covenants that all Underlying Shares so issuable and deliverable shall, upon issuance in accordance with the terms hereof, be duly and validly authorized, issued and fully paid and nonassessable.

15. Certain Adjustments. The Conversion Price is subject to adjustment from time to time as set forth in this Section 15.

(a) Stock Dividends and Splits. If the Corporation, at any time while Series B Preferred Stock is outstanding, (i) pays a stock dividend on its Common Stock or otherwise makes a distribution on any class of capital stock that is payable in shares of Common Stock (other than regular dividends on the Series B Preferred Stock), (ii) subdivides outstanding shares of Common Stock into a larger number of shares, or (iii) combines outstanding shares of Common Stock into a smaller number of shares, then in each such case the applicable Conversion Price for each series of Series B Preferred Stock shall be multiplied by a fraction of which the numerator shall be the number of shares of Common Stock outstanding immediately before such event and of which the denominator shall be the number of shares of Common Stock outstanding immediately after such event. Any adjustment made pursuant to clause (i) of this paragraph shall become effective immediately after the record date for the determination of stockholders entitled to receive such dividend or distribution, and any adjustment pursuant to clause (ii) or (iii) of this paragraph shall become effective immediately after the effective date of such subdivision or combination.

(b) Pro Rata Distributions. If the Corporation, at any time while Series B Preferred Stock is outstanding, distributes to all holders of Common Stock (i) evidences of its indebtedness, (ii) any security (other than a distribution of Common Stock covered by the preceding paragraph), (iii) rights or warrants to subscribe for or purchase any security, or (iv) any other asset other than cash paid as a dividend (in each case, "DISTRIBUTED PROPERTY"), then, at the request of any Holder delivered before the ninetieth day after the record date fixed for determination of stockholders entitled to receive such distribution, the Corporation will deliver to such Holder, within five Trading Days after such request (or, if later, on the effective date of such distribution), the Distributed Property that such Holder would have been entitled to receive in respect of the Underlying Shares for which such Holder's Series B Preferred Stock could have been converted immediately prior to such record date. If such Distributed Property is not delivered to a Holder pursuant to the preceding sentence, then upon any conversion of Series B Preferred Stock that occurs after such record date, such Holder shall be entitled to receive, in addition to the Underlying Shares otherwise issuable upon such conversion, the Distributed Property that such Holder would have been entitled to receive in respect of such number of Underlying Shares had the Holder been the record holder of such Underlying Shares immediately prior to such record date.

(c) Certain Transactions.

(i) If, at any time while Series B Preferred Stock is outstanding, the Corporation proposes to enter into a transaction that would constitute a Change of Control, the Corporation shall mail written notice of the proposed Change of Control transaction to each record Holder not less than 20 Trading Days prior to the effective date thereof. Each Holder shall have the right to receive on the date of the consummation of such Change of Control, at its option, either (A) for each Underlying Share that would have been issuable upon such conversion of the shares of Series B Preferred Stock upon the effective time of such Change of Control, the same kind and amount of securities, cash or property as it would have been entitled to receive upon the occurrence of such Change of Control if it had been, immediately prior to such Change of Control, the holder of one share of Common Stock or (B) for each share of Series B Preferred Stock, cash in an amount equal to 115% of the Stated Value plus all accrued but unpaid dividends thereon through the date of payment. If holders of Common Stock are given any choice as to the securities, cash or property to be received in a Change of Control transaction, then each Holder shall be given the same choice as to the consideration it receives pursuant to clause (A) above. Each Holder shall make the election of which consideration it has elected to receive at least three Trading Days prior to the effective date of a Change of Control. Failure of any Holder to timely provide written notice of its election shall be deemed an election by such Holder to receive the consideration specified in clause (B) above. Notwithstanding the foregoing, if a Holder elects to receive cash pursuant to clause (B) of the preceding sentence or is deemed to have so elected, the Corporation may elect instead to have such successor to the Corporation or surviving entity in the Change of Control issue to the Holder a new series of Preferred Stock with a stated value equal to 115% of the Stated Value of the Series B Preferred Stock, plus all accrued but unpaid dividends thereon, and consistent with terms substantially equivalent to the terms of the Series B-I Preferred Stock or Series B-II Preferred Stock, as the case may be, held by such Holder and evidencing the Holder's right to convert such Preferred Stock into the consideration described in clause (A) of this subparagraph (i). To the extent the Corporation elects to have the successor to the Corporation or the surviving entity issue a new series of Preferred Stock, the terms of any agreement pursuant to which a Change of Control is effected shall include terms requiring any such successor or surviving entity to comply with the provisions substantially equivalent to the provisions of this paragraph (c) and providing that the Series B Preferred Stock (or any such replacement security) will be similarly adjusted upon any subsequent transaction analogous to a Change of Control.

(ii) Any recapitalization, reorganization, reclassification, consolidation, merger, sale of all or substantially all of the Corporation's assets to another Person or other transaction which is effected in such a way that holders of Common Stock are entitled to receive (either directly or upon subsequent liquidation) stock, securities or assets with respect to or in exchange for Common Stock is referred to herein as "ORGANIC CHANGE." Prior to the consummation of any (A) sale of all or substantially all of the Corporation's assets to an acquiring Person or (B) other Organic Change following which the Corporation is not a surviving entity, other than in each case an Organic Change that is a Change of Control (which shall be subject to Section 15(c)(i)), the Corporation will secure from the Person purchasing such assets or the successor, or, if applicable, the parent of the successor, resulting from such Organic Change (in each case, the "ACQUIRING ENTITY") a written agreement (in form and substance reasonably satisfactory to the holders of at least a majority of the shares of Series B Preferred Stock then outstanding) to deliver to each holder of Series B Preferred Stock in exchange for such shares, a security of the Acquiring Entity evidenced by a written instrument substantially similar in form and substance to such Series B Preferred Stock, including, without limitation, having a stated value and liquidation preference equal to the Stated Value and the Series B Stock Liquidation Preference of the Series B Preferred Stock held by such holder, and

reasonably satisfactory to the holders of at least a majority of the Series B Preferred Stock then outstanding.

(d) Subsequent Equity Sales.

(i) If, at any time while any shares of either series of Series B Preferred Stock are outstanding, the Corporation or any Subsidiary issues additional shares of Common Stock or rights, warrants, options or other securities or debt convertible, exercisable or exchangeable for shares of Common Stock or otherwise entitling any Person to acquire shares of Common Stock (collectively, "COMMON STOCK EQUIVALENTS") at an effective net price to the Corporation per share of Common Stock (the "EFFECTIVE PRICE") less than the lesser of (A) the Initial Purchase Price for a series of Series B Preferred Stock or (B) then-applicable Conversion Price for a series of Series B Preferred Stock, then the applicable Conversion Price for such series of Series B Preferred Stock shall be reduced to equal the Effective Price. For purposes of this paragraph, in connection with any issuance of any Common Stock Equivalents, (A) the maximum number of shares of Common Stock potentially issuable at any time upon conversion, exercise or exchange of such Common Stock Equivalents (the "DEEMED NUMBER") shall be deemed to be outstanding upon issuance of such Common Stock Equivalents, (B) the Effective Price applicable to such Common Stock shall equal the minimum dollar value of consideration payable to the Corporation to purchase such Common Stock Equivalents and to convert, exercise or exchange them into Common Stock (net of any discounts, fees, commissions and other expenses), divided by the Deemed Number, (C) no further adjustment shall be made to the Conversion Price upon the actual issuance of Common Stock upon conversion, exercise or exchange of such Common Stock Equivalents, and (D) upon the expiration or termination of any Common Stock Equivalent that does not result in the issuance of any Common Stock or additional Common Stock Equivalent, any adjustment that has been made under this paragraph (d) in respect of the issuance of such Common Stock Equivalent shall be readjusted as if such Common Stock Equivalent had not been issued (but shall in no event affect previously converted stock).

(ii) If, at any time while Series B Preferred Stock is outstanding, the Corporation or any Subsidiary issues Common Stock Equivalents with an Effective Price or a number of underlying shares that floats or resets or otherwise varies or is subject to adjustment based (directly or indirectly) on market prices of the Common Stock (a "FLOATING PRICE SECURITY"), then for purposes of applying the preceding paragraph in connection with any subsequent conversion, the Effective Price will be determined separately on each Conversion Date and will be deemed to equal the lowest Effective Price at which any holder of such Floating Price Security is entitled to acquire Common Stock on such Conversion Date (regardless of whether any such holder actually acquires any shares on such date).

(iii) Notwithstanding the foregoing, no adjustment will be made under this paragraph (d) in respect of the issuance of Excluded Stock.

(e) Calculations. All calculations under this Section 15 shall be made to the nearest cent or the nearest 1/100th of a share, as applicable. The number of shares of Common Stock outstanding at any given time shall not include shares owned or held by or for the account of the Corporation, and the disposition of any such shares shall be considered an issue or sale of Common Stock.

(f) Notice of Adjustments. Upon the occurrence of each adjustment pursuant to this Section 15, the Corporation at its expense will promptly compute such adjustment in accordance with the terms hereof and prepare a certificate describing in reasonable detail such adjustment and the transactions giving rise thereto, including all facts upon which such adjustment is based. Upon written request, the

Corporation will promptly deliver a copy of each such certificate to each Holder and to the Corporation's Transfer Agent.

(g) Notice of Corporate Events. If the Corporation (i) declares a dividend or any other distribution of cash, securities or other property in respect of its Common Stock, including without limitation any granting of rights or warrants to subscribe for or purchase any capital stock of the Corporation or any Subsidiary, (ii) authorizes or approves, enters into any agreement contemplating or solicits stockholder approval for any Fundamental Transaction or (iii) authorizes the voluntary dissolution, liquidation or winding up of the affairs of the Corporation, then the Corporation shall deliver to each Holder a notice describing the material terms and conditions of such transaction, at least 20 calendar days prior to the applicable record or effective date on which a Person would need to hold Common Stock in order to participate in or vote with respect to such transaction, and the Corporation will take all steps reasonably necessary in order to insure that each Holder is given the practical opportunity to convert its Series B Preferred Stock prior to such time so as to participate in or vote with respect to such transaction; provided, however, that the failure to deliver such notice or any defect therein shall not affect the validity of the corporate action required to be described in such notice.

16. Limitation on Conversion.

(a) Notwithstanding anything to the contrary contained herein, the number of shares of Common Stock that may be acquired by any Holder upon any conversion of Series B Preferred Stock (or otherwise in respect of the Series B Preferred Stock) shall be limited to the extent necessary to insure that, following such conversion (or other issuance), the total number of shares of Common Stock then beneficially owned by such Holder and its Affiliates and any other Persons whose beneficial ownership of Common Stock would be aggregated with the Holder's for purposes of Section 13(d) of the Exchange Act, does not exceed 4.999% (the "MAXIMUM PERCENTAGE") of the total number of issued and outstanding shares of Common Stock (including for such purpose the shares of Common Stock issuable upon such conversion). For such purposes, beneficial ownership shall be determined in accordance with Section 13(d) of the Exchange Act and the rules and regulations promulgated thereunder. Each delivery of a Conversion Notice by a Holder will constitute a representation by such Holder that it has evaluated the limitation set forth in this paragraph and determined that issuance of the full number of Underlying Shares requested in such Conversion Notice is permitted under this paragraph. By written notice to the Corporation, any Holder may waive the provisions of this Section or increase or decrease the Maximum Percentage to any other percentage specified in such notice, but (i) any such waiver or increase will not be effective until the 61st day after such notice is delivered to the Corporation, and (ii) any such waiver or increase or decrease will apply only to such Holder and not to any other Holder and (iii) any such waiver or increase shall not be effective to the extent such waiver or increase would cause the Corporation to violate the Nasdaq Stockholder Approval Rule.

(b) For purposes of this Section 16, in determining the number of outstanding shares of Common Stock, a Holder may rely on the number of outstanding shares of Common Stock as reflected in (1) the Corporation's most recent Form 10-Q, Form 10-K or other public filing with the Commission, as the case may be, (2) a more recent public announcement by the Corporation, or (3) any other notice by the Corporation or its transfer agent setting forth the number of shares of Common Stock outstanding. Upon the written request of any Holder, the Corporation shall promptly, but in no even later than one Trading Day following the receipt of such notice, confirm in writing to any such Holder the number of shares of Common Stock then outstanding.

17. Fractional Shares. The Corporation shall not be required to issue or cause to be issued fractional Underlying Shares on conversion of Series B Preferred Stock. If any fraction of an Underlying

Share would, except for the provisions of this Section, be issuable upon conversion of Series B Preferred Stock, the number of Underlying Shares to be issued will be rounded up to the nearest whole share.

18. Notices. Any and all notices or other communications or deliveries hereunder (including without limitation any Conversion Notice) shall be in writing and shall be deemed given and effective on the earliest of (i) the date of transmission, if such notice or communication is delivered via facsimile at the facsimile number specified in this Section prior to 5:30 p.m. (New York City time) on a Trading Day, (ii) the next Trading Day after the date of transmission, if such notice or communication is delivered via facsimile at the facsimile number specified in this Section on a day that is not a Trading Day or later than 5:30 p.m. (New York City time) on any Trading Day, (iii) the Trading Day following the date of mailing, if sent by nationally recognized overnight courier service, or (iv) upon actual receipt by the party to whom such notice is required to be given. The addresses for such communications shall be (i) if to the Corporation, to Ten Canal Park, Cambridge, Massachusetts 02141, facsimile: (617) 949-1722, Attention: Chief Executive Officer and General Counsel, or (ii) if to a Holder, to the address or facsimile number appearing on the Corporation's stockholder records or such other address or facsimile number as such Holder may provide to the Corporation in accordance with this Section.

19. Miscellaneous.

(a) The headings herein are for convenience only, do not constitute a part of this Certificate of Designations and shall not be deemed to limit or affect any of the provisions hereof.

(b) Any of the rights of the Holders of Series B Preferred Stock set forth herein may be waived by the affirmative vote of the Holders of a majority of the shares of Series B Preferred Stock then outstanding. No waiver of any default with respect to any provision, condition or requirement of this Certificate of Designations shall be deemed to be a continuing waiver in the future or a waiver of any subsequent default or a waiver of any other provision, condition or requirement hereof, nor shall any delay or omission of either party to exercise any right hereunder in any manner impair the exercise of any such right.

* * *

IN WITNESS WHEREOF, Aspen Technology, Inc. has caused this Certificate of Designations to be duly executed as of March 19, 2002.

ASPEN TECHNOLOGY, INC.

By: /s/ Lisa W. Zappala

Lisa W. Zappala
Senior Vice President and
Chief Financial Officer

ADDITIONAL DEFINITIONS

"AFFILIATE" means any Person that, directly or indirectly through one or more intermediaries, controls or is controlled by or is under common control with a Person, as such terms are used in and construed under Rule 144. With respect to a Purchaser, any investment fund or managed account that is managed on a discretionary basis by the same investment manager as such Purchaser will be deemed to be an Affiliate of such Purchaser.

"BANKRUPTCY EVENT" means any of the following events: (a) the Corporation or any Material Subsidiary commences a case or other proceeding under any bankruptcy, reorganization, arrangement, adjustment of debt, relief of debtors, dissolution, insolvency or liquidation or similar law of any jurisdiction relating to the Corporation or any Material Subsidiary thereof; (b) there is commenced against the Corporation or any Material Subsidiary any such case or proceeding that is not dismissed within 60 days after commencement; (c) the Corporation or any Material Subsidiary is adjudicated insolvent or bankrupt or any order of relief or other order approving any such case or proceeding is entered; (d) the Corporation or any Material Subsidiary suffers any appointment of any custodian or the like for it or any substantial part of its property that is not discharged or stayed within 60 days; (e) the Corporation or any Material Subsidiary makes a general assignment for the benefit of creditors; (f) the Corporation or any Material Subsidiary fails to pay, or states in writing that it is unable to pay or is unable to pay, its debts generally as they become due; or (g) the Corporation or any Subsidiary, by any act or failure to act, expressly indicates its consent to, approval of or acquiescence in any of the foregoing or takes any corporate or other action that effects any of the foregoing.

"CHANGE OF CONTROL" means the occurrence of any of the following in one or a series of related transactions: (i) an acquisition after the date hereof by an individual or legal entity or "group" (as described in Rule 13d-5(b)(1) under the Exchange Act) of a majority of the voting rights or equity interests in the Corporation; (ii) a replacement of more than one-half of the members of the Corporation's Board of Directors that is not approved by those individuals who are members of the Board of Directors on the Deemed Issue Date (or other directors previously approved by such individuals); (iii) a merger or consolidation of the Corporation or a sale of all or substantially all of the assets of the Corporation in one or a series of related transactions, unless following such transaction or series of transactions, the holders of the Corporation's securities prior to the first such transaction continue to hold, directly or indirectly, at least a majority of the voting rights and equity interests in the surviving entity or acquirer of such assets; (iv) a recapitalization, reorganization or other transaction involving the Corporation that constitutes or results in a transfer of a majority of the voting rights or equity interests in the Corporation to Persons other than holders of the Corporation's voting equity securities prior to such transaction; or (v) consummation of a "Rule 13e-3 transaction" as defined in Rule 13e-3 under the Exchange Act with respect to the Corporation other than a Rule 13e-3 transaction in which no Holder's interest in the Corporation has been adversely changed or diluted in any material manner.

"CLOSING PRICE" means, for any date, the price determined by the first of the following clauses that applies: (a) if the Common Stock is then listed or quoted on an Eligible Market or any other national securities exchange, the last closing price per share of the Common Stock for such date (or the nearest preceding date) on the primary Eligible Market or exchange on which the Common Stock is then listed or quoted; (b) if prices for the Common Stock are then quoted on the OTC Bulletin Board, the average of the highest closing bid price and the lowest closing ask price per share of the Common Stock for such date (or the nearest preceding date) so quoted; (c) if prices for the Common Stock are then reported in the "Pink Sheets" published by the National Quotation Bureau Incorporated (or a similar organization or agency succeeding to its functions of reporting prices), the most recent bid price per share of the Common

Stock so reported; or (d) in all other cases, the fair market value of a share of Common Stock as determined by an independent appraiser selected in good faith by a majority-in-interest of the Purchasers and the Corporation.

"COMMISSION" means the Securities and Exchange Commission.

"COMMON STOCK" means the common stock of the Corporation, par value \$0.10 per share.

"EFFECTIVE DATE" means the date that an Underlying Shares Registration Statement is declared effective by the Commission.

"ELIGIBLE MARKET" means the New York Stock Exchange, the American Stock Exchange, the Nasdaq National Market or the Nasdaq SmallCap Market.

"EVENT EQUITY VALUE" means 115% of the average of the Closing Prices for the five Trading Days preceding the date of delivery of the notice requiring payment of the Event Equity Value, provided that if the Corporation does not make such required payment (together with any other payments, expenses and liquidated damages then due and payable under the Transaction Documents) when due or, in the event the Corporation disputes in good faith the occurrence of the Triggering Event pursuant to which such notice relates, does not instead deposit such required payment (together with such other payments, expenses and liquidated damages then due) in escrow with an independent third-party escrow agent within five Trading Days of the date such required payment is due, then the Event Equity Value shall be 115% of the greater of (a) the average of the Closing Prices for the five Trading Days preceding the date of delivery of the notice requiring payment of the Event Equity Value and (b) the average of the Closing Prices for the five Trading Days preceding the date on which such required payment (together with such other payments, expenses and liquidated damages) is paid in full.

"EXCHANGE ACT" means the Securities Exchange Act of 1934, as amended.

"EXCLUDED STOCK" means any shares of Common Stock issued or issuable: (A) upon exercise, conversion or exchange of any Common Stock Equivalents described in Schedule 3.1(g) to the Purchase Agreement (provided that such exercise or conversion occurs in accordance with the terms thereof, without amendment or modification, and that the applicable exercise or conversion price or ratio is described in such schedule); (B) to officers, directors, employees or consultants of the Corporation pursuant to a stock option plan, employee stock purchase plan or other equity incentive plan approved by the Board of Directors of the Corporation; (C) pursuant to as part of a bona fide firm commitment underwritten public offering with a nationally recognized underwriter (including any "at the market offering," as defined in Rule 415(a)(4) under the Securities Act, only if such offering does not constitute an "equity line" and generates aggregate gross proceeds of at least \$50 million); (D) in connection with any transaction with a strategic investor, vendor, lessor, customer, supplier, marketing partner, developer or integrator or any similar arrangement, in each case the primary purpose of which is not to raise equity capital; (E) in connection with a transaction involving a merger or acquisition of an entity, business or assets (not principally for the purpose of obtaining cash); or (F) in connection with any other transaction for consideration other than cash up to 108,166 shares of Common Stock in the aggregate (as adjusted for stock splits, stock combinations and similar events).

"MATERIAL SUBSIDIARY" means any significant subsidiary, as defined in Rule 1-02(w) of Regulation S-X promulgated by the Commission, of the Corporation.

"PERSON" means an individual or corporation, partnership, trust, incorporated or unincorporated association, joint venture, limited liability Corporation, joint stock Corporation, government (or an agency or subdivision thereof) or other entity of any kind.

"PURCHASER" has the meaning set forth in the Purchase Agreement.

"REGISTRATION RIGHTS AGREEMENT" means the Amended and Restated Registration Rights Agreement, dated as of March 19, 2002 among the Corporation and the Purchasers, as amended from time to time.

"REQUIRED EFFECTIVENESS DATE" means the date on which an Underlying Shares Registration Statement is required to become effective pursuant to the Registration Rights Agreement.

"RULE 144" means Rule 144 promulgated by the Commission pursuant to the Securities Act, as such Rule may be amended from time to time, or any similar rule or regulation hereafter adopted by the Commission having substantially the same effect as such Rule.

"SECURITIES" means the Shares, the Warrants and the Underlying Shares.

"SECURITIES ACT" means the Securities Act of 1933, as amended.

"SHARES" means, collectively, the shares of Series B-I Preferred Stock and Series B-II Preferred Stock.

"SUBSIDIARY" means any subsidiary, as defined in Rule 1-02(x) of Regulation S-X promulgated by the Commission, of the Corporation.

"TRADING DAY" means (a) any day on which the Common Stock is listed or quoted and traded on its primary Trading Market or (b) if the Common Stock is not then listed or quoted and traded on any Eligible Market, then a day on which trading occurs on the New York Stock Exchange (or any successor thereto).

"TRADING MARKET" means the Nasdaq National Market or any other Eligible Market on which the Common Stock is then listed or quoted.

"TRANSACTION DOCUMENTS" means the Purchase Agreement, the Registration Rights Agreement, this Certificate of Designations and the Warrants.

"TRIGGERING EVENT" means any of the following events: (a) immediately prior to any Bankruptcy Event; (b) the Common Stock is not listed or quoted, or is suspended from trading, on an Eligible Market for a period of five consecutive Trading Days or ten aggregate Trading Days in any 365-day period; (c) the Corporation fails for any reason to deliver a certificate evidencing any Securities to a Purchaser within ten Trading Days after delivery of such certificate is required pursuant to any Transaction Document or the exercise or conversion rights of the Holders pursuant to the Transaction Documents are otherwise suspended for any reason; (d) the Corporation fails to have available both (i) a sufficient number of authorized but unissued and otherwise unreserved shares of Common Stock available to issue Underlying Shares upon any exercise of the Warrants or any conversion of Shares and does not make available a sufficient number of authorized but unissued and otherwise unreserved shares of Common Stock for such issuance within 60 days after the occurrence of such deficiency and (ii) at least 6,401,394 authorized but unissued and otherwise unreserved shares of Common Stock (as adjusted for any stock splits, stock combinations or similar events), less reductions reasonably agreed to by the Purchasers to reflect shares of Common Stock issued upon conversion of the Shares (and, therefore, reduced aggregate dividend payments), as dividends on the Shares, upon exercise of the Warrants or upon a redemption of the Shares; (e) at any time after the Required Effectiveness Date, any Common Stock issuable pursuant to the Transaction Documents is not listed on an Eligible Market; (f) any other Event (as defined in the Registration Rights Agreement) occurs and remains uncured for 60 days; (g) the Corporation fails to

make any cash payment required under the Transaction Documents and such failure is not cured within five days after notice of such default is first given to the Corporation by a Purchaser; (h) the Corporation defaults in the timely performance of any other obligation under the Transaction Documents and such default continues uncured for a period of 20 days after the date on which notice of such default is first given to the Corporation by a Purchaser (it being understood that no prior notice need be given in the case of a default that cannot reasonably be cured within 20 days), or (i) any Change of Control event.

"UNDERLYING SHARES" means the shares of Common Stock issuable upon conversion of, or in redemption of, the Shares, as payment of dividends on the Shares and upon exercise of the Warrants, and any securities issued in exchange for, or upon conversion or in respect of, such shares.

"UNDERLYING SHARES REGISTRATION STATEMENT" means a registration statement meeting the requirements set forth in the Registration Rights Agreement and covering the resale of the Underlying Shares by the Purchasers.

"VOLUME WEIGHTED AVERAGE PRICE" means, with respect to a Trading Day, the average of the daily volume weighted average trading price (the total dollar amount traded on each day divided by trading volume for such day) of the Common Stock for the regular Trading Day session as reported at 4:15 p.m. (New York time) as reported by Bloomberg, LP function key HP by using W to calculate the daily weighted average.

"WARRANTS" means the Common Stock purchase warrants, as amended from time to time, issued pursuant to the Purchase Agreement.

FORM OF CONVERSION NOTICE

(To be executed by the registered Holder
in order to convert shares of Series B Preferred Stock)

The undersigned hereby elects to convert the number of shares of Series B Preferred Stock indicated below into shares of Common Stock of Aspen Technology, Inc., a Delaware corporation, according to the conditions hereof, as of the date written below.

Series of Series B Preferred Stock to be converted (check):
_____ Series B-I
_____ Series B-II

Date to effect conversion

Number and series of shares of Series B Preferred Stock owned prior to conversion

Number and series of shares of Series B Preferred Stock to be converted

Stated Value of shares of Series B Preferred Stock to be converted (including \$_____ of dividends added under Section 2(f) of the Registration Rights Agreement)

Number of shares of Common Stock to be issued

Applicable Conversion Price

Number and series of shares of Series B Preferred Stock subsequent to conversion

Name of Holder

By: _____
Name: _____
Title: _____

ASPEN TECHNOLOGY, INC.

CERTIFICATE OF DESIGNATIONS
OF
SERIES C PREFERRED STOCK

(Pursuant to Section 151 of the Delaware General Corporation Law)

Aspen Technology, Inc., a Delaware corporation (the "Corporation"), in accordance with the provisions of Section 103 of the Delaware General Corporation Law (the "DGCL") does hereby certify that, in accordance with Section 141(c) of the DGCL, the following resolution was duly adopted by the Board of Directors of the Corporation as of March 14, 2002:

RESOLVED, that a series of Preferred Stock, Series C Preferred Stock, par value \$0.10 per share, of the Corporation is hereby created and the designation, number of shares, powers, preferences, rights, qualifications, limitations and restrictions thereof (in addition to any provisions set forth in the Certificate of Incorporation of the Corporation which are applicable to the Preferred Stock of all classes and series) are as follows:

SERIES C PREFERRED STOCK

1. Designation, Amount, Par Value and Stated Value. The following series of preferred stock shall be designated as the Corporation's Series C Preferred Stock (the "SERIES C PREFERRED STOCK"), and the number of shares so designated shall be 60,000. Each share of Series C Preferred Stock shall have a par value of \$0.10 per share and a stated value equal to \$10,000 plus any amount added to the Stated Value pursuant to Section 3(b) hereof (the "STATED VALUE").

2. Definitions. In addition to the terms defined elsewhere in this Certificate of Designations, the following terms have the meanings indicated:

"CHANGE OF CONTROL" means the occurrence of any of the following in one or a series of related transactions: (i) an acquisition after the date hereof by an individual or legal entity or "group" (as described in Rule 13d-5(b)(1) under the Exchange Act) of a majority of the voting rights or equity interests in the Corporation; (ii) a replacement of more than one-half of the members of the Corporation's Board of Directors that is not approved by those individuals who are members of the Board of Directors as of March 19, 2002 (or other directors previously approved by such individuals); (iii) a merger or consolidation of the Corporation or a sale of all or substantially all of the assets of the Corporation in one or a series of related transactions, unless following such transaction or series of transactions, the holders of the Corporation's securities prior to the first such transaction continue to hold, directly or indirectly, at least a majority of the voting rights and equity interests in the surviving entity or acquirer of such assets; (iv) a recapitalization, reorganization or other transaction involving the Corporation that constitutes or results in a transfer of a majority of the voting rights or equity interests in the Corporation to Persons other than holders of the Corporation's voting equity securities prior to such transaction; or (v) consummation of a "Rule 13e-3 transaction" as defined in Rule 13e-3 under the Exchange Act with respect to the Corporation other than a Rule 13e-3 transaction in which no Holder's interest in the Corporation has been adversely changed or diluted in any material manner.

"COMMON STOCK" means the common stock of the Corporation, par value \$0.10 per share.

"ELIGIBLE MARKET" means the New York Stock Exchange, the American Stock Exchange, the Nasdaq National Market or the Nasdaq SmallCap Market.

"EXCHANGE ACT" means the Securities Exchange Act of 1934, as amended.

"HOLDER" means any holder of Series C Preferred Stock.

"JUNIOR SECURITIES" means the Common Stock and all other equity or equity equivalent securities of the Corporation.

"PERSON" means an individual or corporation, partnership, trust, incorporated or unincorporated association, joint venture, limited liability corporation, joint stock corporation, government (or an agency or subdivision thereof) or other entity of any kind.

"TRADING DAY" means (a) any day on which the Common Stock is listed or quoted and traded on its primary Trading Market or (b) if the Common Stock is not then listed or quoted and traded on any Eligible Market, then a day on which trading occurs on the New York Stock Exchange (or any successor thereto).

"TRADING MARKET" means the Nasdaq National Market or any other Eligible Market on which the Common Stock is then listed or quoted.

3. Dividends.

(a) Holders shall be entitled to receive, out of funds legally available therefor, and the Corporation shall pay, cumulative dividends on the Series C Preferred Stock at the rate per share (as a percentage of the Stated Value per share) of 12% per annum, payable quarterly in arrears commencing on the last day of each month, except if such date is not a Trading Day, in which case such dividend shall be payable on the next succeeding Trading Day (each, a "DIVIDEND PAYMENT DATE"). Dividends on a share of Series C Preferred Stock shall be calculated on the basis of a 365-day year, shall accrue daily commencing on the such share is initially issued by the Corporation for such share, and shall be deemed to accrue from such date whether or not earned or declared and whether or not there are profits, surplus or other funds of the Corporation legally available for the payment of dividends.

(b) Subject to the conditions and limitations set forth below, the Corporation may pay required dividends (i) in cash or (ii) by an addition to the Stated Value. The Corporation must deliver written notice (the "DIVIDEND NOTICE") to the Holders indicating the manner in which it intends to pay dividends at least ten Trading Days prior to each Dividend Payment Date, but the Corporation may indicate in any such notice that the election contained therein shall continue for subsequent Dividend Payment Dates until revised. Failure to timely provide such written notice shall be deemed an election by the Corporation to pay the dividend by addition to the Stated Value. All dividends payable in respect of the Series C Preferred Stock on any Dividend Payment Date must be paid in the same manner. If the Corporation may not legally pay dividends on any Dividend Payment Date, such amount shall be added to the Stated Value as of such Dividend Payment Date.

(c) So long as any Series C Preferred Stock is outstanding, (i) neither the Corporation nor any subsidiary (as defined in Rule 1-02(x) of Regulation S-X promulgated by the Securities and Exchange Commission) of the Corporation shall, directly or indirectly, redeem, purchase or otherwise acquire any Junior Securities or set aside any monies for such a redemption, purchase or other acquisition and (ii) the Corporation shall not pay or declare any dividend or make any distribution on any Junior Securities, except pro rata stock dividends on the Common Stock payable in additional shares of Common Stock and dividends due and paid in the ordinary course on preferred stock of the Corporation,

in each case only at such times as the Corporation is in compliance with its payment and other obligations hereunder.

4. Registration of Series C Preferred Stock. The Corporation shall register shares of the Series C Preferred Stock, upon records to be maintained by the Corporation for that purpose (the "SERIES C PREFERRED STOCK REGISTER"), in the name of the record Holders thereof from time to time. The Corporation may deem and treat the record Holder of shares of Series C Preferred Stock as the absolute owner thereof for the purpose of any conversion hereof or any distribution to such Holder, and for all other purposes, absent actual notice to the contrary.

5. Registration of Transfers. The Corporation shall register the transfer of any shares of Series C Preferred Stock in the Series C Preferred Stock Register, upon surrender of certificates evidencing such shares to the Corporation at its address specified herein. Upon any such registration or transfer, a new certificate evidencing the shares of Series C Preferred Stock so transferred shall be issued to the transferee and a new certificate evidencing the remaining portion of the shares not so transferred, if any, shall be issued to the transferring Holder.

6. Liquidation.

(a) In the event of any liquidation, dissolution or winding up of the Corporation, either voluntary or involuntary (a "LIQUIDATION EVENT"), the Holders of Series C Preferred Stock shall be entitled to receive, prior and in preference to any distribution of any of the assets or surplus funds of the Corporation to the holders of Junior Securities by reason of their ownership thereof, an amount per share in cash equal to the Stated Value for each share of Series C Preferred Stock then held by them (as adjusted for any stock splits, stock dividends, stock combinations and similar transactions with respect to the Series C Preferred Stock), plus all accrued but unpaid dividends on such Series C Preferred Stock as of the date of such event (the "SERIES C STOCK LIQUIDATION PREFERENCE"). If, upon the occurrence of a Liquidation Event, the assets and funds thus distributed among the Holders of the Series C Preferred Stock shall be insufficient to permit the payment to such Holders of the full Series C Stock Liquidation Preference, then the entire assets and funds of the Corporation legally available for distribution shall be distributed ratably among the Holders of the Series C Preferred Stock in proportion to the aggregate Series C Stock Liquidation Preference that would otherwise be payable to each of such Holders.

(b) In the event of a Liquidation Event, following completion of the distributions required by the first sentence of paragraph (a) of this Section 6, if assets or surplus funds remain in the Corporation, the holders of Junior Securities shall share ratably in all remaining assets of the Corporation.

(c) The Corporation shall mail written notice of any Liquidation Event to each record Holder not less than 20 Trading Days prior to the payment date or effective date thereof.

7. Redemption Rights.

(a) The Corporation may, at its option, redeem all or any number of the shares of Series C Preferred Stock then outstanding at any time or from time to time, upon at least 15 Trading Days' advance notice to the Holders (the "REDEMPTION NOTICE"), at a price per share (the "REDEMPTION PRICE") equal to the Stated Value of such share plus all accrued but unpaid dividends thereon to the date fixed for redemption. The Redemption Notice shall specify the date fixed for redemption, the aggregate Redemption Price for all of the shares to be redeemed, and the aggregate number of shares to be redeemed. The Redemption Price for any share of Series C Preferred Stock shall be paid entirely in cash.

(b) In case of any redemption of fewer than all of the then-outstanding shares of Series C Preferred Stock, the shares to be redeemed shall be selected, as nearly as practicable, as follows:

(i) The aggregate Redemption Price shall be prorated among the record Holders in proportion to the aggregate Stated Values (computed as of the date fixed for redemption) of the shares of Series C Preferred Stock registered in their respective names in the Series C Preferred Stock Register.

(ii) The Redemption Price so prorated to a record Holder shall be applied to redeem shares of Series C Preferred Stock in order of descending per share Stated Value, such that the Redemption Price prorated to such record Holder is first applied to the redemption of the record Holder's shares having the highest per share Stated Value, any remaining prorated Redemption Price is then applied to the redemption of the record Holder's shares having the next highest per share Stated Value, and so forth, until all the Redemption Price prorated to such record Holder has been applied to the redemption of whole shares of such record Holder's Series C Preferred Stock. No share of Series C Preferred Stock shall be subject to redemption in part.

(iii) The Redemption Notice delivered to a Holder shall specify, in addition to the information specified in Section 7(a), the number of shares of such Holder to be redeemed and the certificate number(s) of the certificate(s) evidencing those shares.

(c) Upon receipt of payment of the Redemption Price, each Holder shall deliver the original certificate(s) evidencing the Series C Preferred Stock so redeemed to the Corporation, unless such Holder is awaiting receipt of a new certificate evidencing such shares from the Corporation pursuant to another provision hereof. Upon receipt of such a certificate from a Holder, the Corporation shall issue to such Holder a new certificate evidencing the remaining shares of Series C Preferred Stock, if any, represented by such certificate but not redeemed.

(d) Any shares of Series C Preferred Stock redeemed in accordance with this Section 7 shall be retired and cancelled and shall not be reissued, and the Corporation (without the need for stockholder action) may from time to time take such appropriate action as may be necessary to reduce the authorized number of shares of Series C Preferred Stock accordingly.

8. Voting Rights.

(a) Except as otherwise provided herein or as required by applicable law, the Holders of the Series C Preferred Stock shall not be entitled to vote on any matters on which holders of Common Stock are entitled to vote.

(b) So long as any shares of Series C Preferred Stock are outstanding, the Corporation shall not, without the affirmative vote of the Holders of a majority of the shares of Series C Preferred Stock then outstanding, (i) alter or change adversely the powers, preferences or rights given to the Series C Preferred Stock or alter or amend this Certificate of Designations (whether by merger, reorganization, consolidation or otherwise), (ii) authorize or create any class of stock ranking as to dividends or distribution of assets upon a Liquidation Event senior to the Series C Preferred Stock, (iii) amend its certificate of incorporation or bylaws so as to affect adversely any rights of the Holders (whether by merger, reorganization, consolidation or otherwise), (iv) increase the authorized number of shares of Series C Preferred Stock, or (v) enter into any agreement with respect to the foregoing.

So long as any shares of Series C Preferred Stock are outstanding, (i) the record Holders of Series C Preferred Stock, exclusively and as a separate class, shall be entitled to elect a number of directors equal to the greater of (A) two or (B) 20% of the total number of directors of the Corporation, rounded up to the nearest whole number, and (ii) the record holders of Common Stock, exclusively and as a separate class, shall, subject to the rights of any additional series of Preferred Stock that may be established from time to time, be entitled to elect the balance of the total number of directors of the Corporation. At any meeting

held for the purpose of electing directors, the presence in person or by proxy of the Holders of a majority of the shares of Series C Preferred Stock then outstanding shall constitute a quorum of the Series C Preferred Stock for the purpose of electing directors by Holders. A vacancy in any directorship filled by the Holders shall be filled only by vote or written consent in lieu of a meeting of the Holders or by any remaining director or directors elected by the Holders pursuant to this Section 8(c). To the extent all outstanding shares of Series C Preferred Stock are redeemed at any time in accordance with the provisions of Section 7 hereof, the rights of the Holders under this Section 8(c) shall terminate on the redemption date for those shares and any director previously elected by the Holders pursuant to this Section 8(c) resign as of such redemption date.

9. Certain Transactions.

(a) If, at any time while Series C Preferred Stock is outstanding, the Corporation proposes to enter into a transaction that would constitute a Change of Control, the Corporation shall mail written notice of the proposed Change of Control transaction to each record Holder not less than 20 Trading Days prior to the effective date thereof. Each Holder shall have the right to receive on the date of the consummation of such Change of Control, at the election of the Corporation, either (i) for each share of Series C Preferred Stock, cash in an amount equal to the Stated Value plus all accrued but unpaid dividends thereon through the date of payment, or (ii) a new series of preferred stock in the successor corporation or surviving entity in the Change of Control with a stated value equal to the Stated Value of the Series C Preferred Stock, plus all accrued but unpaid dividends thereon, and consistent with terms substantially equivalent to the terms of the Series C Preferred Stock held by such Holder and evidencing the Holder's right to convert such preferred stock into the consideration described in clause (i) of this Section 9. To the extent the Corporation elects to have the successor to the Corporation or the surviving entity issue a new series of preferred stock, the terms of any agreement pursuant to which a Change of Control is effected shall include terms requiring any such successor or surviving entity to comply with the provisions substantially equivalent to the provisions of this Section 9 and providing that the Series C Preferred Stock (or any such replacement security) will be similarly adjusted upon any subsequent transaction analogous to a Change of Control.

(b) Any recapitalization, reorganization, reclassification, consolidation, merger, sale of all or substantially all of the Corporation's assets to another Person or other transaction which is effected in such a way that holders of Common Stock are entitled to receive (either directly or upon subsequent liquidation) stock, securities or assets with respect to or in exchange for Common Stock is referred to herein as "ORGANIC CHANGE." Prior to the consummation of any (i) sale of all or substantially all of the Corporation's assets to an acquiring Person or (ii) other Organic Change following which the Corporation is not a surviving entity, other than in each case an Organic Change that is a Change of Control (which shall be subject to Section 9(a), the Corporation will secure from the Person purchasing such assets or the successor, or, if applicable, the parent of the successor, resulting from such Organic Change (in each case, the "ACQUIRING ENTITY") a written agreement (in form and substance reasonably satisfactory to the holders of at least a majority of the shares of Series C Preferred Stock then outstanding) to deliver to each holder of Series C Preferred Stock in exchange for such shares, a security of the Acquiring Entity evidenced by a written instrument substantially similar in form and substance to the Series C Preferred Stock, including, without limitation, having a stated value and liquidation preference equal to the Stated Value and the Series C Stock Liquidation Preference of the Series C Preferred Stock held by such holder, and reasonably satisfactory to the holders of at least a majority of the Series C Preferred Stock then outstanding.

10. Charges, Taxes and Expenses. Issuance of certificates for shares of Series C Preferred Stock shall be made without charge to the Holders for any issue or transfer tax, withholding tax, transfer agent fee or other incidental tax or expense in respect of the issuance of such certificates, all of which taxes and

expenses shall be paid by the Corporation; provided, however, that the Corporation shall not be required to pay any tax that may be payable in respect of any transfer involved in the registration of any certificates for Series C Preferred Stock in a name other than that of the Holder. The Holder shall be responsible for all other tax liability that may arise as a result of holding or transferring the Series C Preferred Stock.

11. Replacement Certificates. If any certificate evidencing Series C Preferred Stock is mutilated, lost, stolen or destroyed, the Corporation shall issue or cause to be issued in exchange and substitution for and upon cancellation hereof, or in lieu of and substitution for such certificate, a new certificate, but only upon receipt of evidence reasonably satisfactory to the Corporation of such loss, theft or destruction and customary and reasonable indemnity, if requested. Applicants for a new certificate under such circumstances shall also comply with such other reasonable regulations and procedures and pay such other reasonable third-party costs as the Corporation may prescribe.

12. Notices. Any and all notices or other communications or deliveries hereunder shall be in writing and shall be deemed given and effective on the earliest of (i) the date of transmission, if such notice or communication is delivered via facsimile at the facsimile number specified in this Section prior to 5:30 p.m. (New York City time) on a Trading Day, (ii) the next Trading Day after the date of transmission, if such notice or communication is delivered via facsimile at the facsimile number specified in this Section on a day that is not a Trading Day or later than 5:30 p.m. (New York City time) on any Trading Day, (iii) the Trading Day following the date of mailing, if sent by nationally recognized overnight courier service, or (iv) upon actual receipt by the party to whom such notice is required to be given. The addresses for such communications shall be: (i) if to the Corporation, to Ten Canal Park, Cambridge, Massachusetts 02141, facsimile: (617) 949-1722, Attention: Chief Executive Officer and General Counsel, or (ii) if to a Holder, to the address or facsimile number appearing on the Corporation's stockholder records or such other address or facsimile number as such Holder may provide to the Corporation in accordance with this Section 11.

13. Miscellaneous.

(a) The headings herein are for convenience only, do not constitute a part of this Certificate of Designations and shall not be deemed to limit or affect any of the provisions hereof.

(b) Any of the rights of the Holders of Series C Preferred Stock set forth herein may be waived by the affirmative vote of the Holders of a majority of the shares of Series C Preferred Stock then outstanding. No waiver of any default with respect to any provision, condition or requirement of this Certificate of Designations shall be deemed to be a continuing waiver in the future or a waiver of any subsequent default or a waiver of any other provision, condition or requirement hereof, nor shall any delay or omission of either party to exercise any right hereunder in any manner impair the exercise of any such right.

* * *

IN WITNESS WHEREOF, Aspen Technology, Inc. has caused this Certificate of Designations to be duly executed as of March 19, 2002.

ASPEN TECHNOLOGY, INC.

By: /s/ Lisa W. Zappala

Lisa W. Zappala
Senior Vice President and
Chief Financial Officer

AMENDED AND RESTATED
SECURITIES PURCHASE AGREEMENT

This Amended and Restated Securities Purchase Agreement (this "Agreement") is dated as of March 19, 2002, among Aspen Technology, Inc., a Delaware corporation (the "Company"), and the purchasers identified on the signature pages hereto (each a "Purchaser" and collectively the "Purchasers").

WHEREAS, the Company and the Purchasers entered into a Securities Purchase Agreement, dated as of February 6, 2002 (the "Original Purchase Agreement") pursuant to which the Company issued and sold to the Purchasers, and the Purchasers purchased, shares of the Company's Series B-1 Convertible Preferred Stock and Series B-2 Convertible Preferred Stock and warrants to purchase shares of Common Stock of the Company on February 6, 2002 and February 28, 2002,

WHEREAS, as of the date hereof, the Company has authorized the following new series of its Preferred Stock, par value \$.10 per share: (i) Series B-I Convertible Preferred Stock and (ii) Series B-II Convertible Preferred Stock,

WHEREAS, the Company and the Purchasers wish to exchange at the Third Closing (as defined below) being held contemporaneously with the execution and delivery of this Agreement, upon the terms and conditions set forth in this Agreement, (i) an aggregate of 30,000 shares of Series B-1 Preferred Stock for an aggregate of 30,000 shares of Series B-I Preferred Stock and (ii) an aggregate of 20,000 shares of Series B-2 Preferred Stock for an aggregate of 20,000 shares of Series B-II Preferred Stock,

WHEREAS, each of the exchange of shares of Series B-1 Convertible Preferred Stock for shares of Series B-I Convertible Preferred Stock and the exchange of shares of Series B-2 Convertible Preferred Stock for shares of Series B-II Convertible Preferred Stock is being made in reliance upon an exemption from registration provided by the Securities Act of 1933, as amended, and

WHEREAS, the Company and the Purchasers desire to provide for the issuance to certain of the Purchasers of an additional 10,000 shares of Series B-I Convertible Preferred Stock and Warrants exercisable for shares of Common Stock at a Third Closing.

NOW, THEREFORE, IN CONSIDERATION of the mutual covenants contained in this Agreement, and for other good and valuable consideration the receipt and adequacy of which are hereby acknowledged, the Company and the Purchasers agree that the terms of the Original Purchase Agreement shall be amended and restated as follows as if so amended and restated as of the date of the Original Purchase Agreement:

ARTICLE I
DEFINITIONS

1.1 Definitions. In addition to the terms defined elsewhere in this Agreement, the following terms have the meanings indicated:

"ACTUAL MINIMUM" means, as of any date, the maximum aggregate number of shares of Common Stock then issued or potentially issuable in the future pursuant to the Transaction Documents, including any Underlying Shares issuable upon exercise or conversion in full of all Warrants and Shares, ignoring any limits on the number of shares of Common Stock that may be owned by a Purchaser at any one time and (i) assuming that (a) any previously unconverted Shares are held until the seventh anniversary of the Closing Date and all dividends therein are paid in shares of Common Stock, and (b) the Closing Price at all times on and after the date of determination equals 100% of the actual Closing Price on the Trading Day immediately prior to the date of determination, and (ii) giving effect to the Conversion Price (as defined in the Series B Certificate of Designations) as in effect on such date, without regard to potential changes in the Closing Price that may occur thereafter.

"AFFILIATE" means any Person that, directly or indirectly through one or more intermediaries, controls or is controlled by or is under common control with a Person, as such terms are used in and construed under Rule 144. With respect to a Purchaser, any investment fund or managed account that is managed on a discretionary basis by the same investment manager as such Purchaser will be deemed to be an Affiliate of such Purchaser.

"BANKRUPTCY EVENT" means any of the following events: (a) the Company or any Material Subsidiary commences a case or other proceeding under any bankruptcy, reorganization, arrangement, adjustment of debt, relief of debtors, dissolution, insolvency or liquidation or similar law of any jurisdiction relating to the Company or any Material Subsidiary thereof; (b) there is commenced against the Company or any Material Subsidiary any such case or proceeding that is not dismissed within 60 days after commencement; (c) the Company or any Material Subsidiary is adjudicated insolvent or bankrupt or any order of relief or other order approving any such case or proceeding is entered; (d) the Company or any Material Subsidiary suffers any appointment of any custodian or the like for it or any substantial part of its property that is not discharged or stayed within 60 days; (e) the Company or any Material Subsidiary makes a general assignment for the benefit of creditors; (f) the Company or any Material Subsidiary fails to pay, or states in writing that it is unable to pay or is unable to pay, its debts generally as they become due; or (g) the Company or any Subsidiary, by any act or failure to act, expressly indicates its consent to, approval of or acquiescence in any of the foregoing or takes any corporate or other action that effects any of the foregoing.

"CHANGE OF CONTROL" means the occurrence of any of the following in one or a series of related transactions: (i) an acquisition after the date hereof by an individual or legal entity or "group" (as described in Rule 13d-5(b)(1) under the Exchange Act) of a majority of the voting rights or equity interests in the Company; (ii) a replacement of more than one-half of the members of the Company's Board of Directors that is not approved by those individuals who are members of the Board of Directors on the date hereof (or other directors previously approved by such individuals); (iii) a merger or consolidation of the Company or a sale of all or substantially all of the assets of the Company in one or a series of related transactions, unless following such transaction or series of transactions, the holders of the Company's securities prior to the first such transaction continue to hold, directly or indirectly, at least a majority of the voting rights and equity interests in the surviving entity or acquirer of such assets; (iv) a recapitalization, reorganization or other transaction involving the Company that constitutes or results in a transfer of a majority of the voting rights or equity interests in the Company to Persons other than holders

of the Company's voting equity securities prior to such transaction; or (v) consummation of a "Rule 13e-3 transaction" as defined in Rule 13e-3 under the Exchange Act with respect to the Company other than a Rule 13e-3 transaction in which no Purchaser's interest in the Company has been adversely changed or diluted in any material manner.

"CLOSING" means First Closing, Second Closing and/or Third Closing, as applicable.

"CLOSING DATE" means, with respect to the First Closing, the date of the First Closing, with respect to the Second Closing, the date of the Second Closing, and with respect to the Third Closing, the date of the Third Closing.

"CLOSING PRICE" means, for any date, the price determined by the first of the following clauses that applies: (a) if the Common Stock is then listed or quoted on an Eligible Market or any other national securities exchange, the last closing price per share of the Common Stock for such date (or the nearest preceding date) on the primary Eligible Market or exchange on which the Common Stock is then listed or quoted; (b) if prices for the Common Stock are then quoted on the OTC Bulletin Board, the average of the highest closing bid price and the lowest closing ask price per share of the Common Stock for such date (or the nearest preceding date) so quoted; (c) if prices for the Common Stock are then reported in the "Pink Sheets" published by the National Quotation Bureau Incorporated (or a similar organization or agency succeeding to its functions of reporting prices), the most recent bid price per share of the Common Stock so reported; or (d) in all other cases, the fair market value of a share of Common Stock as determined by an independent appraiser selected in good faith by a majority-in-interest of the Purchasers and the Company.

"COMMISSION" means the Securities and Exchange Commission.

"COMMON STOCK" means the common stock of the Company, par value \$0.10 per share.

"COMMON STOCK EQUIVALENTS" means, collectively, shares of Common Stock and Convertible Securities.

"COMPANY COUNSEL" means Hale and Dorr LLP, counsel to the Company.

"CONVERTIBLE SECURITIES" means any evidence of indebtedness, shares, options, warrants or other securities directly or indirectly convertible into or exercisable or exchangeable for shares of Common Stock.

"EFFECTIVE DATE" means the date that an Underlying Shares Registration Statement is declared effective by the Commission.

"ELIGIBLE MARKET" means the New York Stock Exchange, the American Stock Exchange, the Nasdaq National Market or the Nasdaq SmallCap Market.

"EVENT EQUITY VALUE" means 115% of the average of the Closing Prices for the five Trading Days preceding the date of delivery of the notice requiring payment of the Event Equity Value, provided that if the Company does not make such required payment (together with any other payments, expenses and liquidated damages then due and payable under the Transaction

Documents) when due or, in the event the Company disputes in good faith the occurrence of the Triggering Event pursuant to which such notice relates, does not instead deposit such required payment (together with such other payments, expenses and liquidated damages then due) in escrow with an independent third-party escrow agent within five Trading Days of the date such required payment is due, then the Event Equity Value shall be 115% of the greater of (a) the average of the Closing Prices for the five Trading Days preceding the date of delivery of the notice requiring payment of the Event Equity Value and (b) the average of the Closing Prices for the five Trading Days preceding the date on which such required payment (together with such other payments, expenses and liquidated damages) is paid in full.

"EXCHANGE ACT" means the Securities Exchange Act of 1934, as amended.

"EXCLUDED STOCK" means any shares of Common Stock issued or issuable (a) upon exercise, conversion or exchange of any Common Stock Equivalents described in Schedule 3.1(g) (provided that such exercise or conversion occurs in accordance with the terms thereof, without amendment or modification, and that the applicable exercise or conversion price or ratio is described in such schedule); (b) to officers, directors, employees or consultants of the Company pursuant to a stock option plan, employee stock purchase plan or other equity incentive plan approved by the Board of Directors of the Company; (c) pursuant to as part of a bona fide firm commitment underwritten public offering with a nationally recognized underwriter (including any "at the market offering," as defined in Rule 415(a)(4) under the Securities Act, only if such offering does not constitute an "equity line" and generates aggregate gross proceeds of at least \$50,000,000); (d) in connection with any transaction with a strategic investor, vendor, lessor, customer, supplier, marketing partner, developer or integrator or any similar arrangement, in each case the primary purpose of which is not to raise equity capital; (e) in connection with a transaction involving a merger or acquisition of an entity, business or assets (not principally for the purpose of obtaining cash); or (f) in connection with any other transaction for consideration other than cash up to 108,166 shares of Common Stock in the aggregate (as adjusted for stock splits, stock combinations and similar events).

"FIRST CLOSING" means the closing of the purchase and sale of the Securities pursuant to Section 2.4(a).

"INITIAL SERIES B CERTIFICATE OF DESIGNATIONS" means the certificate of designations of the Series B-1 Preferred Stock and Series B-2 Preferred Stock, in the form of Exhibit A-1.

"INITIAL SHARES" means the shares of Series B-1 Preferred Stock, which are being purchased by the Purchasers at the First Closing.

"LOSSES" means any and all losses, claims, damages, liabilities, settlement costs and expenses, including without limitation costs of preparation of legal action and reasonable attorneys' fees.

"MATERIAL SUBSIDIARY" means any significant subsidiary, as defined in Rule 1-02(w) of Regulation S-X promulgated by the Commission, of the Company.

"PERSON" means an individual or corporation, partnership, trust, incorporated or unincorporated association, joint venture, limited liability company, joint stock company, government (or an agency or subdivision thereof) or other entity of any kind.

"PREFERRED STOCK" means, collectively, the Series B-1 Preferred Stock, Series B-2 Preferred Stock, the Series B-I Preferred Stock and Series B-II Preferred Stock.

"PROCEEDING" means an action, claim, suit, investigation or proceeding (including, without limitation, an investigation or partial proceeding, such as a deposition), whether commenced or threatened.

"PURCHASER COUNSEL" means Proskauer Rose LLP, counsel to the Purchasers.

"QUALIFIED TRANSFER" means the assignment of rights by a Purchaser under this Agreement and the Registration Rights Agreement to any Person to whom such Purchaser assigns or transfers Series C Preferred Stock or Securities convertible into or exercisable for Underlying Shares having an aggregate value of at least \$5,000,000 and who agrees to be bound by the provisions of this Agreement and the Registration Rights Agreement; provided, however, a Purchaser shall have the right (a) together with any transferee of such Purchaser, to assign Series C Preferred Stock or Securities in any amount up to two transfers a year in the aggregate, (b) to assign without limitation to any Affiliate, any other Purchaser or any Affiliate of any other Purchaser and (c) to assign without limitation pursuant to a pledge in connection with a bona fide margin account or other loan secured by such Securities. For the purposes of calculating value pursuant to the preceding sentence, the value of each Underlying Share shall be deemed to equal the Closing Price of the Common Stock on the Trading Day immediately prior to the effective date of such assignment, less the Exercise Price per share of any Underlying Share that is a Warrant Share, but not less than the Stated Value.

"REGISTRATION RIGHTS AGREEMENT" means (a) with respect to the period prior to the time of the Third Closing, the Registration Rights Agreement, dated as of February 6, 2002, among the Company and the Purchasers and (b) upon and after the time of the Third Closing, such Registration Rights Agreement as amended and restated in the form of Exhibit B.

"REQUIRED EFFECTIVENESS DATE" means the date on which an Underlying Shares Registration Statement is required to become effective pursuant to the Registration Rights Agreement.

"REQUIRED MINIMUM" means, as of any date, the maximum aggregate number of shares of Common Stock then issued or potentially issuable in the future pursuant to the Transaction Documents, including any Underlying Shares issuable upon exercise or conversion in full of all Warrants and Shares, ignoring any limits on the number of shares of Common Stock that may be owned by a Purchaser at any one time and assuming that (a) any previously unconverted Shares are held until the seventh anniversary of the Closing Date or, if earlier, until maturity, and all dividends thereon are paid in shares of Common Stock, (b) the Closing Price at all times on and after the date of determination equals 75% of the actual Closing Price on the Trading Day immediately prior to the date of determination and (c) giving effect to the Conversion Price (as defined, with respect to the period before the time of the Third Closing, in the Initial Series B

Certificate of Designations and, upon and after the time of the Third Closing, in the Series B Certificate of Designations) as in effect on such date, without regard to potential changes in the Closing Price that may occur thereafter.

"RULE 144" means Rule 144 promulgated by the Commission pursuant to the Securities Act, as such Rule may be amended from time to time, or any similar rule or regulation hereafter adopted by the Commission having substantially the same effect as such Rule.

"SECOND CLOSING" means the closing of the purchase and sale of the Securities pursuant to Section 2.4(b).

"SECOND CLOSING SHARES" means the shares of Series B-2 Preferred Stock which are being purchased by the Purchasers at the Second Closing.

"SECURITIES" means the Shares, the Warrants and the Underlying Shares.

"SECURITIES ACT" means the Securities Act of 1933, as amended.

"SERIES B CERTIFICATE OF DESIGNATIONS" means a certificate of designations of the Series B-I Preferred Stock and Series B-II Preferred Stock, in the form of Exhibit A-2.

"SERIES B-1 PREFERRED STOCK" means the Series B-1 Convertible Preferred Stock of the Company, which is convertible into shares of Common Stock.

"SERIES B-2 PREFERRED STOCK" means the Series B-2 Convertible Preferred Stock of the Company, which is convertible into shares of Common Stock.

"SERIES B-I PREFERRED STOCK" means the Series B-I Convertible Preferred Stock of the Company, which is convertible into shares of Common Stock.

"SERIES B-II PREFERRED STOCK" means the Series B-II Convertible Preferred Stock of the Company, which is convertible into shares of Common Stock.

"SERIES C CERTIFICATE OF DESIGNATIONS" means a certificate of designations of the Series C Preferred Stock, in the form of Exhibit A-3.

"SERIES C PREFERRED STOCK" means the Series C Preferred Stock of the Company.

"SHARES" means, collectively, (a) the Initial Shares or, upon and after the time of the Third Closing, the shares of Series B-I Preferred Stock issued upon exchange of the Initial Shares, (b) the Second Closing Shares or, upon and after the time of the Third Closing, the shares of Series B-II Preferred Stock issued upon exchange of the Second Closing Shares, and (c) the Third Closing Shares.

"SUBSEQUENT PLACEMENT" shall have the meaning specified in Section 4.7(a).

"SUBSIDIARY" means any subsidiary, as defined in Rule 1-02(x) of Regulation S-X promulgated by the Commission, of the Company.

"THIRD CLOSING" means the closing of the purchase and sale of the Securities pursuant to Section 2.4(c).

"THIRD CLOSING SHARES" means the shares of Series B-I Preferred Stock which are being purchased by the Purchasers at the Third Closing.

"TRADING DAY" means (a) any day on which the Common Stock is listed or quoted and traded on its primary Trading Market or (b) if the Common Stock is not then listed or quoted and traded on any Eligible Market, then a day on which trading occurs on the New York Stock Exchange (or any successor thereto).

"TRADING MARKET" means the Nasdaq National Market or any other Eligible Market on which the Common Stock is then listed or quoted.

"TRANSACTION DOCUMENTS" means this Agreement, the Registration Rights Agreement, the Series B Certificate of Designations (or, with respect to the period before the time of the Third Closing, the Initial Series B Certificate of Designations), the Series C Certificate of Designations and the Warrants.

"TRIGGERING EVENT" means any of the following events: (a) immediately prior to any Bankruptcy Event; (b) the Common Stock is not listed or quoted, or is suspended from trading, on an Eligible Market for a period of five consecutive Trading Days or ten aggregate Trading Days in any 365-day period; (c) the Company fails for any reason to deliver a certificate evidencing any Securities to a Purchaser within ten Trading Days after delivery of such certificate is required pursuant to any Transaction Document or the exercise or conversion rights of the Holders pursuant to the Transaction Documents are otherwise suspended for any reason; (d) the Company fails to have available both (i) a sufficient number of authorized but unissued and otherwise unreserved shares of Common Stock available to issue Underlying Shares upon any exercise of the Warrants or any conversion of Shares and does not make available a sufficient number of authorized but unissued and otherwise unreserved shares of Common Stock for such issuance within 60 days after the occurrence of such deficiency and (ii) at least 6,401,394 authorized but unissued and otherwise unreserved shares of Common Stock, less reductions reasonably agreed to by the Purchasers to reflect shares of Common Stock issued upon conversion of the Shares (and, therefore, reduced aggregate dividend payments), as dividends on the Shares, upon exercise of the Warrants or upon a redemption of the Shares; (e) at any time after the Required Effectiveness Date, any Common Stock issuable pursuant to the Transaction Documents is not listed on an Eligible Market; (f) any other Event (as defined in the Registration Rights Agreement) occurs and remains uncured for 60 days; (g) the Company fails to make any cash payment required under the Transaction Documents and such failure is not cured within five days after notice of such default is first given to the Company by a Purchaser; (h) the Company defaults in the timely performance of any other obligation under the Transaction Documents and such default continues uncured for a period of 20 days after the date on which notice of such default is first given to the Company by a Purchaser (it being understood that no prior notice need be given in the case of a default that cannot reasonably be cured within 20 days); or (i) any Change of Control event.

"UNDERLYING SHARES" means the shares of Common Stock issuable upon conversion of, or in redemption of, the Shares, as payment of dividends on the Shares and upon exercise of the Warrants, and any securities issued in exchange for, or upon conversion or in respect of, such shares.

"UNDERLYING SHARES REGISTRATION STATEMENT" means a registration statement meeting the requirements set forth in the Registration Rights Agreement and covering the resale of the Underlying Shares by the Purchasers.

"WARRANTS" means the Common Stock purchase warrants, in the forms of Exhibit C-1, Exhibit C-2 and Exhibit C-3.

ARTICLE II PURCHASE AND SALE

2.1 Sale and Issuance of Preferred Stock at First Closing. Subject to the terms and conditions of this Agreement, each Purchaser agrees, severally and not jointly, to purchase at the First Closing and the Company agrees to sell and issue to each Purchaser at the First Closing, that number of shares of Series B-1 Preferred Stock set forth opposite such Purchaser's name on Schedule A under the heading "Initial Shares" and a Warrant in the form of Exhibit C-1 having the terms set forth in Section 2.8(a) below, for the aggregate purchase price set forth opposite such Purchaser's name on Schedule A under the heading "First Closing Purchase Price".

2.2 Sale and Issuance of Preferred Stock at Second Closing. Subject to the terms and conditions of this Agreement, including without limitation Section 2.6 hereof, each Purchaser agrees, severally and not jointly, to purchase at the Second Closing and the Company agrees to sell and issue to each Purchaser at the Second Closing, that number of shares of Series B-2 Preferred Stock set forth opposite such Purchaser's name on Schedule A under the heading "Second Closing Shares" and a Warrant (the "Second Closing Warrant") in the form of Exhibit C-2 having the terms set forth in Section 2.8(b) below, for the aggregate purchase price set forth opposite such Purchaser's name on Schedule A under the heading "Second Closing Purchase Price".

2.3 Exchange, Sale and Issuance of Preferred Stock at Third Closing.

(a) Subject to the terms and conditions of this Agreement, including without limitation Section 2.7 hereof, the Company shall at the Third Closing (i) issue to each Purchaser a number of shares of Series B-I Preferred Stock equal to the number of such Purchaser's Initial Shares set forth on Schedule A, and each Purchaser severally agrees to exchange such Initial Shares for such shares of Series B-I Preferred Stock and (ii) issue to each Purchaser a number of shares of Series B-II Preferred Stock equal to the number of such Purchaser's Second Closing Shares set forth in Schedule A, and each Purchaser severally agrees to exchange such Second Closing Shares for such shares of Series B-II Preferred Stock.

(b) Subject to the terms and conditions of this Agreement, including without limitation Section 2.7 hereof, each Purchaser agrees, severally and not jointly, to purchase at the Third Closing and the Company agrees to sell and issue to each Purchaser at the Third Closing, that number of shares of Series B-I Preferred Stock, if any, set forth opposite such Purchaser's

name on Schedule A under the heading "Third Closing Shares" and a Warrant (the "Third Closing Warrant") in the form of Exhibit C-3 having the terms set forth in Section 2.8(c) below, for the aggregate purchase price, if any, set forth opposite such Purchaser's name on Schedule A under the heading "Third Closing Purchase Price".

2.4 Closings.

(a) The purchase and sale of the Initial Shares pursuant to the terms of Section 2.1 shall take place at the offices of Proskauer Rose LLP in New York, New York, at 10:00 a.m. on February 6, 2002 (which time and place are designated as the "First Closing").

(b) The purchase and sale of Second Closing Shares pursuant to the terms and conditions of Sections 2.2 and this Section 2.4 shall take place at the offices of Proskauer Rose LLP in New York, New York at 10:00 a.m. on February 28, 2002 (which time and place are designated as the "Second Closing").

(c) The exchange of the Initial Shares and Second Closing Shares and the purchase and sale of Third Closing Shares pursuant to the terms and conditions of Section 2.3 and this Section 2.4 shall take place at the offices of Proskauer Rose LLP in New York, New York on the date hereof, contemporaneously with the execution and delivery of this Agreement (which time and place are designated as the "Third Closing").

2.5 First Closing Deliveries.

(a) At the First Closing, the Company shall deliver or cause to be delivered to each Purchaser the following:

(i) one or more stock certificates evidencing that number of Initial Shares indicated on Schedule A under the heading "Initial Shares", registered in the name of such Purchaser;

(ii) a Warrant in the form of Exhibit C-1, registered in the name of such Purchaser, pursuant to which such Purchaser shall have the right to acquire that number of shares of Common Stock as set forth in Section 2.8(a) below;

(iii) evidence that the Initial Series B Certificate of Designations has been filed and become effective on or prior to the Closing Date of the First Closing with the Secretary of State of the State of Delaware, in form and substance mutually agreed to by the parties;

(iv) the legal opinion of Company Counsel, in the form of Exhibit D, executed by such counsel and delivered to the Purchasers;

(v) the Registration Rights Agreement duly executed by the Company; and

(vi) any other documents reasonably requested by the Purchasers or Purchaser Counsel in connection with the First Closing.

(b) At the First Closing, each Purchaser shall deliver or cause to be delivered to the Company the following:

(i) the purchase price set forth opposite such Purchaser's name on Schedule A under the heading "First Closing Purchase Price", in United States dollars and in immediately available funds, by wire transfer to an account designated in writing by the Company for such purpose; and

(ii) the Registration Rights Agreement duly executed by such Purchaser.

2.6 Second Closing Deliveries.

(a) At the Second Closing, the Company shall deliver or cause to be delivered to each applicable Purchaser the following:

(i) one or more stock certificates evidencing that number of Second Closing Shares as set forth opposite such Purchaser's name on Schedule A under the heading "Second Closing Shares", registered in the name of such Purchaser;

(ii) a Warrant in the form of Exhibit C-2, registered in the name of such Purchaser, pursuant to which such Purchaser shall have the right to acquire that number of shares of Common Stock as set forth in Section 2.8(b);

(iii) the legal opinion of Company Counsel, in the form of Exhibit E, executed by such counsel and delivered to the Purchasers;

(iv) a certificate from the president of the Company certifying that all the representations and warranties of the Company contained in Section 3.1 herein are true and correct as of the Second Closing; and

(v) any other documents reasonably requested by the Purchasers or Purchaser Counsel in connection with the Second Closing.

(b) At the Second Closing, each applicable Purchaser shall deliver or cause to be delivered to the Company the following:

(i) the purchase price, if any, set forth opposite such Purchaser's name on Schedule A under the heading "Second Closing Purchase Price", in United States dollars and in immediately available funds, by wire transfer to an account designated in writing by the Company for such purpose; and

(ii) a certificate from such Purchaser, if an individual, or an authorized executive officer of such Purchaser, if an entity, certifying that all the representations and warranties of such Purchaser contained in Section 2.8 herein are true and correct as of the Second Closing.

2.7 Third Closing Deliveries.

(a) At the Third Closing, the Company shall deliver or cause to be delivered to each applicable Purchaser the following:

(i) one or more stock certificates evidencing, in the aggregate, the number of shares of Series B-I Preferred Stock equal to the number of such Purchaser's Initial Shares exchanged pursuant to Section 2.3;

(ii) one or more stock certificates evidencing, in the aggregate, the number of shares of Series B-II Preferred Stock equal to the number of such Purchaser's Second Closing Shares exchanged pursuant to Section 2.3;

(iii) one or more stock certificates evidencing that number of Third Closing Shares as set forth opposite such Purchaser's name on Schedule A under the heading "Third Closing Shares", registered in the name of such Purchaser;

(iv) a Warrant in the form of Exhibit C-3, registered in the name of such Purchaser, pursuant to which such Purchaser shall have the right to acquire that number of shares of Common Stock as set forth in Section 2.8(c);

(v) evidence that the Series B Certificate of Designations and the Series C Certificate of Designations each have been filed and become effective as of the Closing Date of the Third Closing with the Secretary of State of the State of Delaware, in form and substance mutually agreed to by the parties;

(vi) the legal opinion of Company Counsel, in the form of Exhibit F, executed by such counsel and delivered to the Purchasers;

(vii) the Registration Rights Agreement duly executed by the Company;

(viii) the amendments of the Warrants issued on February 6, 2002 and February 28, 2002, each such amendment to be in the form of Exhibit G and to be executed by the Company;

(ix) a certificate from the chief financial officer of the Company certifying that all the representations and warranties of the Company contained in Section 3.1 herein are true and correct as of the Third Closing; and

(x) any other documents reasonably requested by the Purchasers or Purchaser Counsel in connection with the Third Closing.

(b) At the Third Closing, each applicable Purchaser shall deliver or cause to be delivered to the Company the following:

(i) stock certificates representing the number of Initial Shares and Second Closing Shares held by such Purchaser;

(ii) the purchase price set forth opposite such Purchaser's name on Schedule A under the heading "Third Closing Purchase Price", in United States dollars

and in immediately available funds, by wire transfer to an account designated in writing by the Company for such purpose;

(iii) the Registration Rights Agreement duly executed by such Purchaser;

(iv) the amendments of the Warrants issued on February 6, 2002 and February 28, 2002;

(v) the unanimous consent of the Purchasers, as holders of the outstanding shares of Preferred Stock, authorizing the filing of the Series B Certificate of Designations and Series C Certification of Designations to the extent required by Section 11 of the Initial Series B Certificate of Designations; and

(vi) a certificate from such Purchaser, if an individual, or an authorized executive officer of such Purchaser, if an entity, certifying that all the representations and warranties of such Purchaser contained in Section 3.2 herein are true and correct as of the Third Closing.

2.8 Warrants.

(a) At the First Closing, each Purchaser shall be issued a Warrant in the form of Exhibit C-1 that shall be exercisable for a number of shares of Common Stock equal to the product of 365,864 times the quotient of (i) the aggregate First Closing Purchase Price paid by such Purchaser, divided by (ii) \$30,000,000, rounded up to the nearest share. Such Warrant shall have an exercise price per share equal to \$23.99.

(b) At the Second Closing, each Purchaser shall be issued a Warrant in the form of Exhibit C-2 that shall be exercisable for a number of shares equal to the product of 283,460 times the quotient of (i) the aggregate Second Closing Purchase Price paid by such Purchaser, divided by (ii) \$20,000,000, rounded up to the nearest share. Such Warrant shall have an exercise price per share equal to \$20.64.

(c) At the Third Closing, each applicable Purchaser shall be issued a Warrant in the form of Exhibit C-3 that shall be exercisable for a number of shares equal to the product of 141,730 times the quotient of (i) the aggregate Third Closing Purchase Price paid by such Purchaser, divided by (ii) \$10,000,000, rounded up to the nearest share. Such Warrant shall have an exercise price per share equal to \$23.99.

ARTICLE III REPRESENTATIONS AND WARRANTIES

3.1 Representations and Warranties of the Company. The Company hereby makes the following representations and warranties to each of the Purchasers:

(a) Subsidiaries. The Company does not directly or indirectly control or own any interest in any other corporation, partnership, joint venture or other business association or entity, other than those listed in Schedule 3.1(a). Except as disclosed in Schedule 3.1(a), the

Company owns, directly or indirectly, all of the capital stock of each Subsidiary free and clear of any lien, charge, claim, security interest, encumbrance, right of first refusal or other restriction (collectively, "Liens"), and all the issued and outstanding shares of capital stock of each Subsidiary are validly issued and are fully paid, non-assessable and free of preemptive and similar rights.

(b) Organization and Qualification. Each of the Company and the Material Subsidiaries is an entity duly incorporated or otherwise organized, validly existing and in good standing under the laws of the jurisdiction of its incorporation or organization (as applicable), with the requisite power and authority to own and use its properties and assets and to carry on its business as currently conducted. Neither the Company nor any Material Subsidiary is in violation of any of the provisions of its respective certificate or articles of incorporation, bylaws or other organizational or charter documents. Each of the Company and the Material Subsidiaries is duly qualified to do business and is in good standing as a foreign corporation or other entity in each jurisdiction in which the nature of the business conducted or property owned by it makes such qualification necessary, except where the failure to be so qualified or in good standing, as the case may be, could not, individually or in the aggregate, (i) adversely affect the legality, validity or enforceability of any Transaction Document, (ii) have or result in a material adverse effect on the results of operations, assets, prospects, business or condition (financial or otherwise) of the Company and the Subsidiaries, taken as a whole, or (iii) adversely impair the Company's ability to perform fully on a timely basis its obligations under any of the Transaction Documents (any of (i), (ii) or (iii), a "Material Adverse Effect").

(c) Authorization; Enforcement. The Company has the requisite corporate power and authority to enter into and to consummate the transactions contemplated by each of the Transaction Documents and otherwise to carry out its obligations hereunder and thereunder. The execution and delivery of each of the Transaction Documents by the Company and the consummation by it of the transactions contemplated hereby and thereby have been duly authorized by all necessary action on the part of the Company and no further consent or action is required by the Company, its Board of Directors or its stockholders (except to the extent that stockholder approval may be required pursuant to the rules of the Nasdaq National Market for the issuance of Underlying Shares equal to or greater than 20% of the number of shares of Common Stock outstanding immediately prior to the First Closing Date (the "Nasdaq Stockholder Approval Rule")). Each of the Transaction Documents has been (or upon delivery will be) duly executed by the Company and is, or when delivered in accordance with the terms hereof, will constitute the valid and binding obligation of the Company enforceable against the Company in accordance with its terms.

(d) No Conflicts. The execution, delivery and performance of the Transaction Documents by the Company and the consummation by the Company of the transactions contemplated hereby and thereby, including the filing of the Initial Series B Certificate of Designations pursuant to Section 2.5 and the Series B Certificate of Designations and Series C Certificate of Designations pursuant to Section 2.7 and the issuance of the Shares, do not and will not (i) conflict with or violate any provision of the Company's certificate of incorporation or bylaws, or (ii) subject to obtaining the Required Approvals (as defined below), conflict with, or constitute a default (or an event that with notice or lapse of time or both would become a default) under, or give to others any rights of termination, amendment, acceleration or cancellation (with

or without notice, lapse of time or both) of, any agreement, credit facility, debt or other instrument (evidencing a Company or Subsidiary debt or otherwise) or other understanding to which the Company or any Subsidiary is a party or by which any property or asset of the Company or any Subsidiary is bound or affected, or (iii) result in a violation of any law, rule, regulation, order, judgment, injunction, decree or other restriction of any court or governmental authority to which the Company or a Subsidiary is subject (including federal and state securities laws and regulations) and the rules and regulations of any self-regulatory organization to which the Company or its securities are subject, or by which any property or asset of the Company or a Subsidiary is bound or affected; except in the case of each of clauses (ii) and (iii), such as could not reasonably be expected to have or result in, individually or in the aggregate, a Material Adverse Effect.

(e) Filings, Consents and Approvals. Neither the Company nor any Subsidiary is required to obtain any consent, waiver, authorization or order of, give any notice to, or make any filing or registration with, any court or other federal, state, local or other governmental authority or other Person in connection with the execution, delivery and performance by the Company of the Transaction Documents, other than (i) the filings required under Section 4.8 and the required filing of the Initial Series B Certificate of Designations pursuant to Section 2.5 and the Series B Certificate of Designations and the Series C Certificate of Designations pursuant to Section 2.7, (ii) the filing with the Commission of the Underlying Shares Registration Statement, (iii) the application(s) to each Trading Market for the listing of the Underlying Shares for trading thereon in the time and manner required thereby, (iv) applicable Blue Sky filings, (v) approval of the stockholders pursuant to the Nasdaq Stockholder Approval Rule, and (vi) in all other cases where the failure to obtain such consent, waiver, authorization or order, or to give such notice or make such filing or registration could not reasonably be expected to have or result in, individually or in the aggregate, a Material Adverse Effect (collectively, the "Required Approvals").

(f) Issuance of the Securities. The Shares, the Underlying Shares and the shares of Series C Preferred Stock have been duly authorized and, when issued in accordance with the Transaction Documents, will be duly and validly issued, fully paid and nonassessable, free and clear of all Liens and shall not be subject to preemptive rights or similar rights of stockholders. The Warrants have been duly authorized and the issuance thereof is not subject to preemptive rights or similar rights of stockholders. The Company has reserved from its duly authorized capital stock a number of shares of Common Stock for issuance of the Securities (including the Underlying Shares) at least equal to the Required Minimum on the date hereof.

(g) Capitalization. The number of shares and type of all authorized, issued and outstanding capital stock, options and other securities of the Company (whether or not presently convertible into or exercisable or exchangeable for shares of capital stock of the Company) are set forth in Schedule 3.1(g). All outstanding shares of capital stock are duly authorized, validly issued, fully paid and nonassessable and have been issued in compliance with all applicable securities laws. Except as disclosed in Schedule 3.1(g), there are no outstanding options, warrants, script rights to subscribe to, calls or commitments of any character whatsoever relating to, or securities, rights or obligations convertible into or exchangeable for, or giving any Person any right to subscribe for or acquire, any shares of Common Stock, or contracts, commitments, understandings or arrangements by which the Company or any Subsidiary is or

may become bound to issue additional shares of Common Stock, or securities or rights convertible into or exercisable or exchangeable for shares of Common Stock. Except as disclosed in Schedule 3.1(g), there are no anti-dilution or price adjustment provisions contained in any security issued by the Company (or in any agreement providing rights to security holders) and the issue and sale of the Securities (including the Underlying Shares) and Series C Preferred Stock will not obligate the Company to issue shares of Common Stock or other securities to any Person (other than the Purchasers) and will not result in a right of any holder of Company securities to adjust the exercise, conversion, exchange or reset price under such securities. To the knowledge of the Company, except as specifically disclosed in Schedule 3.1(g), no Person or group of related Persons beneficially owns (as determined pursuant to Rule 13d-3 under the Exchange Act), or has the right to acquire, by agreement with or by obligation binding upon the Company, beneficial ownership of in excess of 5% of the outstanding Common Stock, ignoring for such purposes any limitation on the number of shares of Common Stock that may be owned at any single time.

(h) SEC Reports; Financial Statements. The Company has filed all reports required to be filed by it under the Exchange Act, including pursuant to Section 13(a) or 15(d) thereof, for the two years preceding the date hereof (or such shorter period as the Company was required by law to file such material) (the foregoing materials being collectively referred to herein as the "SEC Reports" and, together with this Agreement and the Schedules to this Agreement, the "Disclosure Materials"). The Company has delivered to the Purchasers a copy of all SEC Reports filed within the 10 days preceding the date hereof. As of their respective dates, the SEC Reports complied in all material respects with the requirements of the Exchange Act and the rules and regulations of the Commission promulgated thereunder, and none of the SEC Reports, when filed, contained any untrue statement of a material fact or omitted to state a 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. The financial statements of the Company included in the SEC Reports complied in all material respects with applicable accounting requirements and the rules and regulations of the Commission with respect thereto as in effect at the time of filing. Such financial statements were prepared in accordance with United States generally accepted accounting principles applied on a consistent basis during the periods involved ("GAAP"), except as may be otherwise specified in such financial statements or the notes thereto, and fairly present in all material respects the financial position of the Company and its consolidated subsidiaries as of and for the dates thereof and the results of operations and cash flows for the periods then ended, subject, in the case of unaudited statements, to normal year-end audit adjustments and the absence of footnotes. All material agreements to which the Company or any Subsidiary is a party or to which the property or assets of the Company or any Subsidiary are subject have been included as part of or specifically identified in the SEC Reports to the extent required by the rules and regulations of the Commission.

(i) Material Changes. Since the date of the latest audited financial statements included within the SEC Reports, except as specifically disclosed in the SEC Reports, (i) there has been no event, occurrence or development that has had or that could reasonably be expected to result in a Material Adverse Effect, (ii) the Company has not incurred any material liabilities (contingent or otherwise) other than (A) trade payables and accrued expenses incurred in the ordinary course of business, (B) liabilities not required to be reflected in the Company's financial

statements pursuant to GAAP and (C) as set forth in the press release issued by the Company on January 23, 2002, (iii) the Company has not altered its method of accounting or the identity of its auditors, (iv) the Company has not declared or made any dividend or distribution of cash or other property to its stockholders or purchased, redeemed or made any agreements to purchase or redeem any shares of its capital stock (other than in connection with restricted stock grants to employees), and (v) the Company has not issued any equity securities to any officer, director or Affiliate, except pursuant to existing Company stock option plans.

(j) Litigation. There is no action, suit, inquiry, notice of violation, proceeding or investigation pending or, to the knowledge of the Company, threatened against or affecting the Company, any Subsidiary or any of their respective properties before or by any court, arbitrator, governmental or administrative agency or regulatory authority (federal, state, county, local or foreign) (collectively, an "Action") which (i) adversely affects or challenges the legality, validity or enforceability of any of the Transaction Documents, Series C Preferred Stock or the Securities or (ii) could, if there were an unfavorable decision, individually or in the aggregate, reasonably be expected to have or result in a Material Adverse Effect. Neither the Company nor any Subsidiary, nor any director or officer thereof, is or has been the subject of any Action involving a claim of violation of or liability under federal or state securities laws with respect to the Company or a Subsidiary or a claim of breach of fiduciary duty with respect to the Company or a Subsidiary. The Company does not have pending before the Commission any request for confidential treatment of information, and the Company does not expect to make any such request prior to the Required Effectiveness Date. There has not been, and to the knowledge of the Company, there is not pending or contemplated, any investigation by the Commission involving the Company or any current or former director or officer of the Company with respect to the Company or a Subsidiary. The SEC has not issued any stop order or other order suspending the effectiveness of any registration statement filed by the Company or any Subsidiary under the Exchange Act or the Securities Act. No strike, work stoppage, slow down or other material labor problem exists or, to the knowledge of the Company, is threatened or imminent with respect to any of the employees of the Company or the Subsidiaries.

(k) Compliance. Neither the Company nor any Subsidiary (i) is in default under or in violation of (and no event has occurred that has not been waived that, with notice or lapse of time or both, would result in a default by the Company or any Subsidiary under), nor has the Company or any Subsidiary received notice of a claim that it is in default under or that it is in violation of, any indenture, loan or credit agreement or any other agreement or instrument to which it is a party or by which it or any of its properties is bound (whether or not such default or violation has been waived), (ii) is in violation of any order of any court, arbitrator or governmental body, or (iii) is or has been in violation of any statute, rule or regulation of any governmental authority, including without limitation all foreign, federal, state and local laws relating to taxes, environmental protection, occupational health and safety, product quality and safety and employment and labor matters, except in each case as, individually or in the aggregate, are not reasonably likely to have or result in a Material Adverse Effect.

(l) Regulatory Permits. The Company and the Subsidiaries possess all certificates, authorizations and permits issued by the appropriate federal, state, local or foreign regulatory authorities necessary to conduct their respective businesses as described in the SEC Reports, except where the failure to possess such permits, individually or in the aggregate, are

not reasonably likely to have or result in a Material Adverse Effect ("Material Permits"), and neither the Company nor any Subsidiary has received any notice of proceedings relating to the revocation or modification of any Material Permit.

(m) Transactions With Affiliates and Employees. Except as set forth in SEC Reports filed at least ten days prior to the date hereof, none of the officers or directors of the Company is presently a party to any transaction with the Company or any Subsidiary (other than for services as employees, officers and directors), including any contract, agreement or other arrangement providing for the furnishing of services to or by, providing for rental of real or personal property to or from, or otherwise requiring payments to or from any officer or director or, to the knowledge of the Company, any entity in which any officer or director has a material interest.

(n) Internal Accounting Controls. The Company and the Subsidiaries maintain a system of internal accounting controls sufficient to provide reasonable assurance that (i) transactions are executed in accordance with management's general or specific authorizations, (ii) transactions are recorded as necessary to permit preparation of financial statements in conformity with generally accepted accounting principles and to maintain asset accountability, (iii) access to assets is permitted only in accordance with management's general or specific authorization, and (iv) the recorded accountability for assets is compared with the existing assets at reasonable intervals and appropriate action is taken with respect to any differences.

(o) Certain Fees. Except for the fees described in Schedule 3.1(o), all of which are payable to registered broker-dealers, no brokerage or finder's fees or commissions are or will be payable by the Company to any broker, financial advisor or consultant, finder, placement agent, investment banker, bank or other Person with respect to the transactions contemplated by this Agreement, and the Company has not taken any action that would cause any Purchaser to be liable for any such fees or commissions.

(p) Private Placement. Neither the Company nor any Person acting on the Company's behalf has sold or offered to sell or solicited any offer to buy the Securities by means of any form of general solicitation or advertising. Neither the Company nor any of its Affiliates nor any person acting on the Company's behalf has, directly or indirectly, at any time within the past six months, made any offer or sale of any security or solicitation of any offer to buy any security under circumstances that would (i) eliminate the availability of an exemption from registration under the Securities Act in connection with the offer and sale of the Securities as contemplated hereby or (ii) cause the offering of the Securities pursuant to the Transaction Documents to be integrated with prior offerings by the Company for purposes of any applicable law, regulation or shareholder approval provisions, including without limitation under the rules and regulations of any Trading Market. The Company is not, and is not an Affiliate of, an "investment company" within the meaning of the Investment Company Act of 1940, as amended. The Company is not a United States real property holding corporation within the meaning of the Foreign Investment in Real Property Tax Act of 1980. Neither the Company, nor any of its affiliates, nor any Person acting on its or their behalf, has paid or given, either directly or indirectly, any commission or other remuneration to any person for soliciting the exchange of the Series B-1 Preferred Stock for the Series B-I Preferred Stock or the exchange of the Series B-

2 Preferred Stock for the Series B-II Preferred Stock or for any other transaction contemplated by this Agreement.

(q) Form S-3 Eligibility. The Company has the ability to register its Common Stock for resale by the Purchasers under Form S-3 promulgated under the Securities Act.

(r) Listing and Maintenance Requirements. The Company has not, in the two years preceding the date hereof, received notice (written or oral) from any Trading Market on which the Common Stock is or has been listed or quoted to the effect that the Company is not in compliance with the listing or maintenance requirements of such Trading Market. The Company is, and has no reason to believe that it will not in the foreseeable future continue to be, in compliance with all such listing and maintenance requirements.

(s) Registration Rights. Except as described in Schedule 3.1(s), the Company has not granted or agreed to grant to any Person any rights (including "piggy-back" registration rights) to have any securities of the Company registered with the Commission or any other governmental authority that have not been satisfied.

(t) Application of Takeover Protections. The Company and its Board of Directors have taken all necessary action, if any, in order to render inapplicable any control share acquisition, business combination, poison pill (including any distribution under a rights agreement) or other similar anti-takeover provision under the Company's certificate of incorporation or the laws of its state of incorporation that is or could become applicable to the Purchasers as a result of the Purchasers and the Company fulfilling their obligations or exercising their rights under the Transaction Documents, including without limitation the Company's issuance of the Securities or Series C Preferred Stock and the Purchasers' ownership of the Securities or Series C Preferred Stock.

(u) Disclosure. The Company confirms that neither it nor any other Person acting on its behalf has provided any of the Purchasers or their agents or counsel with any information that constitutes or could reasonably be expected to constitute material, nonpublic information. The Company understands and confirms that each of the Purchasers will rely on the foregoing representations in effecting transactions in securities of the Company. The Company acknowledges and agrees that no Purchaser makes or has made any representations or warranties with respect to the transactions contemplated hereby other than those specifically set forth in Section 3.2.

(v) Acknowledgment Regarding Purchasers' Purchase of Securities. The Company acknowledges and agrees that each of the Purchasers is acting solely in the capacity of an arm's length purchaser with respect to this Agreement and the transactions contemplated hereby. The Company further acknowledges that no Purchaser is acting as a financial advisor or fiduciary of the Company (or in any similar capacity) with respect to this Agreement and the transactions contemplated hereby and any advice given by any Purchaser or any of their respective representatives or agents in connection with this Agreement and the transactions contemplated hereby is merely incidental to the Purchasers' purchase of the Securities. The Company further represents to each Purchaser that the Company's decision to enter into this

Agreement has been based solely on the independent evaluation of the Company and its representatives.

3.2 Representations and Warranties of the Purchasers. Each Purchaser hereby, as to itself only and for no other Purchaser, represents and warrants to the Company as follows:

(a) Organization; Authority. Such Purchaser is an entity duly organized, validly existing and in good standing under the laws of the jurisdiction of its organization with the requisite corporate or partnership power and authority to enter into and to consummate the transactions contemplated by the Transaction Documents and otherwise to carry out its obligations thereunder. The purchase by such Purchaser of the Securities hereunder has been duly authorized by all necessary action on the part of such Purchaser. Each of this Agreement and the Registration Rights Agreement has been duly executed by such Purchaser, and when delivered by such Purchaser in accordance with the terms hereof, will constitute the valid and legally binding obligation of such Purchaser, enforceable against it in accordance with its terms.

(b) Investment Intent. Such Purchaser is acquiring the Securities as principal for its own account for investment purposes only and not with a view to or for distributing or reselling such Securities or any part thereof, without prejudice, however, to such Purchaser's right, subject to the provisions of this Agreement and the Registration Rights Agreement, at all times to sell or otherwise dispose of all or any part of such Securities pursuant to an effective registration statement under the Securities Act or under an exemption from such registration and in compliance with applicable federal and state securities laws. Nothing contained herein shall be deemed a representation or warranty by such Purchaser to hold Securities for any period of time. Such Purchaser is acquiring the Securities hereunder in the ordinary course of its business. Such Purchaser does not have any agreement or understanding, directly or indirectly, with any Person to distribute any of the Securities.

(c) Purchaser Status. From the time such Purchaser was initially offered the Securities through the Third Closing Date, the Purchaser has been or will be, as the case may be, an "accredited investor" as defined in Rule 501(a) under the Securities Act.

(d) Experience of such Purchaser. Such Purchaser, either alone or together with its representatives, has such knowledge, sophistication and experience in business and financial matters so as to be capable of evaluating the merits and risks of the prospective investment in the Securities, and has so evaluated the merits and risks of such investment. Such Purchaser is able to bear the economic risk of an investment in the Securities and, at the present time, is able to afford a complete loss of such investment.

(e) Access to Information. Such Purchaser acknowledges that it has reviewed the Disclosure Materials and has been afforded: (i) the opportunity to ask such questions as it has deemed necessary of, and to receive answers from, representatives of the Company concerning the terms and conditions of the offering of the Securities and the merits and risks of investing in the Securities; (ii) access to information about the Company and the Subsidiaries and their respective financial condition sufficient to enable it to evaluate its investment; and (iii) the opportunity to obtain such additional information that the Company possesses or can acquire without unreasonable effort or expense that is necessary to make an informed investment

decision with respect to the investment. Neither such inquiries nor any other investigation conducted by or on behalf of such Purchaser or its representatives or counsel, nor any other provisions of this Section 3.2, shall modify, amend or affect such Purchaser's right to rely on the truth, accuracy and completeness of the Disclosure Materials and the Company's representations and warranties contained in the Transaction Documents. Such Purchaser does not have actual knowledge that any representation or warranty of the Company in the Transaction Documents is not accurate as of the date hereof.

(f) General Solicitation. Such Purchaser is not purchasing the Securities as a result of any advertisement, article, notice or other communication regarding the Securities published in any newspaper, magazine or similar media or broadcast over television or radio or presented at any seminar or any other general solicitation or general advertisement.

(g) Reliance. Such Purchaser understands and acknowledges that (i) the Securities are being offered and sold to it without registration under the Securities Act in a private placement that is exempt from the registration provisions of the Securities Act and (ii) the availability of such exemption depends in part on, and the Company will rely upon the accuracy and truthfulness of, the foregoing representations and such Purchaser hereby consents to such reliance.

ARTICLE IV OTHER AGREEMENTS OF THE PARTIES

4.1 Transfer Restrictions.

(a) Securities may only be disposed of pursuant to an effective registration statement under the Securities Act or pursuant to an available exemption from the registration requirements of the Securities Act, and in compliance with any applicable state securities laws. In connection with any transfer of Securities other than pursuant to an effective registration statement or to the Company or pursuant to Rule 144(k), except as otherwise set forth herein, the Company may require the transferor to provide to the Company an opinion of counsel selected by the transferor, the form and substance of which opinion shall be reasonably satisfactory to the Company, to the effect that such transfer does not require registration under the Securities Act. The Shares, the Warrants and the rights and obligations of each Purchaser under this Agreement may be assigned by such Purchaser only pursuant to a Qualified Transfer. Notwithstanding the foregoing, the Company hereby consents to and agrees to register on the books of the Company and with its transfer agent, without any such legal opinion, any transfer of Securities by a Purchaser to an Affiliate of such Purchaser, provided that the transferee certifies to the Company that it is an "accredited investor" as defined in Rule 501(a) under the Securities Act and is purchasing such Shares for investment only and not with a view to distributing or reselling such Securities and agrees in writing to be bound by the provisions of this Agreement.

(b) The Purchasers agree to the imprinting, so long as is required by this Section 4.1(b), of the following legend on any certificate evidencing Securities:

THESE SECURITIES HAVE NOT BEEN REGISTERED WITH THE SECURITIES AND
EXCHANGE COMMISSION OR THE SECURITIES

COMMISSION OF ANY STATE IN RELIANCE UPON AN EXEMPTION FROM REGISTRATION UNDER THE SECURITIES ACT OF 1933, AS AMENDED (THE "SECURITIES ACT"), AND, ACCORDINGLY, MAY NOT BE OFFERED OR SOLD EXCEPT PURSUANT TO AN EFFECTIVE REGISTRATION STATEMENT UNDER THE SECURITIES ACT OR PURSUANT TO AN AVAILABLE EXEMPTION FROM THE REGISTRATION REQUIREMENTS OF THE SECURITIES ACT AND IN COMPLIANCE WITH APPLICABLE STATE SECURITIES OR BLUE SKY LAWS. THESE SECURITIES AND THE SECURITIES ISSUABLE UPON EXERCISE OF THESE SECURITIES MAY BE PLEDGED IN CONNECTION WITH A BONA FIDE MARGIN ACCOUNT OR OTHER LOAN SECURED BY SUCH SECURITIES.

Certificates evidencing Securities shall not be required to contain such legend or any other legend (i) pursuant to or following any sale of such Securities pursuant to an effective Registration Statement covering the resale of such Securities under the Securities Act, (ii) following any sale of such Securities pursuant to Rule 144, (iii) if such Securities are eligible for sale under Rule 144(k), or (iv) if such legend is not, in the reasonable opinion of the Company Counsel, required under the circumstances under applicable requirements of the Securities Act (including judicial interpretations and pronouncements issued by the Staff of the Commission). Following the Effective Date or at such earlier time as a legend is no longer required for certain Securities, the Company will, no later than three Trading Days following the delivery by a Purchaser to the Company or the Company's transfer agent of a legended certificate representing such Securities, deliver or cause to be delivered to such Purchaser a certificate representing such Securities that is free from all restrictive and other legends. In addition, each certificate for the Shares shall bear the following legend: "THE NUMBER OF PREFERRED SHARES REPRESENTED BY THIS CERTIFICATE MAY BE LESS THAN THE NUMBER OF PREFERRED SHARES STATED ON THE FACE HEREOF PURSUANT TO SECTION 8(c) OF THE CERTIFICATE OF DESIGNATIONS RELATING TO THE PREFERRED SHARES REPRESENTED BY THIS CERTIFICATE." The Company may not make any notation on its records or give instructions to any transfer agent of the Company that enlarge the restrictions on transfer set forth in this Section, except as may be required by applicable law.

(c) The Company acknowledges and agrees that a Purchaser may from time to time pledge pursuant to a bona fide margin agreement or grant a security interest in some or all of the Securities and, if required under the terms of such arrangement, such Purchaser may transfer pledged or secured Securities to the pledgees or secured parties. Such a pledge or transfer would not be subject to approval of the Company and no legal opinion of the pledgee, secured party or pledgor shall be required in connection therewith except as required by applicable law. Further, no notice shall be required of such pledge. At the appropriate Purchaser's expense, the Company will execute and deliver such reasonable documentation as a pledgee or secured party of Securities may reasonably request in connection with a pledge or transfer of the Securities, including the preparation and filing of any required prospectus

supplement under Rule 424(b)(3) of the Securities Act or other applicable provision of the Securities Act to appropriately amend the list of Selling Stockholders thereunder.

(d) In addition to any other rights available to a Purchaser, if the Company fails to deliver to such Purchaser a certificate representing Common Stock by the third Trading Day after the date on which delivery of such certificate is required by any Transaction Document, and if after such third Trading Day such Purchaser purchases (in an open market transaction or otherwise) shares of Common Stock to deliver in satisfaction of a sale by such Purchaser of the shares that the Purchaser anticipated receiving from the Company (a "Buy-In"), then the Company shall, within three Trading Days after such Purchaser's request and in such Purchaser's discretion, either (i) pay cash to such Purchaser in an amount equal to such Purchaser's total purchase price (including brokerage commissions, if any) for the shares of Common Stock so purchased (the "Buy-In Price"), at which point the Company's obligation to deliver such certificate (and to issue such Common Stock) shall terminate and the Purchaser shall have been deemed to have tendered the Securities to which the Underlying Securities relate to the Company for cancellation and shall do so promptly after the occurrence of such event, or (ii) promptly honor its obligation to deliver to such Purchaser a certificate or certificates representing such Common Stock and pay cash to such Purchaser in an amount equal to the excess (if any) of the Buy-In Price over the product of (A) such number of shares of Common Stock, times (B) the Closing Price on the date of the event giving rise to the Company's obligation to deliver such certificate.

4.2 Acknowledgment of Dilution. The Company acknowledges that the issuance of the Securities (including the Underlying Shares) will result in dilution of the outstanding shares of Common Stock, which dilution may be substantial under certain market conditions. The Company further acknowledges that, subject to the satisfaction by the Purchasers of their obligations under the Transaction Documents, the Company's obligations under the Transaction Documents, including without limitation its obligation to issue the Securities (including the Underlying Shares) pursuant to the Transaction Documents, are unconditional and absolute and not subject to any right of set off, counterclaim, delay or reduction, regardless of the effect of any such dilution or any claim that the Company may have against any Purchaser.

4.3 Furnishing of Information. As long as any Purchaser owns Securities, the Company covenants to timely file (or obtain extensions in respect thereof and file within the applicable grace period) all reports required to be filed by the Company after the date hereof pursuant to the Exchange Act. As long as any Purchaser owns Securities, if the Company is not required to file reports pursuant to such laws, it will prepare and furnish to the Purchasers and make publicly available in accordance with paragraph (c) of Rule 144 such information as is required for the Purchasers to sell the Securities under Rule 144. The Company further covenants that it will take such further action as any holder of Securities may reasonably request to satisfy the provisions of Rule 144 applicable to the issuer of securities relating to transactions for the sale of securities pursuant to Rule 144.

4.4 Integration. The Company shall not, and shall use its best efforts to ensure that no Affiliate of the Company shall, sell, offer for sale or solicit offers to buy or otherwise negotiate in respect of any security (as defined in Section 2 of the Securities Act) that would be integrated with the offer or sale of the Securities in a manner that would require the registration under the

Securities Act of the sale of the Securities to the Purchasers, or that would be integrated with the offer or sale of the Securities for purposes of the rules and regulations of any Trading Market.

4.5 Reservation and Listing of Securities.

(a) The Company shall reserve for issuance and maintain a reserve of 6,401,394 shares of Common Stock for issuance pursuant to the Transaction Documents less any shares of Common Stock issued upon conversion of the Shares, as dividends on the Shares, upon exercise of the Warrants or upon a redemption of the Shares or, if smaller, a sufficient number of authorized but unissued and otherwise unreserved shares of Common Stock available to issue Underlying Shares upon any exercise of the Warrants or any conversion of Shares.

(b) If, on any date, the number of authorized but unissued (and otherwise unreserved) shares of Common Stock (the "Remaining Authorized Shares") is less than 125% of (i) the Actual Minimum on such date, minus (ii) the number of shares of Common Stock previously issued pursuant to the Transaction Documents, then the Board of Directors of the Company shall use its best efforts to amend the Company's certificate of incorporation to increase the number of authorized but unissued shares of Common Stock to at least the Required Minimum at such time (minus the number of shares of Common Stock previously issued pursuant to the Transaction Documents), as soon as possible and in any event not later than the 60th day after such date; provided that the Company will not be required at any time to authorize a number of shares of Common Stock greater than the maximum remaining number of shares of Common Stock that could possibly be issued after such time pursuant to the Transaction Documents.

(c) If, at the time any Purchaser requests an exercise or conversion of any Securities, the Actual Minimum minus the number of shares of Common Stock previously issued pursuant to the Transaction Documents exceeds the Remaining Authorized Shares, then the Company shall issue to the Purchaser requesting such exercise or conversion a number of Underlying Shares not exceeding such Purchaser's pro-rata portion of the Remaining Authorized Shares (based on such Purchaser's share of the aggregate purchase price paid hereunder and considering any Underlying Shares previously issued to such Purchaser), and the remainder of the Underlying Shares issuable in connection with such exercise or conversion (if any) shall constitute "Excess Shares" pursuant to Section 4.5(g) below.

(d) The Company shall (i) in the time and manner required by each Trading Market, prepare and file with such Trading Market an additional shares listing application covering a number of shares of Common Stock at least equal to the greater of (A) the Required Minimum on the applicable Closing Date and (B) the Required Minimum on the date of such application, (ii) take all steps necessary to cause such shares of Common Stock to be approved for listing on each Trading Market as soon as possible thereafter, (iii) provide to the Purchasers evidence of such listing, and (iv) maintain the listing of such Common Stock on each such Trading Market or another Eligible Market.

(e) If, on any date, the number of shares of Common Stock previously listed on a Trading Market is less than 125% of the Actual Minimum on such date, then the Company shall take the necessary actions to list on such Trading Market, as soon as reasonably possible, a

number of shares of Common Stock at least equal to the Required Minimum on such date; provided that the Company will not be required at any time to list a number of shares of Common Stock greater than the maximum number of shares of Common Stock that could possibly be issued pursuant to the Transaction Documents.

(f) If the Trading Market is the Nasdaq National Market or the Nasdaq SmallCap Market, then the maximum number of shares of Common Stock that the Company may issue pursuant to the Transaction Documents at an effective purchase price less than the Closing Price on the Trading Day immediately preceding the date of the First Closing shall be 6,401,394 shares (the "Issuable Maximum"), unless the Company obtains shareholder approval in accordance with the rules and regulations of such Trading Market. If, at the time any Purchaser requests an exercise or conversion of any Securities, the Actual Minimum (excluding any shares issued or issuable at an effective purchase price in excess of the Closing Price on the Trading Day immediately preceding the date of the First Closing) exceeds the Issuable Maximum (and if the Company has not have previously obtained the required shareholder approval), then the Company shall issue to the Purchaser requesting such exercise or conversion a number of Underlying Shares of Common Stock not exceeding such Purchaser's pro-rata portion of the Issuable Maximum (based on such Purchaser's share of the aggregate purchase price paid hereunder and considering any Underlying Shares previously issued to such Purchaser), and the remainder of the Underlying Shares issuable in connection with such exercise or conversion (if any) shall constitute "Excess Shares" pursuant to Section 4.5(g) below.

(g) Any Purchaser to which Excess Shares are attributed based on the number of Remaining Authorized Shares or the Issuable Maximum shall have the option, by notice to the Company, to require the Company to either: (i) use its best efforts to obtain the required shareholder approval necessary to permit the issuance of such Excess Shares as soon as is possible, but in any event not later than the 60th day after such notice, or (ii) within five Trading Days after such notice, pay to such Purchaser, as liquidated damages and not as a penalty, in cash or in Series C Preferred Stock, at the option of the Company, an amount equal to the number of Excess Shares times the average Closing Price over the five Trading Days immediately prior to the date of such notice less the exercise price thereof in the case of any Underlying Shares issuable upon exercise of the Warrants (the "Damages Amount") and the Company shall have no further obligation to issue or deliver such Excess Shares and the Purchaser shall have been deemed to have tendered the Securities to which the Underlying Securities related to the Company for cancellation and shall do so promptly after the occurrence of such event. If the exercising or converting Purchaser elects the first option under the preceding sentence and the Company fails to obtain the required shareholder approval on or prior to the 60th day after such notice, then within three Trading Days after such 60th day, the Company shall pay the Damages Amount to such Purchaser, as liquidated damages and not as penalty, and the Company shall have no further obligation to issue or deliver such Excess Shares. In the event that the Company elects to pay the Damages Amount in shares of Series C Preferred Stock, the number of shares of Series C Preferred Stock to be issued to the Purchaser in payment of the Damages Amount shall be determined by dividing the total Damages Amount then payable to such Purchaser with respect to all of the Excess Shares then allocated to such Purchaser by \$10,000 (the initial Stated Value per share of the Series C Preferred Stock) and rounding downward to the nearest whole number of shares of Series C Preferred Stock. In addition, the Company shall pay to the Purchaser in cash the amount, if any, by which the Damages Amount payable to such Holder

exceeds the aggregate Stated Value of the Series C Preferred Stock issued pursuant to the preceding sentence. If the total Damages Amount then payable to the Purchaser is less than \$10,000, then the Company shall pay such amount to such Purchaser entirely in cash.

4.6 Conversion and Exercise Procedures. The form of Election to Purchase included in the Warrants and the form of Conversion Notice included in the Series B Certificate of Designations set forth the totality of the procedures required in order to exercise the Warrants or convert the Shares under the Transaction Documents on or after the date of this Agreement. No additional legal opinion or other information or instructions shall be necessary to enable the Purchasers to exercise their Warrants or convert their Shares except as may be required by law. The Company shall honor exercises of the Warrants and conversions of the Shares and shall deliver Underlying Shares in accordance with the terms, conditions and time periods set forth in the Transaction Documents.

4.7 Subsequent Placements.

(a) Until the second anniversary of the Third Closing Date, the Company will not, directly or indirectly, offer, sell, grant any option to purchase, or otherwise dispose of (or announce any offer, sale, grant or any option to purchase or other disposition of) any of its or the Subsidiaries' equity or equity equivalent securities, including without limitation any debt, preferred stock or other instrument or security that is, at any time during its life and under any circumstances, convertible into or exercisable or exchangeable for Common Stock (any such offer, sale, grant, disposition or announcement being referred to as a "Subsequent Placement") unless the Company shall have first complied with this Section 4.7(a).

(i) The Company shall deliver to each Purchaser a written notice (the "Offer") of any proposed or intended issuance or sale or exchange of the securities being offered (the "Offered Securities") in a Subsequent Placement, which Offer shall (w) identify and describe the Offered Securities, (x) describe the price and other terms upon which they are to be issued, sold or exchanged, and the number or amount of the Offered Securities to be issued, sold or exchanged, (y) identify the persons or entities (if known) to which or with which the Offered Securities are to be offered, issued, sold or exchanged and (z) offer to issue and sell to or exchange with the Purchasers fifty percent (50%) of the Offered Securities (the "Purchaser Allocation"), allocated among the Purchasers (A) first, based on each Purchaser's pro rata portion of the aggregate purchase price paid by the Purchasers for all of the Securities purchased hereunder (the "Basic Amount"), and (B) with respect to each Purchaser that elects to purchase its Basic Amount, based upon any additional portion of the Offered Securities attributable to the Basic Amounts of other Purchasers as such Purchaser shall indicate it will purchase or acquire should the other Purchasers subscribe for less than their Basic Amounts (the "Undersubscription Amount").

(ii) To accept an Offer, in whole or in part, a Purchaser must deliver a written notice to the Company prior to the end of the ten (10) Trading Day period of the Offer, setting forth the portion of the Purchaser's Basic Amount that such Purchaser elects to purchase and, if such Purchaser shall elect to purchase all of its Basic Amount, the Undersubscription Amount, if any, that such Purchaser elects to purchase (in either

case, the "Notice of Acceptance"). If the Basic Amounts subscribed for by all Purchasers are less than the total of all of the Basic Amounts, then each Purchaser who has set forth an Undersubscription Amount in its Notice of Acceptance shall be entitled to purchase, in addition to the Basic Amounts subscribed for, the Undersubscription Amount it has subscribed for; provided, however, that if the Undersubscription Amounts subscribed for exceed the difference between the total of all the Basic Amounts and the Basic Amounts subscribed for (the "Available Undersubscription Amount"), each Purchaser who has subscribed for any Undersubscription Amount shall be entitled to purchase on that portion of the Available Undersubscription Amount as the Basic Amount of such Purchaser bears to the total Basic Amounts of all Purchasers that have subscribed for Undersubscription Amounts, subject to rounding by the Board of Directors to the extent it deems reasonably necessary. If the Purchasers in the aggregate have not agreed to purchase the full Purchaser Allocation, none of the Purchasers shall be entitled to purchase any of the Offered Securities, provided the Offered Securities are sold as described in the following clause (iii).

(iii) The Company shall have ten (10) Trading Days from the expiration of the period set forth in Section 4.7(a)(ii) above to issue, sell or exchange (A) fifty percent (50%) of the Offered Securities, if the Purchasers in the aggregate have agreed to purchase the full Purchaser Allocation, or (B) all of the Offered Securities, if the Purchasers in the aggregate have not agreed to purchase the full Purchaser Allocation (the Offered Securities so available for issuance, sale or exchange to persons other than the Purchasers being referred to herein as the "Available Securities"), provided that the Available Securities are issued, sold or exchanged only to the offerees described in the Offer (if so described therein) and only upon terms and conditions (including, without limitation, unit prices and interest rates) that are not more favorable to the acquiring person or persons or less favorable to the Company than those set forth in the Offer.

(iv) In the event the Company shall propose to sell less than all the Available Securities (any such sale to be in the manner and on the terms specified in Section 4.7(a)(iii) above), then each Purchaser shall be deemed to reduce the number or amount of the Offered Securities specified in its Notice of Acceptance to an amount that shall be not less than the number or amount of the Offered Securities that the Purchaser elected to purchase pursuant to Section 4.7(a)(ii) above multiplied by a fraction, (i) the numerator of which shall be the number or amount of Offered Securities the Company actually proposes to issue, sell or exchange (including Offered Securities to be issued or sold to Purchasers pursuant to Section 4.7(a)(ii) above prior to such reduction) and (ii) the denominator of which shall be the original amount of the Offered Securities. The Company may not issue, sell or exchange more than the reduced number or amount of the Offered Securities unless and until such Offered Securities have again been offered to the Purchasers in accordance with Section 4.7(a)(i) above.

(v) Upon the closing of the issuance, sale or exchange of all or less than all of the Available Securities, the Purchasers shall acquire from the Company, and the Company shall issue to the Purchasers, the number or amount of Offered Securities specified in the Notices of Acceptance, as reduced pursuant to Section 4.7(a)(iv) above, upon the terms and conditions specified in the Offer. The purchase by the Purchasers of

any Offered Securities is subject in all cases to the preparation, execution and delivery by the Company and the Purchasers of a purchase agreement relating to such Offered Securities reasonably satisfactory in form and substance to the Purchasers and their respective counsel.

(vi) Any Offered Securities not acquired by the Purchasers or other persons in accordance with Section 4.7(a)(iii) above may not be issued, sold or exchanged until they are again offered to the Purchasers under the procedures specified in this Agreement.

(b) The restrictions contained in paragraph (a) of this Section shall not apply to the issuance of Excluded Stock.

4.8 Securities Laws Disclosure; Publicity. The Company shall, on the First Closing Date, issue a press release acceptable to the Purchasers disclosing all material terms of the transactions contemplated hereby. The Company shall, within one Trading Day after the Third Closing Date, file a Current Report on Form 8-K with respect to the transactions effected at the Third Closing. Thereafter, the Company shall timely file any filings and notices required by the Commission or applicable law with respect to the transactions contemplated hereby and provide copies thereof to the Purchasers promptly after filing. The Company shall, at least two Trading Days prior to the filing or dissemination of any disclosure required by this paragraph, provide a copy thereof to the Purchasers for their review, except that with respect to the Current Report on Form 8-K contemplated by the second sentence of this Section 4.8, the Company shall provide such copy thereof to the Purchasers for their review by no later than noon, Eastern Standard Time, on the first Trading Day following the Third Closing Date. The Company and the Purchasers shall consult with each other in issuing any press releases or otherwise making public statements or filings and other communications with the Commission or any regulatory agency or Trading Market with respect to the transactions contemplated hereby, and neither party shall issue any such press release or otherwise make any such public statement, filing or other communication without the prior consent of the other (which consent shall not be unreasonably withheld), except if such disclosure is required by law, in which case the disclosing party shall promptly provide the other party with prior notice of such public statement, filing or other communication. Notwithstanding the foregoing, the Company shall not publicly disclose the name of any Purchaser, or include the name of any Purchaser in any filing with the Commission or any regulatory agency or Trading Market, without the prior written consent of such Purchaser, except to the extent such disclosure (but not any disclosure as to the controlling Persons thereof) is required by law or Trading Market regulations, in which case the Company shall provide the Purchasers with prior notice of such disclosure. Neither the Company nor any Person acting on its behalf will provide any Purchaser with material, nonpublic information about the Company unless such Purchaser consents to receive such information in writing in advance even if otherwise required pursuant to the terms of any Transaction Document.

4.9 Repurchase Upon Occurrence of a Bankruptcy Event. Upon the occurrence of any Bankruptcy Event, the Company shall immediately be obligated, without any further action by any Purchaser, to repurchase all outstanding shares of Series B Preferred Stock and all such Underlying Shares at the Event Price as if each Holder had delivered an Event Notice immediately prior to the occurrence of such Bankruptcy Event pursuant to Section 10 of the

Series B Certificate of Designations. Such repurchase price shall be payable in cash, provided that if the Bankruptcy Event occurs as a result of an event set forth in clause (b), (c) or (d) of the definition of "Bankruptcy Event" set forth herein, then the Company, at its option, may instead pay the repurchase price in shares of Series C Preferred Stock. In the event that the Company elects to pay the repurchase price in shares of Series C Preferred Stock, the number of such shares shall be determined in the manner described in the final two sentences of Section 4.5(g).

4.10 Reimbursement.

(a) The Company shall indemnify and hold harmless each Purchaser and any of its Affiliates or any officer, director, partner, controlling person, employee or agent of a Purchaser or any of its Affiliates (a "Related Person") from and against any and all Losses, as incurred, arising out of or relating to any breach by the Company of any of the representations, warranties or covenants made by the Company in this Agreement or any other Transaction Document, or any allegation by a third party that, if true, would constitute such a breach. The conduct of any Proceedings for which indemnification is available under this paragraph shall be governed by Section 5(c) of the Registration Rights Agreement. The indemnification obligations of the Company under this paragraph shall be in addition to any liability that the Company may otherwise have and shall be binding upon and inure to the benefit of any successors, assigns, heirs and personal representatives of the Purchasers and any such Related Persons. In no event shall the Company's liability under this Section 4.10(a) to a Purchaser or its Related Persons exceed the total purchase price paid by the Purchaser under this Agreement. If the Company breaches its obligations under any Transaction Document, then, in addition to any other liabilities the Company may have under any Transaction Document or applicable law, the Company shall pay or reimburse the Purchasers on demand for all costs of collection and enforcement (including reasonable attorney's fees and expenses). Without limiting the generality of the foregoing, the Company specifically agrees to reimburse the Purchasers on demand for all costs of enforcing the indemnification obligations in this paragraph.

(b) Each Purchaser shall severally indemnify and hold harmless the Company from and against any and all Losses, as incurred, arising out of or relating to any breach by such Purchaser of any of the representations, warranties or covenants made by such Purchaser in this Agreement or any other Transaction Document, or any allegation by a third party that, if true, would constitute such a breach. The conduct of any Proceedings for which indemnification is available under this paragraph shall be governed by Section 5(c) of the Registration Rights Agreement. The indemnification obligations of such Purchaser under this paragraph shall be in addition to any liability that such Purchaser may otherwise have and shall be binding upon and inure to the benefit of any successors, assigns, heirs and personal representatives of the Company. In no event shall a Purchaser's liability under this Section 4.10(b) to the Company exceed the total purchase price paid by such Purchaser under this Agreement. If such Purchaser breaches its obligations under any Transaction Document, then, in addition to any other liabilities such Purchaser may have under any Transaction Document or applicable law, such Purchaser shall pay or reimburse the Company on demand for all costs of collection and enforcement (including reasonable attorney's fees and expenses). Without limiting the generality of the foregoing, such Purchaser specifically agrees to reimburse the Company on demand for all costs of enforcing the indemnification obligations in this paragraph.

4.11 Default Interest. If the Company fails to make any cash payment required by any Transaction Document in full when due, then the Company shall pay interest thereon at a rate of 12% per annum (or such lesser maximum rate that is permitted to be paid under applicable law) from the date such payment was due until such amount, plus all such interest thereon, is paid in full.

4.12 Rights of Shareholders. Each time the Company delivers a notice or other communication to holders of the Common Stock it will contemporaneously deliver a copy of such notice or communication to the Purchasers. The Company acknowledges and agrees that, for so long as a Purchaser holds any Shares (whether or not such Purchaser holds shares of Common Stock), (a) the officers and directors of the Company will owe the same duties (fiduciary and otherwise) to such Purchaser with respect to the Shares owned by such Purchaser as are owed to a holder of Common Stock and (b) such Purchaser will be entitled to all rights and remedies with respect to such duties with respect to the Shares owned by such Purchaser as are available to a holder of Common Stock under the corporate law of the Company's jurisdiction of incorporation.

4.13 Shareholders Rights Plan. In the event that a shareholders rights plan is adopted by the Company, no claim will be made or enforced by the Company or any other Person that any Purchaser is an "Acquiring Person" under any such plan or in any way could be deemed to trigger the provisions of such plan by virtue of receiving Securities under the Transaction Documents.

4.14 Certain Trading Limitations. For so long as a Purchaser or its Affiliates hold the Shares originally purchased by it under this Agreement such Purchaser agrees that it will not enter into any Short Sales. For purposes of this Section 4.14, a "Short Sale" by a Purchaser means to sell, contract to sell, grant any option to purchase, or make any short sale of Common Stock, establish a "put equivalent position" (as such term is defined in Rule 16a-1(h) under the Exchange Act) or engage in any transaction the result of which will involve any of the foregoing, at a time when such Purchaser has no equivalent offsetting long position in the Common Stock. For purposes of determining whether a Purchaser has an equivalent offsetting long position in the Common Stock, all Common Stock held by such Purchaser, all Underlying Shares that would be issuable upon conversion or exercise in full of all Securities then held by such Purchaser (assuming that such Securities were then fully convertible or exercisable, notwithstanding any provisions to the contrary, and giving effect to any conversion or exercise price adjustments scheduled to take effect in the future) and all shares of Common Stock issuable upon exercise of any call option or "call equivalent position" (as defined in Rule 16a-1(b) under the Exchange Act) held by such Purchaser (assuming that such call position was then fully convertible or exercisable, notwithstanding any provisions to the contrary, and giving effect to any conversion or exercise price adjustments scheduled to take effect in the future) shall be deemed to be held long by such Purchaser.

4.15 Limitation on Issuance and Amendment of Series C Preferred Stock. Notwithstanding anything set forth in the Transaction Documents to the contrary, in the event the Company issues 60,000 shares of Series C Preferred Stock in accordance with one or more provisions of the Transaction Documents, such issuance shall be deemed to satisfy in full all obligations of the Company with respect to each and all of such provisions and no additional

cash, other securities, or other damages, amounts or consideration shall be payable thereunder. The Company shall not issue any shares of Series C Preferred Stock except to a holder of Securities in accordance with the provisions of the Transaction Documents. The affirmative vote of the holders of a majority of the outstanding shares of Series B Preferred Stock shall be required for any amendment, modification or repeal of the Series C Certificate of Designations.

4.16 Certificate of Elimination. As promptly as practicable after the Third Closing, the Company may file an appropriate certificate to effectively eliminate all matters set forth in the Initial Series B Certificate of Designations.

4.17 Rule 144. The Company shall not, directly or indirectly, dispute or otherwise interfere with any claim by a holder of Series B-I Preferred Stock or Series B-II Preferred Stock issued in exchange for Series B-1 Preferred Stock or Series B-2 Preferred Stock, respectively, that such holder's holding period of such Series B-I Preferred Stock or Series B-II Preferred Stock for purposes of Rule 144 promulgated under the Securities Act (or a successor rule thereto) ("Rule 144") relates back (i.e., tacks) to the holding period for the Series B-1 Preferred Stock and the Series B-2 Preferred Stock, respectively.

ARTICLE V CONDITIONS

5.1 Conditions Precedent to the Obligations of the Purchasers. The obligation of each Purchaser to acquire or exchange Securities at the applicable Closing is subject to the satisfaction or waiver by such Purchaser, at or before such Closing, of each of the following conditions:

(a) Representations and Warranties. The representations and warranties of the Company contained herein shall be true and correct in all material respects as of the date when made and as of the applicable Closing as though made on and as of such date except for those representations and warranties made as of a specific date which shall be true and correct in all material respects as of such date;

(b) Performance. The Company and each other Purchaser shall have performed, satisfied and complied in all material respects with all covenants, agreements and conditions required by the Transaction Documents to be performed, satisfied or complied with by it at or prior to the applicable Closing;

(c) No Injunction. No statute, rule, regulation, executive order, decree, ruling or injunction shall have been enacted, entered, promulgated or endorsed by any court or governmental authority of competent jurisdiction that prohibits the consummation of any of the transactions contemplated by the Transaction Documents;

(d) No Suspensions of Trading in Common Stock; Listing. Trading in the Common Stock shall not have been suspended by the Commission or any Trading Market (except for any suspensions of trading of not more than one Trading Day solely to permit dissemination of material information regarding the Company) at any time since the date of execution of this Agreement, and the Common Stock shall have been at all times since such date listed for trading on an Eligible Market; and

(e) Adverse Changes. Since the date of execution of this Agreement, no event or series of events shall have occurred that reasonably could be expected to have or result in a Material Adverse Effect.

5.2 Conditions Precedent to the Obligations of the Company. The obligation of the Company to sell or exchange Securities at the applicable Closing is subject to the satisfaction or waiver by the Company, at or before such Closing, of each of the following conditions:

(a) Representations and Warranties. The representations and warranties of the Purchasers contained herein shall be true and correct in all material respects as of the date when made and as of each Closing Date as though made on and as of such date;

(b) Performance. The Purchasers shall have performed, satisfied and complied in all material respects with all covenants, agreements and conditions required by the Transaction Documents to be performed, satisfied or complied with by the Purchasers at or prior to the applicable Closing; and

(c) No Injunction. No statute, rule, regulation, executive order, decree, ruling or injunction shall have been enacted, entered, promulgated or endorsed by any court or governmental authority of competent jurisdiction that prohibits the consummation of any of the transactions contemplated by the Transaction Documents.

ARTICLE VI MISCELLANEOUS

6.1 Termination. This Agreement may be terminated by the Company or any Purchaser, by written notice to the other parties, if the First Closing has not been consummated by the third business day following the date of this Agreement; provided that no such termination will affect the right of any party to sue for any breach by the other party (or parties).

6.2 Fees and Expenses. At the First Closing, the Company shall pay to Pine Ridge Financial, Inc., the reasonable legal fees and expenses incurred by the Purchasers in connection with the preparation and negotiation of the Transaction Documents up to \$50,000 in the aggregate. In lieu of the foregoing payments, the Pine Ridge Financial, Inc. may retain the amount of such payments instead of delivering such amounts to the Company at the First Closing or require the Company to pay such amounts directly to Purchaser Counsel. Except as expressly set forth in the Transaction Documents to the contrary, each party shall pay the fees and expenses of its advisers, counsel, accountants and other experts, if any, and all other expenses incurred by such party incident to the negotiation, preparation, execution, delivery and performance of this Agreement. The Company shall pay all transfer agent fees, stamp taxes and other taxes and duties levied in connection with the issuance of any Securities and any and all costs and expenses relating to compliance with the Company's obligations under Section 4.5.

6.3 Entire Agreement. The Transaction Documents, together with the Exhibits and Schedules thereto, contain the entire understanding of the parties with respect to the subject matter hereof and supersede all prior agreements and understandings, oral or written, with respect to such matters, which the parties acknowledge have been merged into such documents, exhibits and schedules. At or after the First Closing, and without further consideration, the

Company will execute and deliver to the Purchasers such further documents as may be reasonably requested in order to give practical effect to the intention of the parties under the Transaction Documents.

6.4 Notices. Any and all notices or other communications or deliveries required or permitted to be provided hereunder shall be in writing and shall be deemed given and effective on the earliest of (a) the date of transmission, if such notice or communication is delivered via facsimile at the facsimile number specified in this Section prior to 5:30 p.m. (New York City time) on a Trading Day, (b) the next Trading Day after the date of transmission, if such notice or communication is delivered via facsimile at the facsimile number specified in this Section on a day that is not a Trading Day or later than 5:30 p.m. (New York City time) on any Trading Day, (c) the Trading Day following the date of mailing, if sent by U.S. nationally recognized overnight courier service, or (d) upon actual receipt by the party to whom such notice is required to be given. The addresses for such notices and communications are those set forth on the signature pages hereof, or such other address as may be designated in writing hereafter, in the same manner, by such Person.

6.5 Amendments; Waivers. No provision of this Agreement may be waived or amended except in a written instrument signed by the Company and holders of at least a majority of the shares of Common Stock issued or issuable upon conversion of the Shares. No waiver of any default with respect to any provision, condition or requirement of this Agreement shall be deemed to be a continuing waiver in the future or a waiver of any subsequent default or a waiver of any other provision, condition or requirement hereof, nor shall any delay or omission of either party to exercise any right hereunder in any manner impair the exercise of any such right.

6.6 Construction. The headings herein are for convenience only, do not constitute a part of this Agreement and shall not be deemed to limit or affect any of the provisions hereof. The language used in this Agreement will be deemed to be the language chosen by the parties to express their mutual intent, and no rules of strict construction will be applied against any party.

6.7 Successors and Assigns. This Agreement shall be binding upon and inure to the benefit of the parties and their successors and permitted assigns. The Company may not assign this Agreement or any rights or obligations hereunder without the prior written consent of the Purchasers. Any Purchaser may only assign its rights under this Agreement and the Registration Rights Agreement pursuant to a Qualified Transfer.

6.8 No Third-Party Beneficiaries. This Agreement is intended for the benefit of the parties hereto and their respective successors and permitted assigns and is not for the benefit of, nor may any provision hereof be enforced by, any other Person, except that each Related Person is an intended third party beneficiary of Section 4.10 and may enforce the provisions of such Section directly against the Company.

6.9 Governing Law; Venue; Waiver Of Jury Trial. THE CORPORATE LAWS OF THE STATE OF DELAWARE SHALL GOVERN ALL ISSUES CONCERNING THE RELATIVE RIGHTS OF THE COMPANY AND ITS STOCKHOLDERS. ALL QUESTIONS CONCERNING THE CONSTRUCTION, VALIDITY, ENFORCEMENT AND INTERPRETATION OF THIS AGREEMENT SHALL BE GOVERNED BY AND

CONSTRUED AND ENFORCED IN ACCORDANCE WITH THE LAWS OF THE STATE OF NEW YORK. EACH PARTY HEREBY IRREVOCABLY SUBMITS TO THE EXCLUSIVE JURISDICTION OF THE STATE AND FEDERAL COURTS SITTING IN THE CITY OF NEW YORK, BOROUGH OF MANHATTAN, FOR THE ADJUDICATION OF ANY DISPUTE HEREUNDER OR IN CONNECTION HERewith OR WITH ANY TRANSACTION CONTEMPLATED HEREBY OR DISCUSSED HEREIN (INCLUDING WITH RESPECT TO THE ENFORCEMENT OF ANY OF THE TRANSACTION DOCUMENTS), AND HEREBY IRREVOCABLY WAIVES, AND AGREES NOT TO ASSERT IN ANY SUIT, ACTION OR PROCEEDING, ANY CLAIM THAT IT IS NOT PERSONALLY SUBJECT TO THE JURISDICTION OF ANY SUCH COURT, THAT SUCH SUIT, ACTION OR PROCEEDING IS IMPROPER. EACH PARTY HEREBY IRREVOCABLY WAIVES PERSONAL SERVICE OF PROCESS AND CONSENTS TO PROCESS BEING SERVED IN ANY SUCH SUIT, ACTION OR PROCEEDING BY MAILING A COPY THEREOF VIA REGISTERED OR CERTIFIED MAIL OR OVERNIGHT DELIVERY (WITH EVIDENCE OF DELIVERY) TO SUCH PARTY AT THE ADDRESS IN EFFECT FOR NOTICES TO IT UNDER THIS AGREEMENT AND AGREES THAT SUCH SERVICE SHALL CONSTITUTE GOOD AND SUFFICIENT SERVICE OF PROCESS AND NOTICE THEREOF. NOTHING CONTAINED HEREIN SHALL BE DEEMED TO LIMIT IN ANY WAY ANY RIGHT TO SERVE PROCESS IN ANY MANNER PERMITTED BY LAW. THE COMPANY HEREBY WAIVES ALL RIGHTS TO A TRIAL BY JURY.

6.10 Survival. The representations, warranties, agreements and covenants contained herein shall survive each Closing and the delivery, conversion and/or, exercise of the Securities, as applicable.

6.11 Execution. This Agreement may be executed in two or more counterparts, all of which when taken together shall be considered one and the same agreement and shall become effective when counterparts have been signed by each party and delivered to the other party, it being understood that both parties need not sign the same counterpart. In the event that any signature is delivered by facsimile transmission, such signature shall create a valid and binding obligation of the party executing (or on whose behalf such signature is executed) with the same force and effect as if such facsimile signature page were an original thereof.

6.12 Severability. If any provision of this Agreement is held to be invalid or unenforceable in any respect, the validity and enforceability of the remaining terms and provisions of this Agreement shall not in any way be affected or impaired thereby and the parties will attempt to agree upon a valid and enforceable provision that is a reasonable substitute therefor, and upon so agreeing, shall incorporate such substitute provision in this Agreement.

6.13 Rescission and Withdrawal Right. Notwithstanding anything to the contrary contained in (and without limiting any similar provisions of) the Transaction Documents, whenever any Purchaser exercises a right, election, demand or option under a Transaction Document and the Company does not timely perform its related obligations within the periods therein provided, then such Purchaser may rescind or withdraw, in its sole discretion from time to time upon written notice to the Company, any relevant notice, demand or election in whole or in part without prejudice to its future actions and rights.

6.14 Replacement of Securities. If any certificate or instrument evidencing any Securities or shares of Series C Preferred Stock is mutilated, lost, stolen or destroyed, the Company shall issue or cause to be issued in exchange and substitution for and upon cancellation thereof, or in lieu of and substitution therefor, a new certificate or instrument, but only upon receipt of evidence reasonably satisfactory to the Company of such loss, theft or destruction and customary and reasonable indemnity, if requested. The applicants for a new certificate or instrument under such circumstances shall also pay any reasonable third-party costs associated with the issuance of such replacement Securities or shares of Series C Preferred Stock.

6.15 Remedies. In addition to being entitled to exercise all rights provided herein or granted by law, including recovery of damages, each of the Purchasers and the Company will be entitled to specific performance under the Transaction Documents. The parties agree that monetary damages may not be adequate compensation for any loss incurred by reason of any breach of obligations described in the foregoing sentence and hereby agrees to waive in any action for specific performance of any such obligation the defense that a remedy at law would be adequate.

6.16 Payment Set Aside. To the extent that the Company makes a payment or payments to any Purchaser pursuant to any Transaction Document or a Purchaser enforces or exercises its rights thereunder, and such payment or payments or the proceeds of such enforcement or exercise or any part thereof are subsequently invalidated, declared to be fraudulent or preferential, set aside, recovered from, disgorged by or are required to be refunded, repaid or otherwise restored to the Company, a trustee, receiver or any other person under any law (including, without limitation, any bankruptcy law, state or federal law, common law or equitable cause of action), then to the extent of any such restoration the obligation or part thereof originally intended to be satisfied shall be revived and continued in full force and effect as if such payment had not been made or such enforcement or setoff had not occurred.

6.17 Usury. To the extent it may lawfully do so, the Company hereby agrees not to insist upon or plead or in any manner whatsoever claim, and will resist any and all efforts to be compelled to take the benefit or advantage of, usury laws wherever enacted, now or at any time hereafter in force, in connection with any claim, action or proceeding that may be brought by any Purchaser in order to enforce any right or remedy under any Transaction Document. Notwithstanding any provision to the contrary contained in any Transaction Document, it is expressly agreed and provided that the total liability of the Company under the Transaction Documents for payments in the nature of interest shall not exceed the maximum lawful rate authorized under applicable law (the "Maximum Rate"), and, without limiting the foregoing, in no event shall any rate of interest or default interest, or both of them, when aggregated with any other sums in the nature of interest that the Company may be obligated to pay under the Transaction Documents exceed such Maximum Rate. It is agreed that if the maximum contract rate of interest allowed by law and applicable to the Transaction Documents is increased or decreased by statute or any official governmental action subsequent to the date hereof, the new maximum contract rate of interest allowed by law will be the Maximum Rate of interest applicable to the Transaction Documents from the effective date forward, unless such application is precluded by applicable law. If under any circumstances whatsoever, interest in excess of the Maximum Rate is paid by the Company to any Purchaser with respect to indebtedness evidenced by the Transaction Documents, such excess shall be applied by such Purchaser to the unpaid

principal balance of any such indebtedness or be refunded to the Company, the manner of handling such excess to be at such Purchaser's election.

6.18 Independent Nature of Purchasers. The obligations of each Purchaser under any Transaction Document are several and not joint with the obligations of any other Purchaser, and no Purchaser shall be responsible in any way for the performance of the obligations of any other Purchaser under any Transaction Document. The decision of each Purchaser to purchase Shares pursuant to this Agreement has been made by such Purchaser independently of any other Purchaser and independently of any information, materials, statements or opinions as to the business, affairs, operations, assets, properties, liabilities, results of operations, condition (financial or otherwise) or prospects of the Company or of the Subsidiary which may have been made or given by any other Purchaser or by any agent or employee of any other Purchaser, and no Purchaser or any of its agents or employees shall have any liability to any other Purchaser (or any other person) relating to or arising from any such information, materials, statements or opinions. Nothing contained herein or in any Transaction Document, and no action taken by any Purchaser pursuant thereto, shall be deemed to constitute the Purchasers as a partnership, an association, a joint venture or any other kind of entity, or create a presumption that the Purchasers are in any way acting in concert or as a group with respect to such obligations or the transactions contemplated by the Transaction Document. Each Purchaser shall be entitled to independently protect and enforce its rights, including without limitation the rights arising out of this Agreement or out of the other Transaction Documents, and it shall not be necessary for any other Purchaser to be joined as an additional party in any proceeding for such purpose.

6.19 Adjustments in Share Numbers and Prices. In the event of any stock split, subdivision, dividend or distribution payable in shares of Common Stock (or other securities or rights convertible into, or entitling the holder thereof to receive directly or indirectly shares of Common Stock), combination or other similar recapitalization or event occurring after the date hereof, each reference in this Agreement to a number of shares or a price per share shall be amended to appropriately account for such event.

[REMAINDER OF PAGE INTENTIONALLY LEFT BLANK
SIGNATURE PAGES FOLLOW]

IN WITNESS WHEREOF, the parties hereto have caused this Amended and Restated Securities Purchase Agreement to be duly executed by their respective authorized signatories as of the date first indicated above.

ASPEN TECHNOLOGY, INC.

By: /s/ Lisa W. Zappala

Name: Lisa W. Zappala
Title: Senior Vice President and
Chief Financial Officer

Address for Notice:

10 Canal Park
Cambridge, Massachusetts 02141
Facsimile No.:(617) 949-1722
Telephone No.:(617) 949-1000
Attn: Chief Executive Officer and General
Counsel

With a copy to:

Hale and Dorr LLP
60 State Street
Boston, Massachusetts 02109
Facsimile No.: (617) 526-5000
Telephone No.: (617) 526-6000
Attn: Mark L. Johnson, Esq.

[REMAINDER OF PAGE INTENTIONALLY LEFT BLANK
SIGNATURE PAGES FOR PURCHASERS FOLLOW]

PINE RIDGE FINANCIAL INC.

By: /s/ Miriam Hyman

Name: Miriam Hyman
Title: Assistant Secretary
Pine Ridge Financial Inc.
c/o Cavallo Capital Corp.
660 Madison Avenue
New York, NY 10022
Facsimile No.: (212) 651-9010
Telephone No.: (212) 651-9000
Attn: Avi Vigder

With a copy to
Proskauer Rose LLP
1585 Broadway
New York, New York 10036-8299
Facsimile No.: (212) 969-2900
Telephone No.: (212) 969-3000
Attn: Adam J. Kansler, Esq.

SMITHFIELD FIDUCIARY LLC

By: /s/ Adam J. Chill

Name: Adam J. Chill
Title: Authorized Signatory

Address for Notice:

Smithfield Fiduciary LLC
c/o Highbridge Capital Management, LLC
9 West 57th Street, 27th Floor
New York, New York 10019
Facsimile No.: (212) 751-0755
Telephone No.: (212) 287-4720
Attn: Ari J. Storch / Adam J. Chill

With a copy to
Proskauer Rose LLP
1585 Broadway
New York, New York 10036-8299
Facsimile No.: (212) 969-2900
Telephone No.: (212) 969-3000
Attn: Adam J. Kansler, Esq.

PERSEVERANCE LLC

By: /s/ Fiona Theaker

Name: Fiona Theaker
Title: Director

Perseverance LLC.
c/o Cavallo Capital Corp.
660 Madison Avenue
New York, NY 10022
Facsimile No.: (212) 651-9010
Telephone No.: (212) 651-9000
Attn: Avi Vigder

With a copy to
Proskauer Rose LLP
1585 Broadway
New York, New York 10036-8299
Facsimile No.: (212) 969-2900
Telephone No.: (212) 969-3000
Attn: Adam J. Kansler, Esq.

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- A-1 Form of Initial Series B Certificate of Designations
- A-2 Form of Series B Certificate of Designations
- A-3 Form of Series C Certificate of Designations
- B Registration Rights Agreement
- C-1 Form of Warrant for First Closing
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Schedule A

PURCHASERS

NAME AND ADDRESS OF PURCHASERS	INITIAL SHARES	FIRST CLOSING PURCHASE PRICE	SECOND CLOSING SHARES	SECOND CLOSING PURCHASE PRICE	THIRD CLOSING SHARES	THIRD CLOSING PURCHASE PRICE
Pine Ridge Financial Inc. c/o Cavallo Capital Corp. 660 Madison Avenue New York, NY 10022	15,000	\$15,000,000	10,000	\$10,000,000	4,000	\$ 4,000,000
Smithfield Fiduciary LLC c/o Highbridge Capital Management, LLC 9 West 57th Street 27th Floor New York, NY 10019	9,000	\$ 9,000,000	6,000	\$ 6,000,000	6,000	\$ 6,000,000
Perseverance LLC c/o Cavallo Capital Corp. 660 Madison Avenue New York, NY 10022	6,000	\$ 6,000,000	4,000	\$ 4,000,000	--	--
Totals	30,000	\$30,000,000	20,000	\$20,000,000	10,000	\$10,000,000

AMENDED AND RESTATED
REGISTRATION RIGHTS AGREEMENT

This Amended and Restated Registration Rights Agreement (this "AGREEMENT") is made and entered into as of March 19, 2002, among Aspen Technology, Inc., a Delaware corporation (the "COMPANY"), and the investors signatory hereto (each such investor is a "Purchaser" and all such investors are, collectively, the "PURCHASERS").

WHEREAS, the Company and the Purchasers entered into a Registration Rights Agreement, dated as of February 6, 2002 (the "ORIGINAL REGISTRATION RIGHTS AGREEMENT") pursuant to which the Company and the Purchasers provided for certain arrangements with respect to the registration of shares of common stock of the Company under the Securities Act of 1933, as amended;

WHEREAS, the Company and the Purchasers are contemporaneously entering into the Amended and Restated Securities Purchase Agreement dated as of the date hereof (the "PURCHASE AGREEMENT") and consummating the Third Closing under the Purchase Agreement; and

WHEREAS, in connection with the execution and delivery of the Purchase Agreement and the consummation of the Third Closing, the Company and the Purchasers wish to amend certain provisions of the Original Registration Rights Agreement;

NOW, THEREFORE, IN CONSIDERATION of the mutual covenants contained in this Agreement, and for other good and valuable consideration the receipt and adequacy of which are hereby acknowledged, the Company and the Purchasers agree that the terms of the Original Registration Rights Agreement shall be amended and restated as follows:

1. Definitions. In addition to the terms defined elsewhere in this Agreement, (a) capitalized terms that are not otherwise defined herein have the meanings given to such terms in the Purchase Agreement, and (b) the following terms have the meanings indicated:

"FILING DATE" means, with respect to the initial Registration Statement required to be filed pursuant to Section 2, March 25, 2002, and, with respect to any additional Registration Statements that may be required pursuant to Section 3(c), the 15th day following the date on which the Company first knows, or reasonably should have known, that such additional Registration Statement is required under such Section.

"HOLDER" means any holder, from time to time, of Registrable Securities.

"PROSPECTUS" means the prospectus included in the Registration Statement (including, without limitation, a prospectus that includes any information previously omitted from a prospectus filed as part of an effective registration statement in reliance upon Rule 430A promulgated under the Securities Act), as amended or supplemented by any prospectus supplement, with respect to the terms of the offering of any portion of the Registrable Securities covered by the Registration Statement, and all other amendments and supplements to the Prospectus, including post-effective amendments, and all material incorporated by reference or deemed to be incorporated by reference in such Prospectus.

"REGISTRABLE SECURITIES" means any Common Stock (including Underlying Shares) issued or issuable pursuant to the Transaction Documents, together with any securities issued or issuable upon any stock split, dividend or other distribution, recapitalization or similar event with respect to the foregoing.

"REGISTRATION STATEMENT" means the initial registration statement required to be filed hereunder and any additional registration statements contemplated by Section 3(c), including (in each case) the Prospectus, amendments and supplements to such registration statement or Prospectus, including pre- and post-effective amendments, all exhibits thereto, and all material incorporated by reference or deemed to be incorporated by reference in such registration statement.

"REQUIRED EFFECTIVENESS DATE" means, with respect to the initial Registration Statement required to be filed hereunder, May 30, 2002, and, with respect to any additional Registration Statements that may be required pursuant to Section 3(c), the 60th day following the date on which such additional Registration Statement is required to be filed hereunder.

"RULE 415," "RULE 424" and "RULE 461" means Rule 415, Rule 424 and Rule 461, respectively, promulgated by the Commission pursuant to the Securities Act, as such Rules may be amended from time to time, or any similar rule or regulation hereafter adopted by the Commission having substantially the same effect as such Rule.

"SPECIAL COUNSEL" means one special counsel to the Holders. Unless the Holders notify the Company otherwise, the Special Counsel will be the Purchaser Counsel identified in the Purchase Agreement.

2. Shelf Registration

(a) As promptly as possible, and in any event on or prior to each Filing Date, the Company shall prepare and file with the Commission a "shelf" Registration Statement covering the resale of all Registrable Securities for an offering to be made on a continuous basis pursuant to Rule 415. The Registration Statement shall be on Form S-3 (except if the Company is not then eligible to register for resale the Registrable Securities on Form S-3, in which case such registration shall be on such other form as the Company is eligible to use, and shall contain (except if otherwise directed by the Holders) the "Plan of Distribution" attached hereto as Annex A. The Company shall use its best efforts to cause the Registration Statement to be declared effective under the Securities Act as promptly as possible after the filing thereof, but in any event on or prior to the Required Effectiveness Date, and shall use its best efforts to keep such Registration Statement continuously effective under the Securities Act until the earlier of (i) the second anniversary of the Third Closing and (ii) when all Registrable Securities covered by such Registration Statement have been sold (the "EFFECTIVENESS PERIOD"). The Company shall notify each Holder in writing promptly (and in any event within one business day) after receiving notification from the Commission that a Registration Statement has been declared effective.

(b) The initial Registration Statement to be filed hereunder shall cover the sale by the Holders of at least the Required Minimum number of shares of Common Stock.

(c) Notwithstanding anything in this Agreement to the contrary, if after the Third Closing and prior to the Required Effectiveness Date applicable to the initial Registration Statement to be filed hereunder, the Company is engaged in a material merger, acquisition or sale and the Board of Directors determines in good faith, by appropriate resolutions, that, as a result of such activity, (A) it would be materially detrimental to the Company (other than as relating solely to the price of the Common Stock) to file a Registration Statement at such time and (B) it is in the best interests of the Company to defer proceeding with such registration at such time, then the Filing Date for the initial Registration Statement to be filed hereunder may be extended and the Required Effectiveness Date may be extended, but the Required Effectiveness Date shall not be extended, in any event, beyond June 28, 2002. In no event, however, shall this right be exercised to delay the filing of or proceeding with a Registration Statement beyond the period during which (in the good faith determination of the Company's Board of Directors) such filing or proceeding would be materially detrimental to the Company.

(d) Notwithstanding anything in this Agreement to the contrary, after 20 consecutive trading days of continuous effectiveness of the initial Registration Statement filed and declared effective pursuant to this Agreement, the Company may, by written notice to the Holders, suspend sales under a Registration Statement after the effective date thereof and/or require that the Holders immediately cease the sale of shares of Common Stock pursuant thereto and/or defer the filing of any subsequent Registration Statement if:

(i) the Company is engaged in a material merger, acquisition or sale and the Board of Directors determines in good faith, by appropriate resolutions, that, as a result of such activity, (A) it would be materially detrimental to the Company (other than as relating solely to the price of the Common Stock) to file a Registration Statement at such time and (B) it is in the best interests of the Company to defer proceeding with such registration at such time, or

(ii) the Company files a Registration Statement with the Commission for the purpose of registering under the Securities Act any securities to be publicly offered and sold by the Company in a bona fide firm commitment underwritten offering.

Upon receipt of such notice, each Holder shall immediately discontinue any sales of Registrable Securities pursuant to such registration until such Holder has received copies of a supplemented or amended Prospectus or until such Holder is advised in writing by the Company that the then-current Prospectus may be used and has received copies of any additional or supplemental filings that are incorporated or deemed incorporated by reference in such Prospectus. In no event, however, shall this right be exercised to suspend sales beyond the period during which (in the good faith determination of the Company's Board of Directors) the failure to require such suspension would be materially detrimental to the Company. The Company's rights under this Section 2(d) may be exercised (A) with respect to clause (i) above, not more than three (3) times (which may be consecutive) in any twelve-month period and may not be exercised for a period of more than 30 days each, and (B) with respect to clause (ii) above, not

more than one (1) time and may not be exercised for a period of more than 20 days in any twelve-month period. In no event may the Company exercise its rights pursuant to subclauses (A) and (B) above for an aggregate of more than 90 days. Immediately after the end of any suspension period under this Section 2(d), the Company shall take all necessary actions (including filing any required supplemental prospectus) to restore the effectiveness of the applicable Registration Statement and the ability of the Holders to publicly resell their Registrable Securities pursuant to such effective Registration Statement.

(e) Upon the occurrence of any Event (as defined below) and on every monthly anniversary thereof until the applicable Event is cured, as partial relief for the damages suffered therefrom by the Holders (which remedy shall not be exclusive of any other remedies available at law or in equity), the Company shall pay to each Holder an amount (the "Registration Damage Amount"), as liquidated damages and not as a penalty, equal to 1.0% for the first two months and 2% for each month thereafter of the aggregate purchase price paid under the Purchase Agreement for the Securities held by such Holder, with such purchase price being allocated between the Shares and Warrants in the same manner as such purchase price is allocated for the purposes of the Company's consolidated financial statements, provided that the Registration Damage Amount shall not accrue after the date, if any, on which such Holder has exercised its rights under Section 10 of the Series B Certificate of Designations to have the Company repurchase its Shares or Underlying Shares with respect to such repurchased interest. The Registration Damage Amount payable pursuant to the terms hereof shall apply on a pro-rata basis for any portion of a month prior to the cure of an Event. The accrued but unpaid Registration Damage Amount payable to each Holder shall be paid on the last day of each calendar month, and may be paid at the Company's option in cash or in Series C Preferred Stock. The Company shall deliver written notice to the Holders indicating the manner in which it intends to pay the Registration Damage Amount at least five Trading Days before the payment date for such Registration Damage Amount. Failure to timely provide such written notice shall be deemed an election by the Company to make the payment in cash. In the event that the Company elects to pay the Registration Damage Amount in shares of Series C Preferred Stock, the number of shares of Series C Preferred Stock to be issued to the Holder in payment of the Registration Damage Amount shall be determined by dividing the total Registration Damage Amount then payable to such Holder with respect to all of such Holder's Shares and Warrants by \$10,000 (the initial Stated Value per share of the Series C Preferred Stock) and rounding downward to the nearest whole number of shares of Series C Preferred Stock. In addition, the Company shall pay to the Holder in cash the amount, if any, by which the Registration Damage Amount payable to such Holder exceeds the aggregate Stated Value of the Series C Preferred Stock issued pursuant to the preceding sentence. If the total Redemption Price payable to the Holder is less than \$10,000, then the Corporation shall pay such amount to such Holder entirely in cash. For purposes hereof, each of the following shall constitute an "Event":

(i) a Registration Statement is not filed on or prior to the applicable Filing Date or is not declared effective on or prior to the applicable Required Effectiveness Date, except as a result of an extension permitted pursuant to Section 2(c); or

(ii) after the Effective Date for a Registration Statement and until the end of the Effectiveness Period, a Holder is not permitted to sell Registrable

Securities under such Registration Statement (or a subsequent Registration Statement filed in replacement thereof) for any reason except (A) as a result of a suspension permitted pursuant to Section 2(d) and (B) for five or more Trading Days, whether or not consecutive, for which such sales are not permitted other than as a result of a suspension pursuant to Section 2(d).

(iii) the Common Stock is not listed or quoted, or is suspended from trading, on an Eligible Market for a period of five consecutive Trading Days or ten aggregate Trading Days in any 365-day period;

(iv) the Company fails for any reason to deliver a certificate evidencing any Securities to a Holder within ten Trading Days after delivery of such certificate is required pursuant to any Transaction Document or the exercise or conversion rights of the Holders pursuant to the Transaction Documents are otherwise suspended for any reason;

(v) the Company fails to have available both (A) a sufficient number of authorized but unissued and otherwise unreserved shares of Common Stock available to issue Underlying Shares upon any exercise of the Warrants or any conversion of the Shares and does not make available a sufficient number of authorized but unissued and otherwise unreserved shares of Common Stock for such issuance within 60 days after the occurrence of such deficiency and (B) at least 6,401,394 authorized but unissued and otherwise unreserved shares of Common Stock (as adjusted for any stock splits, stock combinations or similar events), less any shares of Common Stock issued upon conversion of the Shares, as dividends on the Shares, upon exercise of the Warrants or upon redemption of the Shares; or

(vi) after the Effective Date for a Registration Statement, any Registrable Securities covered by such Registration Statement are not listed on an Eligible Market.

(f) At the election of any Holder, any Registration Damage Amount required to be paid by the Company to such Holder pursuant to Section 2(e) may instead be added to the Stated Value of the outstanding Series B Preferred Stock then owned by such Holder. A Holder may make such election by delivering written notice to the Company at any time before payment of such Registration Damage Amount is received by such Holder.

(g) If (i) any Event occurs and remains uncured for 60 days; (ii) the Company fails to make any cash payment required under the Transaction Documents and such failure is not cured within five days after notice of such default is first given to the Company by a Holder; or (iii) the Company defaults in the timely performance of any other obligation under the Transaction Documents and such default continues uncured for a period of 20 days after the date on which notice of such default is first given to the Company by a Holder (it being understood that no prior notice need be given in the case of a default that cannot reasonably be cured within 20 days), then at any time or times thereafter any Holder may deliver to the Company a notice (a "Repurchase Notice") requiring the Company to repurchase all or any portion of the Shares

and any Underlying Shares issued upon conversion of the Shares then held by such Holder at a price per share equal to the Event Equity Value (measured based on the Underlying Shares into which Shares or Warrants are convertible or exercisable, without giving effect to any limitations on conversion or exercise). Notwithstanding the foregoing, if the Holder is entitled to deliver the Repurchase Notice for the reasons set forth in clause (i) hereof, and the Holder is entitled to receive payments in accordance with Section 2(e), then the Holder shall deliver such Repurchase Notice to the Company either (x) within three days of the date on which the Event occurred, or (y) if not delivered to the Company within three days, then no earlier than the 61st day following the date on which the Event occurred. If a Holder delivers a Repurchase Notice pursuant to this Section, the Company shall pay the aggregate repurchase price (together with any other payments, expenses and liquidated damages then due and payable pursuant to the Transaction Documents) to such Holder in cash or in shares of Series C Preferred Stock, at the option of the Company, no later than the fifth Trading Day following the date of delivery of the Repurchase Notice, and upon receipt thereof such Holder shall deliver original certificates evidencing the Securities so repurchased to the Company (to the extent such certificates have been delivered to such Holder). Notwithstanding the foregoing, immediately upon the occurrence of a Bankruptcy Event, each Holder will automatically be deemed to have delivered a Repurchase Notice pursuant to this Section and will be entitled to receive the corresponding repurchase price without any further action or notice to the Company, except that, in the event of an event described in clause (a), (e), (f) or (g) of the definition of "Bankruptcy Event" set forth in the Purchase Agreement, the Company shall not have the option to elect to pay the repurchase price in shares of Series C Preferred Stock. In the event that the Company elects to pay the aggregate repurchase price (together with such other payments, expenses and liquidated damages as aforesaid) in shares of Series C Preferred Stock, the number of such shares shall be determined in the manner described in the sixth and seventh sentences of Section 2(e).

3. Registration Procedures. In connection with the Company's registration obligations hereunder, the Company shall:

(a) Not less than three Trading Days prior to the filing of each Registration Statement or any related Prospectus or any amendment or supplement thereto (including any document that would be incorporated or deemed to be incorporated therein by reference), the Company shall (i) furnish to the Holders and their Special Counsel copies of all such documents proposed to be filed, which documents (other than those incorporated or deemed to be incorporated by reference) will be subject to the review of such Holders and their Special Counsel, and (ii) cause its officers and directors, counsel and independent certified public accountants to respond to such inquiries as shall be necessary, in the reasonable opinion of respective counsel, to conduct a reasonable investigation within the meaning of the Securities Act. The Company shall not file the Registration Statement or any such Prospectus or any amendments or supplements thereto to which the Holders of a majority of the Registrable Securities and their Special Counsel shall reasonably object, provided that such objection is communicated to the Company within three Trading Days of receipt of such documents.

(b) (i) Prepare and file with the Commission such amendments, including post-effective amendments, to the Registration Statement and the Prospectus used in connection therewith as may be necessary to keep the Registration Statement continuously effective as to the applicable Registrable Securities for the Effectiveness Period and prepare and file with the

Commission such additional Registration Statements in order to register for resale under the Securities Act all of the Registrable Securities; (ii) cause the related Prospectus to be amended or supplemented by any required Prospectus supplement, and as so supplemented or amended to be filed pursuant to Rule 424; and (iii) respond as promptly as reasonably possible, and in any event within ten Trading Days, to any comments received from the Commission with respect to the Registration Statement or any amendment thereto and as promptly as reasonably possible provide the Special Counsel true and complete copies of all correspondence from and to the Commission relating to the Registration Statement.

(c) If, on any date the number of shares of Common Stock previously registered under all existing Registration Statements is less than 125% of the Actual Minimum on such date, file an additional Registration Statement covering a number of shares of Common Stock at least equal to (i) the Required Minimum on such date, less (ii) the number of shares of Common Stock previously registered under all existing Registration Statements; provided that the Company will not be required at any time to register a number of shares of Common Stock greater than the maximum number of shares of Common Stock that could possibly be issued pursuant to the Transaction Documents.

(d) Notify the Holders of Registrable Securities to be sold and their Special Counsel as promptly as reasonably possible, and (if requested by any such Person) confirm such notice in writing no later than one Trading Day thereafter, of any of the following events: (i) the Commission notifies the Company whether there will be a "review" of any Registration Statement; (ii) the Commission comments in writing on any Registration Statement (in which case the Company shall deliver to each Holder a copy of such comments and of all written responses thereto); (iii) any Registration Statement or any post-effective amendment is declared effective; (iv) the Commission or any other Federal or state governmental authority requests any amendment or supplement to a Registration Statement or Prospectus or requests additional information related thereto; (v) the Commission issues any stop order suspending the effectiveness of any Registration Statement or initiates any Proceedings for that purpose; (vi) the Company receives notice of any suspension of the qualification or exemption from qualification of any Registrable Securities for sale in any jurisdiction, or the initiation or threat of any Proceeding for such purpose; or (vii) the financial statements included in any Registration Statement become ineligible for inclusion therein or any statement made in any Registration Statement or Prospectus or any document incorporated or deemed to be incorporated therein by reference is untrue in any material respect or any revision to a Registration Statement, Prospectus or other document is required so that it will not contain any untrue statement of a material fact or omit to state any material fact required to be stated therein or necessary to make the statements therein, in light of the circumstances under which they were made, not misleading.

(e) Use its best efforts to avoid the issuance of or, if issued, obtain the withdrawal of (i) any order suspending the effectiveness of any Registration Statement or (ii) any suspension of the qualification (or exemption from qualification) of any of the Registrable Securities for sale in any jurisdiction as soon as reasonably practicable.

(f) Furnish to each Holder and their Special Counsel, without charge, at least one conformed copy of each Registration Statement and each amendment thereto, including financial statements and schedules, all documents incorporated or deemed to be incorporated therein by

reference, and all exhibits to the extent requested by such Person (including those previously furnished or incorporated by reference) promptly after the filing of such documents with the Commission.

(g) Promptly deliver to each Holder and their Special Counsel, without charge, as many copies of the Prospectus or Prospectuses (including each form of prospectus) and each amendment or supplement thereto as such Persons may reasonably request. The Company hereby consents to the use of such Prospectus and each amendment or supplement thereto by each of the selling Holders in connection with the offering and sale of the Registrable Securities covered by such Prospectus and any amendment or supplement thereto.

(h) Use its best efforts to list the Registrable Securities covered by such Registration Statement with each Trading Market;

(i) Prior to any public offering of Registrable Securities, use its best efforts to register or qualify or cooperate with the selling Holders and their Special Counsel in connection with the registration or qualification (or exemption from such registration or qualification) of such Registrable Securities for offer and sale under the securities or Blue Sky laws of such jurisdictions within the United States as any Holder requests in writing, to keep each such registration or qualification (or exemption therefrom) effective during the Effectiveness Period and to do any and all other acts or things necessary or advisable to enable the disposition in such jurisdictions of the Registrable Securities covered by a Registration Statement.

(j) Cooperate with the Holders to facilitate the timely preparation and delivery of certificates representing Registrable Securities to be delivered to a transferee pursuant to a Registration Statement, which certificates shall be free, to the extent permitted by the Purchase Agreement, of all restrictive legends, and to enable such Registrable Securities to be in such denominations and registered in such names as any such Holders may request.

(k) Upon the occurrence of any event described in Section 3(d)(vii), as promptly as reasonably possible, prepare a supplement or amendment, including a post-effective amendment, to the Registration Statement or a supplement to the related Prospectus or any document incorporated or deemed to be incorporated therein by reference, and file any other required document so that, as thereafter delivered, neither the Registration Statement nor such Prospectus will contain an untrue statement of a material fact or omit to state a material fact required to be stated therein or necessary to make the statements therein, in light of the circumstances under which they were made, not misleading.

(l) Cooperate with any due diligence investigation undertaken by the Holders in connection with the sale of Registrable Securities, including without limitation by making available any documents and information; provided that the Company will not deliver or make available to any Holder material, nonpublic information.

(m) If the Holders of a majority of the Registrable Securities being offered pursuant to a Registration Statement select underwriters for the offering, the Company shall enter into and perform its obligations under an underwriting agreement, in usual and customary form,

including, without limitation, by providing customary legal opinions, comfort letters and indemnification and contribution obligations.

4. Registration Expenses. All fees and expenses incident to the performance of or compliance with this Agreement by the Company shall be borne by the Company whether or not any Registrable Securities are sold pursuant to the Registration Statement. The fees and expenses referred to in the foregoing sentence shall include, without limitation, (a) all registration and filing fees (including, without limitation, fees and expenses (i) with respect to filings required to be made with any Trading Market, and (ii) in compliance with applicable state securities or Blue Sky laws (including, without limitation, fees and disbursements of counsel for the Company in connection with Blue Sky qualifications or exemptions of the Registrable Securities)) and determination of the eligibility of the Registrable Securities for investment under the laws of such jurisdictions as requested by the Holders), (b) printing expenses (including, without limitation, expenses of printing certificates for Registrable Securities and of printing prospectuses requested by the Holders), (c) messenger, telephone and delivery expenses of the Company, (d) fees and expenses reasonably incurred by Special Counsel up to \$5,000, but in no event shall the aggregate amount paid by the Company to the Special Counsel exceed \$50,000, including the fees and expenses paid pursuant to Section 6.2 of the Purchase Agreement, and (e) fees and expenses of all other Persons retained by the Company in connection with the consummation of the transactions contemplated by this Agreement.

5. Indemnification

(a) Indemnification by the Company. In the event of any registration of Registrable Securities pursuant to this Agreement, the Company shall, notwithstanding any termination of this Agreement, indemnify and hold harmless each Holder, the officers, directors, partners, members, agents, brokers (including brokers who offer and sell Registrable Securities as principal as a result of a pledge or any failure to perform under a margin call of Common Stock), investment advisors and employees of each of them, each Person who controls any such Holder (within the meaning of Section 15 of the Securities Act or Section 20 of the Exchange Act) and the officers, directors, partners, members, agents and employees of each such controlling Person, to the fullest extent permitted by applicable law, from and against any and all Losses, as incurred, arising out of or relating to any untrue or alleged untrue statement of a material fact contained in the Registration Statement, any Prospectus or any form of prospectus or in any amendment or supplement thereto or in any preliminary prospectus, or arising out of or relating to any omission or alleged omission of a material fact required to be stated therein or necessary to make the statements therein (in the case of any Prospectus or form of prospectus or supplement thereto, in light of the circumstances under which they were made) not misleading, except to the extent, but only to the extent, that (i) such untrue statements or omissions are based solely upon information regarding such Holder furnished in writing to the Company by such Holder expressly for use therein, or to the extent that such information relates to such Holder or such Holder's proposed method of distribution of Registrable Securities and was reviewed and expressly approved in writing by such Holder expressly for use in the Registration Statement, such Prospectus or such form of Prospectus or in any amendment or supplement thereto or (ii) in the case of an occurrence of an event of the type specified in Section 3(d)(v) through (vii), the use by such Holder of an outdated or defective Prospectus after the Company has notified such Holder in writing that the Prospectus is outdated or defective and prior to the receipt by such

Holder of the Advice contemplated in Section 6(f). The Company shall notify the Holders promptly of the institution, threat or assertion of any Proceeding of which the Company is aware in connection with the transactions contemplated by this Agreement.

(b) Indemnification by Holders. Each Holder shall, severally and not jointly, indemnify and hold harmless the Company, its directors, officers, agents and employees, each Person who controls the Company (within the meaning of Section 15 of the Securities Act and Section 20 of the Exchange Act), and the directors, officers, agents or employees of such controlling Persons, to the fullest extent permitted by applicable law, from and against all Losses arising solely out of any untrue statement of a material fact contained in the Registration Statement, any Prospectus, or any form of prospectus, or in any amendment or supplement thereto, or arising solely out of any omission of a material fact required to be stated therein or necessary to make the statements therein not misleading to the extent, but only to the extent, that such untrue statement or omission is contained in any information so furnished in writing by such Holder to the Company specifically for inclusion in such Registration Statement or such Prospectus. In no event shall the liability of any selling Holder hereunder be greater in amount than the dollar amount of the net proceeds received by such Holder upon the sale of the Registrable Securities giving rise to such indemnification obligation.

(c) Conduct of Indemnification Proceedings. If any Proceeding shall be brought or asserted against any Person entitled to indemnity hereunder (an "INDEMNIFIED PARTY"), such Indemnified Party shall promptly notify the Person from whom indemnity is sought (the "INDEMNIFYING PARTY") in writing, and the Indemnifying Party shall have the right to assume the defense thereof, including the employment of counsel reasonably satisfactory to the Indemnified Party and the payment of all fees and expenses incurred in connection with defense thereof; provided that the failure of any Indemnified Party to give such notice shall not relieve the Indemnifying Party of its obligations or liabilities pursuant to this Agreement, except (and only) to the extent that it shall be finally determined by a court of competent jurisdiction (which determination is not subject to appeal or further review) that such failure shall have proximately and materially adversely prejudiced the Indemnifying Party.

An Indemnified Party shall have the right to employ separate counsel in any such Proceeding and to participate in the defense thereof, but the fees and expenses of such counsel shall be at the expense of such Indemnified Party or Parties unless: (i) the Indemnifying Party has agreed in writing to pay such fees and expenses; or (ii) the Indemnifying Party shall have failed promptly to assume the defense of such Proceeding and to employ counsel reasonably satisfactory to such Indemnified Party in any such Proceeding; or (iii) the named parties to any such Proceeding (including any impleaded parties) include both such Indemnified Party and the Indemnifying Party, and such Indemnified Party shall have been advised by counsel that a conflict of interest is likely to exist if the same counsel were to represent such Indemnified Party and the Indemnifying Party (in which case, if such Indemnified Party notifies the Indemnifying Party in writing that it elects to employ separate counsel at the expense of the Indemnifying Party, the Indemnifying Party shall not have the right to assume the defense thereof and such counsel shall be at the expense of the Indemnifying Party). The Indemnifying Party shall not be liable for any settlement of any such Proceeding effected without its written consent, which consent shall not be unreasonably withheld. No Indemnifying Party shall, without the prior written consent of the Indemnified Party, effect any settlement of any pending Proceeding in

respect of which any Indemnified Party is a party, unless such settlement includes an unconditional release of such Indemnified Party from all liability on claims that are the subject matter of such Proceeding.

All fees and expenses of the Indemnified Party (including reasonable fees and expenses to the extent incurred in connection with investigating or preparing to defend such Proceeding in a manner not inconsistent with this Section) shall be paid to the Indemnified Party, as incurred, within ten Trading Days of written notice thereof to the Indemnifying Party (regardless of whether it is ultimately determined that an Indemnified Party is not entitled to indemnification hereunder; provided that the Indemnifying Party may require such Indemnified Party to undertake to reimburse all such fees and expenses to the extent it is finally judicially determined that such Indemnified Party is not entitled to indemnification hereunder).

(d) Contribution. If a claim for indemnification under Section 5(a) or 5(b) is unavailable to an Indemnified Party (by reason of public policy or otherwise), then each Indemnifying Party, in lieu of indemnifying such Indemnified Party, shall contribute to the amount paid or payable by such Indemnified Party as a result of such Losses, in such proportion as is appropriate to reflect the relative fault of the Indemnifying Party and Indemnified Party in connection with the actions, statements or omissions that resulted in such Losses as well as any other relevant equitable considerations. The relative fault of such Indemnifying Party and Indemnified Party shall be determined by reference to, among other things, whether any action in question, including any untrue or alleged untrue statement of a material fact or omission or alleged omission of a material fact, has been taken or made by, or relates to information supplied by, such Indemnifying Party or Indemnified Party, and the parties' relative intent, knowledge, access to information and opportunity to correct or prevent such action, statement or omission. The amount paid or payable by a party as a result of any Losses shall be deemed to include, subject to the limitations set forth in Section 5(c), any reasonable attorneys' or other reasonable fees or expenses incurred by such party in connection with any Proceeding to the extent such party would have been indemnified for such fees or expenses if the indemnification provided for in this Section was available to such party in accordance with its terms.

The parties hereto agree that it would not be just and equitable if contribution pursuant to this Section 5(d) were determined by pro rata allocation or by any other method of allocation that does not take into account the equitable considerations referred to in the immediately preceding paragraph. Notwithstanding the provisions of this Section 5(d), no Holder shall be required to contribute, in the aggregate, any amount in excess of the amount by which the proceeds actually received by such Holder from the sale of the Registrable Securities subject to the Proceeding exceeds the amount of any damages that such Holder has otherwise been required to pay by reason of such untrue or alleged untrue statement or omission or alleged omission. No Person guilty of fraudulent misrepresentation (within the meaning of Section 11(f) of the Securities Act) shall be entitled to contribution from any Person who was not guilty of such fraudulent misrepresentation. No party shall be liable for contribution with respect to any action, suit, proceeding or claim settled without its prior written consent, which consent shall not be unreasonably withheld.

The indemnity and contribution agreements contained in this Section are in addition to any liability that the Indemnifying Parties may have to the Indemnified Parties.

6. Miscellaneous

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

(b) Amendments and Waivers. The provisions of this Agreement, including the provisions of this sentence, may not be amended, modified or supplemented, and waivers or consents to departures from the provisions hereof may not be given, unless the same shall be in writing and signed by the Company and the Holders of at least two-thirds of the then outstanding Registrable Securities. Notwithstanding the foregoing, a waiver or consent to depart from the provisions hereof with respect to a matter that relates exclusively to the rights of Holders and that does not directly or indirectly affect the rights of other Holders may be given by Holders of at least a majority of the Registrable Securities to which such waiver or consent relates; provided, however, that the provisions of this sentence may not be amended, modified, or supplemented except in accordance with the provisions of the immediately preceding sentence.

(c) Information by Holders. Each Holder included in any registration pursuant to this Agreement shall furnish to the Company such information regarding such Holder and the distribution proposed by such Holder (if different than Annex A) as the Company may reasonably request in writing and that is required under applicable law in connection with any registration, qualification or compliance referred to in this Agreement.

(d) No Inconsistent Agreements. Neither the Company nor any of its subsidiaries has entered, as of the date hereof, nor shall the Company or any of its subsidiaries, on or after the date of this Agreement, enter into any agreement with respect to its securities that would conflict with the provisions hereof.

(e) No Piggyback on Registrations. Except as and to the extent specified in Schedule 3.1(w) to the Purchase Agreement, neither the Company nor any of its security holders (other than the Holders in such capacity pursuant hereto) may include securities of the Company in the Registration Statement other than the Registrable Securities, and the Company shall not after the date hereof enter into any agreement providing any such right to any of its security holders.

(f) Compliance. Each Holder covenants and agrees that it will comply with the prospectus delivery requirements of the Securities Act as applicable to it in connection with sales of Registrable Securities pursuant to the Registration Statement.

(g) Discontinued Disposition. Each Holder agrees by its acquisition of such Registrable Securities that, upon receipt of a notice from the Company of the occurrence of any

event of the kind described in Section 3(d)(v), 3(d)(vi), or 3(d)(vii), such Holder will forthwith discontinue disposition of such Registrable Securities under the Registration Statement until such Holder's receipt of the copies of the supplemented Prospectus and/or amended Registration Statement contemplated by Section 3(k), or until it is advised in writing (the "ADVICE") by the Company that the use of the applicable Prospectus may be resumed, and, in either case, has received copies of any additional or supplemental filings that are incorporated or deemed to be incorporated by reference in such Prospectus or Registration Statement. The Company may provide appropriate stop orders to enforce the provisions of this paragraph.

(h) Piggy-Back Registrations. If at any time during the Effectiveness Period there is not an effective Registration Statement covering all of the Registrable Securities and the Company shall determine to prepare and file with the Commission a registration statement relating to an offering for its own account or the account of others under the Securities Act of any of its equity securities, other than on Form S-4 or Form S-8 (each as promulgated under the Securities Act) or their then equivalents relating to equity securities to be issued solely in connection with any acquisition of any entity or business or equity securities issuable in connection with stock option or other employee benefit plans, then the Company shall send to each Holder written notice of such determination and, if within fifteen days after receipt of such notice, any such Holder shall so request in writing, the Company shall include in such registration statement all or any part of such Registrable Securities such holder requests to be registered, subject to customary underwriter cutbacks no less favorable to each Holder than to any other participating stockholder of the Company, in the event of an underwritten offering. The Company shall have the right to delay, suspend or withdraw any registration of Registrable Securities effected pursuant to this Section 6(h) without any obligation or liability to any Holder.

(i) Notices. Any and all notices or other communications or deliveries required or permitted to be provided hereunder shall be in writing and shall be deemed given and effective on the earliest of (a) the date of transmission, if such notice or communication is delivered via facsimile at the facsimile telephone number specified in this Section prior to 5:30 p.m. (New York City time) on a Trading Day, (b) the next Trading Day after the date of transmission, if such notice or communication is delivered via facsimile at the facsimile telephone number specified in this Agreement on a day that is not a Trading Day or later than 5:30 p.m. (New York City time) and earlier than 11:59 p.m. (New York City time) on any Trading Day, (c) the Trading Day following the date of mailing, if sent by U.S. nationally recognized overnight courier service, or (d) upon actual receipt by the party to whom such notice is required to be given. The address for such notices and communications shall be as set forth in the Purchase Agreement.

(j) Successors and Assigns. This Agreement, together with the other Transaction Documents, constitutes the entire agreement, and supersedes all other prior agreements and understandings, both written and oral, among the parties with respect to the subject matter hereof. This Agreement shall inure to the benefit of and be binding upon the successors and permitted assigns of each of the parties and shall inure to the benefit of each Holder. The Company may not assign its rights or obligations hereunder without the prior written consent of each Holder. Each Holder may assign its rights and obligations hereunder in the manner and to the extent permitted under the Purchase Agreement.

(k) Counterparts. This Agreement may be executed in any number of counterparts, each of which when so executed shall be deemed to be an original and, all of which taken together shall constitute one and the same Agreement. In the event that any signature is delivered by facsimile transmission, such signature shall create a valid binding obligation of the party executing (or on whose behalf such signature is executed) the same with the same force and effect as if such facsimile signature were the original thereof.

(l) GOVERNING LAW; VENUE; WAIVER OF JURY TRIAL. THE CORPORATE LAWS OF THE STATE OF DELAWARE SHALL GOVERN ALL ISSUES CONCERNING THE RELATIVE RIGHTS OF THE COMPANY AND ITS STOCKHOLDERS. ALL QUESTIONS CONCERNING THE CONSTRUCTION, VALIDITY, ENFORCEMENT AND INTERPRETATION OF THIS AGREEMENT SHALL BE GOVERNED BY AND CONSTRUED AND ENFORCED IN ACCORDANCE WITH THE LAWS OF THE STATE OF NEW YORK. EACH PARTY HEREBY IRREVOCABLY SUBMITS TO THE EXCLUSIVE JURISDICTION OF THE STATE AND FEDERAL COURTS SITTING IN THE CITY OF NEW YORK, BOROUGH OF MANHATTAN, FOR THE ADJUDICATION OF ANY DISPUTE HEREUNDER OR IN CONNECTION HERewith OR WITH ANY TRANSACTION CONTEMPLATED HEREBY OR DISCUSSED HEREIN (INCLUDING WITH RESPECT TO THE ENFORCEMENT OF ANY OF THE TRANSACTION DOCUMENTS), AND HEREBY IRREVOCABLY WAIVES, AND AGREES NOT TO ASSERT IN ANY SUIT, ACTION OR PROCEEDING, ANY CLAIM THAT IT IS NOT PERSONALLY SUBJECT TO THE JURISDICTION OF ANY SUCH COURT, THAT SUCH SUIT, ACTION OR PROCEEDING IS IMPROPER. EACH PARTY HEREBY IRREVOCABLY WAIVES PERSONAL SERVICE OF PROCESS AND CONSENTS TO PROCESS BEING SERVED IN ANY SUCH SUIT, ACTION OR PROCEEDING BY MAILING A COPY THEREOF VIA REGISTERED OR CERTIFIED MAIL OR OVERNIGHT DELIVERY (WITH EVIDENCE OF DELIVERY) TO SUCH PARTY AT THE ADDRESS IN EFFECT FOR NOTICES TO IT UNDER THIS AGREEMENT AND AGREES THAT SUCH SERVICE SHALL CONSTITUTE GOOD AND SUFFICIENT SERVICE OF PROCESS AND NOTICE THEREOF. NOTHING CONTAINED HEREIN SHALL BE DEEMED TO LIMIT IN ANY WAY ANY RIGHT TO SERVE PROCESS IN ANY MANNER PERMITTED BY LAW. THE COMPANY HEREBY WAIVES ALL RIGHTS TO A TRIAL BY JURY.

(m) Cumulative Remedies. The remedies provided herein are cumulative and not exclusive of any remedies provided by law.

(n) Severability. If any term, provision, covenant or restriction of this Agreement is held by a court of competent jurisdiction to be invalid, illegal, void or unenforceable, the remainder of the terms, provisions, covenants and restrictions set forth herein shall remain in full force and effect and shall in no way be affected, impaired or invalidated, and the parties hereto shall use their reasonable efforts to find and employ an alternative means to achieve the same or substantially the same result as that contemplated by such term, provision, covenant or restriction. It is hereby stipulated and declared to be the intention of the parties that they would have executed the remaining terms, provisions, covenants and restrictions without including any of such that may be hereafter declared invalid, illegal, void or unenforceable.

(o) Headings. The headings in this Agreement are for convenience of reference only and shall not limit or otherwise affect the meaning hereof.

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SIGNATURE PAGES TO FOLLOW]

IN WITNESS WHEREOF, the parties have executed this Amended and Restated Registration Rights Agreement as of the date first written above.

ASPEN TECHNOLOGY, INC.

By: /s/ Lisa W. Zappala

Lisa W. Zappala
Senior Vice President and
Chief Financial Officer

[REMAINDER OF PAGE INTENTIONALLY LEFT BLANK
SIGNATURE PAGES OF PURCHASERS TO FOLLOW]

PINE RIDGE FINANCIAL INC.

By: /s/ Miriam Hyman

Name: Miriam Hyman
Title: Assistant Secretary

Pine Ridge Financial Inc.
c/o Cavallo Capital Corp.
660 Madison Avenue
New York, NY 10022
Facsimile No.: (212) 651-9010
Telephone No.: (212) 651-9000
Attn: Avi Vigder

With a copy to
Proskauer Rose LLP
1585 Broadway
New York, New York 10036-8299
Facsimile No.: (212) 969-2900
Telephone No.: (212) 969-3000
Attn: Adam J. Kansler, Esq.

SMITHFIELD FIDUCIARY LLC

By: /s/ Adam J. Chill

Name: Adam J. Chill
Title: Authorized Signatory

Address for Notice:

Smithfield Fiduciary LLC
c/o Highbridge Capital Management, LLC
9 West 57th Street, 27th Floor
New York, New York 10019
Facsimile No.: (212) 751-0755
Telephone No.: (212) 287-4720
Attn: Ari J. Storch / Adam J. Chill

With a copy to
Proskauer Rose LLP
1585 Broadway
New York, New York 10036-8299
Facsimile No.: (212) 969-2900
Telephone No.: (212) 969-3000
Attn: Adam J. Kansler, Esq.

PERSEVERANCE LLC

By: /s/ Fiona Theaker

Name: Fiona Theaker
Title: Director

Perseverance LLC.
c/o Cavallo Capital Corp.
660 Madison Avenue
New York, NY 10022
Facsimile No.: (212) 651-9010
Telephone No.: (212) 651-9000
Attn: Avi Vigder

With a copy to
Proskauer Rose LLP
1585 Broadway
New York, New York 10036-8299
Facsimile No.: (212) 969-2900
Telephone No.: (212) 969-3000
Attn: Adam J. Kansler, Esq.

PLAN OF DISTRIBUTION

The selling stockholders may, from time to time, sell any or all of their shares of common stock on any stock exchange, market or trading facility on which the shares are traded or in private transactions. These sales may be at fixed or negotiated prices. The selling stockholders may use any one or more of the following methods when selling shares:

- - ordinary brokerage transactions and transactions in which the broker-dealer solicits purchasers;
- - block trades in which the broker-dealer will attempt to sell the shares as agent but may position and resell a portion of the block as principal to facilitate the transaction;
- - purchases by a broker-dealer as principal and resale by the broker-dealer for its account;
- - an exchange distribution in accordance with the rules of the applicable exchange;
- - privately negotiated transactions;
- - short sales;
- - broker-dealers may agree with the selling stockholders to sell a specified number of such shares at a stipulated price per share;
- - a combination of any such methods of sale; and
- - any other method permitted pursuant to applicable law.

The selling stockholders may also sell shares under Rule 144 under the Securities Act, if available, rather than under this prospectus.

The selling stockholders may also engage in short sales against the box, puts and calls and other transactions in our securities or derivatives of our securities and may sell or deliver shares in connection with these trades.

Broker-dealers engaged by the selling stockholders may arrange for other brokers-dealers to participate in sales. Broker-dealers may receive commissions or discounts from the selling stockholders (or, if any broker-dealer acts as agent for the purchaser of shares, from the purchaser) in amounts to be negotiated. The selling stockholders do not expect these commissions and discounts to exceed what is customary in the types of transactions involved. Any profits on the resale of shares of common stock by a broker-dealer acting as principal might be deemed to be underwriting discounts or commissions under the Securities Act. Discounts, concessions, commissions and similar selling expenses, if any, attributable to the sale of shares will be borne by a selling stockholder. The selling stockholders may agree to indemnify any

agent, dealer or broker-dealer that participates in transactions involving sales of the shares if liabilities are imposed on that person under the Securities Act.

The selling stockholders may from time to time pledge or grant a security interest in some or all of the shares of common stock owned by them and, if they default in the performance of their secured obligations, the pledgees or secured parties may offer and sell the shares of common stock from time to time under this prospectus after we have filed an amendment to this prospectus under Rule 424(b)(3) or other applicable provision of the Securities Act of 1933 amending the list of selling stockholders to include the pledgee, transferee or other successors in interest as selling stockholders under this prospectus.

The selling stockholders also may transfer the shares of common stock in other circumstances, in which case the transferees, pledgees or other successors in interest will be the selling beneficial owners for purposes of this prospectus and may sell the shares of common stock from time to time under this prospectus after we have filed an amendment to this prospectus under Rule 424(b)(3) or other applicable provision of the Securities Act of 1933 amending the list of selling stockholders to include the pledgee, transferee or other successors in interest as selling stockholders under this prospectus.

The selling stockholders and any broker-dealers or agents that are involved in selling the shares of common stock may be deemed to be "underwriters" within the meaning of the Securities Act in connection with such sales. In such event, any commissions received by such broker-dealers or agents and any profit on the resale of the shares of common stock purchased by them may be deemed to be underwriting commissions or discounts under the Securities Act.

We are required to pay certain fees and expenses incident to the registration of the shares of common stock, including certain fees and disbursements of counsel to the selling stockholders. We have agreed to indemnify the selling stockholders against certain losses, claims, damages and liabilities, including liabilities under the Securities Act.

The selling stockholders have advised us that they have not entered into any agreements, understandings or arrangements with any underwriters or broker-dealers regarding the sale of their shares of common stock, nor is there an underwriter or coordinating broker acting in connection with a proposed sale of shares of common stock by any selling stockholder. If we are notified by any selling stockholder that any material arrangement has been entered into with a broker-dealer for the sale of shares of common stock, if required, we will file a supplement to this prospectus. If the selling stockholders use this prospectus for any sale of the shares of common stock, they will be subject to the prospectus delivery requirements of the Securities Act.

The anti-manipulation rules of Regulation M under the Securities Exchange Act of 1934 may apply to sales of our common stock and activities of the selling stockholders.

FORM OF WARRANT FOR FIRST CLOSING

THESE SECURITIES HAVE NOT BEEN REGISTERED WITH THE SECURITIES AND EXCHANGE COMMISSION OR THE SECURITIES COMMISSION OF ANY STATE IN RELIANCE UPON AN EXEMPTION FROM REGISTRATION UNDER THE SECURITIES ACT OF 1933, AS AMENDED (THE "SECURITIES ACT"), AND, ACCORDINGLY, MAY NOT BE OFFERED OR SOLD EXCEPT PURSUANT TO AN EFFECTIVE REGISTRATION STATEMENT UNDER THE SECURITIES ACT OR PURSUANT TO AN AVAILABLE EXEMPTION FROM THE REGISTRATION REQUIREMENTS OF THE SECURITIES ACT AND IN COMPLIANCE WITH APPLICABLE STATE SECURITIES OR BLUE SKY LAWS. THESE SECURITIES AND THE SECURITIES ISSUABLE UPON EXERCISE OF THESE SECURITIES MAY BE PLEDGED IN CONNECTION WITH A BONA FIDE MARGIN ACCOUNT OR OTHER LOAN SECURED BY SUCH SECURITIES.

ASPEN TECHNOLOGY, INC.

WARRANT

Warrant No. []

Dated: February 6, 2002

Aspen Technology, Inc., a Delaware corporation (the "COMPANY"), hereby certifies that, for value received, [Name of Holder] or its registered assigns (the "HOLDER"), is entitled to purchase from the Company up to a total of [] shares of common stock, \$0.10 par value per share (the "COMMON STOCK"), of the Company (each such share, a "WARRANT SHARE" and all such shares, the "WARRANT SHARES") at an exercise price equal to \$[] per share (as adjusted from time to time as provided in Section 8, the "EXERCISE PRICE"), at any time and from time to time from and after the date hereof and through and including February 6, 2007 (the "EXPIRATION DATE"), and subject to the following terms and conditions. This Warrant (this "Warrant") is one of a series of similar warrants issued pursuant to that certain Securities Purchase Agreement, dated as of the date hereof, by and among the Company and the Purchasers identified therein (the "PURCHASE AGREEMENT"). All such warrants are referred to herein, collectively, as the "WARRANTS."

1. Definitions. In addition to the terms defined elsewhere in this Warrant, capitalized terms that are not otherwise defined herein have the meanings given to such terms in the Purchase Agreement.

2. Registration of Warrant. The Company shall register this Warrant, upon records to be maintained by the Company for that purpose (the "WARRANT REGISTER"), in the name of the record Holder hereof from time to time. The Company may deem and treat the registered Holder

of this Warrant as the absolute owner hereof for the purpose of any exercise hereof or any distribution to the Holder, and for all other purposes, absent actual notice to the contrary.

3. Registration of Transfers. The Company shall register the transfer of any portion of this Warrant in the Warrant Register, upon surrender of this Warrant, with the Form of Assignment attached hereto duly completed and signed by the Holder, to the Transfer Agent or to the Company at its address specified herein, provided that any such assignment shall be pursuant to a Qualified Transfer. Upon any such registration or transfer, a new warrant to purchase Common Stock, in substantially the form of this Warrant (any such new warrant, a "NEW WARRANT"), evidencing the portion of this Warrant so transferred shall be issued to the transferee and a New Warrant evidencing the remaining portion of this Warrant not so transferred, if any, shall be issued to the transferring Holder. The acceptance of the New Warrant by the transferee thereof shall be deemed the acceptance by such transferee of all of the rights and obligations of a holder of a Warrant.

4. Exercise and Duration of Warrant.

(a) This Warrant shall be exercisable by the registered Holder at any time and from time to time on or after the date hereof to and including the Expiration Date. At 6:30 P.M., New York City time on the Expiration Date, the portion of this Warrant not exercised prior thereto shall be and become void and of no value; provided that, if the average of the Closing Prices for the five Trading Days immediately prior to (but not including) the Expiration Date exceeds the Exercise Price on the Expiration Date, then this Warrant shall be deemed to have been exercised in full (to the extent not previously exercised) on a "cashless exercise" basis at 6:30 P.M. New York City time on the Expiration Date.

(b) Except as provided in Section 4(a), a Holder may exercise this Warrant by delivering to the Company (i) an Exercise Notice, in the form attached hereto, appropriately completed and duly signed, and (ii) payment of the Exercise Price for the number of Warrant Shares as to which this Warrant is being exercised (which may take the form of a "cashless exercise" if so indicated in the Exercise Notice), and the date such items are delivered to the Company (as determined in accordance with the notice provisions hereof), or the Warrant has been deemed to have been exercised pursuant to Section 4(a), is an "EXERCISE DATE." The Holder shall not be required to deliver the original Warrant in order to effect an exercise hereunder. Execution and delivery of the Exercise Notice shall have the same effect as cancellation of the original Warrant and issuance of a New Warrant evidencing the right to purchase the remaining number of Warrant Shares.

5. Delivery of Warrant Shares.

(a) Upon exercise of this Warrant, the Company shall promptly (but in no event later than three Trading Days after the Exercise Date) issue or cause to be issued and cause to be delivered to or upon the written order of the Holder and in such name or names as the Holder may designate, a certificate for the Warrant Shares issuable upon such exercise, free of restrictive legends unless a registration statement covering the resale of the Warrant Shares and naming the Holder as a selling stockholder thereunder is not then effective and the Warrant Shares are not freely transferable without volume restrictions pursuant to Rule 144 under the

Securities Act. Notwithstanding the foregoing, if the Warrant is deemed to have been exercised pursuant to Section 4(a), then the Company shall issue or cause to be issued a certificate for the Warrant Shares issuable upon such exercise no later than three Trading Days after the Holder delivers a notice to the Company in accordance with Section 12 that the Warrant was deemed to have been exercised pursuant to Section 4(a). The Holder, or any Person so designated by the Holder to receive Warrant Shares, shall be deemed to have become holder of record of such Warrant Shares as of the Exercise Date. The Company shall, upon request of the Holder, use its commercially reasonable best efforts to deliver Warrant Shares hereunder electronically through the Depository Trust Corporation or another established clearing corporation performing similar functions.

(b) This Warrant is exercisable, either in its entirety or, from time to time, for a portion of the number of Warrant Shares. Upon surrender of this Warrant following one or more partial exercises, the Company shall issue or cause to be issued, at its expense, a New Warrant evidencing the right to purchase the remaining number of Warrant Shares.

(c) The Company's obligations to issue and deliver Warrant Shares subject to and in accordance with the terms hereof are absolute and unconditional, irrespective of any action or inaction by the Holder to enforce the same, any waiver or consent with respect to any provision hereof, the recovery of any judgment against any Person or any action to enforce the same, or any setoff, counterclaim, recoupment, limitation or termination, or any breach or alleged breach by the Holder or any other Person of any obligation to the Company or any violation or alleged violation of law by the Holder or any other Person, and irrespective of any other circumstance which might otherwise limit such obligation of the Company to the Holder in connection with the issuance of Warrant Shares.

6. Charges, Taxes and Expenses. Issuance of certificates for shares of Common Stock upon exercise of this Warrant shall be made without charge to the Holder for any issue or transfer tax, withholding tax, transfer agent fee or other incidental tax or expense in respect of the issuance of such certificates, all of which taxes and expenses shall be paid by the Company; provided, however, that the Company shall not be required to pay any tax which may be payable in respect of any transfer involved in the registration of any certificates for Warrant Shares or Warrants in a name other than that of the Holder. The Holder shall be responsible for all other tax liability that may arise as a result of holding or transferring this Warrant or receiving Warrant Shares upon exercise hereof.

7. Reservation of Warrant Shares. The Company covenants that it will at all times reserve and keep available out of the aggregate of its authorized but unissued and otherwise unreserved Common Stock, solely for the purpose of enabling it to issue Warrant Shares upon exercise of this Warrant as herein provided, 665,854 shares of Common Stock (as adjusted for any stock splits, stock combinations or similar events), free from preemptive rights or any other contingent purchase rights of persons other than the Holder (taking into account the adjustments and restrictions of Section 8), less any shares of Common Stock issued upon exercise of the Warrants and reductions reasonably agreed to by the Purchasers to reflect shares of Common Stock issued upon exercise of the Warrants. The Company covenants that all Warrant Shares so issuable and deliverable shall, upon issuance and the payment of the applicable Exercise Price in accordance with the terms hereof, be duly and validly authorized, issued and fully paid and

nonassessable. The Company will take all such action as may be necessary to assure that such shares of stock may be issued as provided herein without violation of any applicable law or regulation, or of any requirements of any securities exchange or automated quotation system upon which the stock may be listed (it being understood that the Company shall not be required to take any action to assure the issuance of stock to any Purchaser to the extent that such issuance is prohibited by some act or failure to act of such Purchaser).

8. Certain Adjustments. The Exercise Price and number of Warrant Shares issuable upon exercise of this Warrant are subject to adjustment from time to time as set forth in this Section 8.

(a) Stock Dividends and Splits. If the Company, at any time while this Warrant is outstanding, (i) pays a stock dividend on its Common Stock or otherwise makes a distribution on any class of capital stock that is payable in shares of Common Stock, (ii) subdivides outstanding shares of Common Stock into a larger number of shares, or (iii) combines outstanding shares of Common Stock into a smaller number of shares, then in each such case the Exercise Price shall be multiplied by a fraction of which the numerator shall be the number of shares of Common Stock outstanding immediately before such event and of which the denominator shall be the number of shares of Common Stock outstanding immediately after such event. Any adjustment made pursuant to clause (i) of this paragraph shall become effective immediately after the record date for the determination of stockholders entitled to receive such dividend or distribution, and any adjustment pursuant to clause (ii) or (iii) of this paragraph shall become effective immediately after the effective date of such subdivision or combination.

(b) Pro Rata Distributions. If the Company, at any time while this Warrant is outstanding, distributes to holders of Common Stock (i) evidences of its indebtedness, (ii) any security (other than a distribution of Common Stock covered by the preceding paragraph), (iii) rights or warrants to subscribe for or purchase any security, or (iv) any other asset (in each case, "DISTRIBUTED PROPERTY"), then in each such case the Exercise Price in effect immediately prior to the record date fixed for determination of stockholders entitled to receive such distribution shall be adjusted (effective on such record date) to equal the product of such Exercise Price times a fraction of which the denominator shall be the average of the Closing Prices for the last five Trading Days immediately prior to (but not including) such record date and of which the numerator shall be such average less the then fair market value of the Distributed Property distributed in respect of one outstanding share of Common Stock, as determined by the Company's independent certified public accountants that regularly examine the financial statements of the Company, or, if such accountants are unable or unwilling to make such determination for any reason, then a nationally recognized investment banking firm or accounting firm designated by the Company (an "APPRAISER"). In such event, the Holder, after receipt of the determination by the Appraiser, shall have the right to select an additional appraiser (which shall be a nationally recognized investment banking firm or accounting firm), in which case such fair market value shall be deemed to equal the average of the values determined by each of the Appraiser and such appraiser. As an alternative to the foregoing adjustment to the Exercise Price, at the request of the Holder delivered before the 90th day after such record date, the Company, within five Trading Days after such request (or, if later, on the effective date of such distribution), will place the Distributed Property that such Holder would have been entitled to receive in respect of the Warrant Shares for which this Warrant could have been exercised

immediately prior to such record date in escrow with an escrow agent selected by the Company and reasonably acceptable to the Holder. Thereafter, upon exercise of this Warrant in accordance with Section 4, the Holder shall be entitled to receive, in addition to the number of Warrant Shares issuable such exercise, that portion of the escrowed Distributed Property attributable to the number of Warrant Shares for which the Warrant has been exercised, giving effect to all applicable adjustments called for pursuant to this Section 8 during such escrow period.

(c) Fundamental Transactions. If, at any time while this Warrant is outstanding, (i) the Company effects any merger or consolidation of the Company with or into another Person, (ii) the Company effects any sale of all or substantially all of its assets in one or a series of related transactions, (iii) any tender offer or exchange offer (whether by the Company or another Person) is completed pursuant to which holders of Common Stock are permitted to tender or exchange their shares for other securities, cash or property, or (iv) the Company effects any reclassification of the Common Stock or any compulsory share exchange pursuant to which the Common Stock is effectively converted into or exchanged for other securities, cash or property (in any such case, a "FUNDAMENTAL TRANSACTION"), then the Holder shall have the right thereafter to receive, upon exercise of this Warrant, the same amount and kind of securities, cash or property as it would have been entitled to receive upon the occurrence of such Fundamental Transaction if it had been, immediately prior to such Fundamental Transaction, the holder of the number of Warrant Shares then issuable upon exercise in full of this Warrant (the "ALTERNATE CONSIDERATION"). The aggregate Exercise Price for this Warrant will not be affected by any such Fundamental Transaction, but the Company shall apportion such aggregate Exercise Price among the Alternate Consideration in a reasonable manner reflecting the relative value of any different components of the Alternate Consideration. If holders of Common Stock are given any choice as to the securities, cash or property to be received in a Fundamental Transaction, then the Holder shall be given the same choice as to the Alternate Consideration it receives upon any exercise of this Warrant following such Fundamental Transaction. At the Holder's request, any successor to the Company or surviving entity in such Fundamental Transaction shall issue to the Holder a new warrant consistent with the foregoing provisions, provided that

(i) the covenant set forth in Section 7 relating to the reservation of Common Stock shall be replaced with a covenant to the effect that sufficient Alternate Consideration shall be reserved for issuance upon exercise of the Warrant, and

(ii) Sections 8(d) and 10 shall be deleted in their entirety,

and evidencing the Holder's right to purchase the Alternate Consideration for the aggregate Exercise Price upon exercise thereof. The terms of any agreement pursuant to which a Fundamental Transaction is effected shall include terms requiring any such successor or surviving entity to comply with the provisions of this paragraph (c) and ensuring that the Warrant (or any such replacement security) will be similarly adjusted upon any subsequent transaction analogous to a Fundamental Transaction.

(d) Subsequent Equity Sales.

(i) If, at any time while this Warrant is outstanding, the Company or any Subsidiary issues additional shares of Common Stock or rights, warrants, options or other securities or debt convertible, exercisable or exchangeable for shares of Common Stock or otherwise entitling any Person to acquire shares of Common Stock (collectively, "Common Stock Equivalents") at an effective net price to the Company per share of Common Stock (the "Effective Price") less than the Exercise Price (as adjusted hereunder to such date), then the Exercise Price shall be reduced to equal the Effective Price. For purposes of this paragraph, in connection with any issuance of any Common Stock Equivalents, (A) the maximum number of shares of Common Stock potentially issuable at any time upon conversion, exercise or exchange of such Common Stock Equivalents (the "Deemed Number") shall be deemed to be outstanding upon issuance of such Common Stock Equivalents, (B) the Effective Price applicable to such Common Stock shall equal the minimum net dollar value of consideration payable to the Company to purchase such Common Stock Equivalents and to convert, exercise or exchange them into Common Stock, divided by the Deemed Number, and (C) no further adjustment shall be made to the Exercise Price upon the actual issuance of Common Stock upon conversion, exercise or exchange of such Common Stock Equivalents.

(ii) If, at any time while this Warrant is outstanding, the Company or any Subsidiary issues Common Stock Equivalents with an Effective Price or a number of underlying shares that floats or resets or otherwise varies or is subject to adjustment based (directly or indirectly) on market prices of the Common Stock (a "Floating Price Security"), then for purposes of applying the preceding paragraph in connection with any subsequent exercise, the Effective Price will be determined separately on each Exercise Date and will be deemed to equal the lowest Effective Price at which any holder of such Floating Price Security is entitled to acquire Common Stock on such Exercise Date (regardless of whether any such holder actually acquires any shares on such date).

(iii) Notwithstanding the foregoing, no adjustment will be made under this paragraph (d) in respect of any Excluded Stock.

(e) Number of Warrant Shares. Simultaneously with any adjustment to the Exercise Price pursuant to paragraphs (a), (b) or (d) of this Section, the number of Warrant Shares that may be purchased upon exercise of this Warrant shall be increased or decreased proportionately, so that after such adjustment the aggregate Exercise Price payable hereunder for the increased or decreased number of Warrant Shares shall be the same as the aggregate Exercise Price in effect immediately prior to such adjustment.

(f) Calculations. All calculations under this Section 8 shall be made to the nearest cent or the nearest 1/100th of a share, as applicable. The number of shares of Common Stock outstanding at any given time shall not include shares owned or held by or for the account of the Company, and the disposition of any such shares shall be considered an issue or sale of Common Stock.

(g) Notice of Adjustments. Upon the occurrence of each adjustment pursuant to this Section 8, the Company at its expense will promptly compute such adjustment in accordance with the terms of this Warrant and prepare a certificate setting forth such adjustment,

including a statement of the adjusted Exercise Price and adjusted number or type of Warrant Shares or other securities issuable upon exercise of this Warrant (as applicable), describing the transactions giving rise to such adjustments and showing in detail the facts upon which such adjustment is based. Upon written request, the Company will promptly deliver a copy of each such certificate to the Holder and to the Company's Transfer Agent.

(h) Notice of Corporate Events. If the Company (i) declares a dividend or any other distribution of cash, securities or other property in respect of its Common Stock, including without limitation any granting of rights or warrants to subscribe for or purchase any capital stock of the Company or any Subsidiary, (ii) authorizes or approves, enters into any agreement contemplating or solicits stockholder approval for any Fundamental Transaction or (iii) authorizes the voluntary dissolution, liquidation or winding up of the affairs of the Company, then the Company shall deliver to the Holder a notice describing the material terms and conditions of such transaction, at least 20 calendar days prior to the applicable record or effective date on which a Person would need to hold Common Stock in order to participate in or vote with respect to such transaction, and the Company will take all steps reasonably necessary in order to insure that the Holder is given the practical opportunity to exercise this Warrant prior to such time so as to participate in or vote with respect to such transaction; provided, however, that the failure to deliver such notice or any defect therein shall not affect the validity of the corporate action required to be described in such notice.

9. Payment of Exercise Price. The Holder shall pay the Exercise Price in one of the following manners:

(a) Cash Exercise. The Holder may deliver immediately available funds; or

(b) Cashless Exercise. The Holder may satisfy its obligation to pay the Exercise Price through a "cashless exercise," in which event the Company shall issue to the Holder the number of Warrant Shares determined as follows:

$$X = Y [(A-B)/A]$$

where:

X = the number of Warrant Shares to be issued to the Holder.

Y = the number of Warrant Shares with respect to which this Warrant is being exercised.

A = the average of the Closing Prices for the five Trading Days immediately prior to (but not including) the Exercise Date.

B = the Exercise Price.

For purposes of Rule 144 promulgated under the Securities Act, it is intended, understood and acknowledged that the Warrant Shares issued in a cashless exercise transaction shall be deemed to have been acquired by the Holder, and the holding period for the Warrant Shares shall be

deemed to have commenced, on the date this Warrant was originally issued pursuant to the Purchase Agreement.

10. Limitation on Exercise.

(a) Notwithstanding anything to the contrary contained herein, the number of shares of Common Stock that may be acquired by the Holder upon any exercise of this Warrant (or otherwise in respect hereof) shall be limited to the extent necessary to insure that, following such exercise (or other issuance), the total number of shares of Common Stock then beneficially owned by such Holder and its Affiliates and any other Persons whose beneficial ownership of Common Stock would be aggregated with the Holder's for purposes of Section 13(d) of the Exchange Act, does not exceed 4.999% (the "MAXIMUM PERCENTAGE") of the total number of issued and outstanding shares of Common Stock (including for such purpose the shares of Common Stock issuable upon such exercise). For such purposes, beneficial ownership shall be determined in accordance with Section 13(d) of the Exchange Act and the rules and regulations promulgated thereunder. Each delivery of an Exercise Notice hereunder will constitute a representation by the Holder that it has evaluated the limitation set forth in this paragraph and determined that issuance of the full number of Warrant Shares requested in such Exercise Notice is permitted under this paragraph. The Company's obligation to issue shares of Common Stock in excess of the limitation referred to in this Section shall be suspended (and shall not terminate or expire notwithstanding any contrary provisions hereof) until such time, if any, as such shares of Common Stock may be issued in compliance with such limitation. By written notice to the Company, the Holder may waive the provisions of this Section or increase or decrease the Maximum Percentage to any other percentage specified in such notice, but (i) any such waiver or increase will not be effective until the 61st day after such notice is delivered to the Company, and (ii) any such waiver or increase or decrease will apply only to the Holder and not to any other holder of Warrants.

(b) Notwithstanding anything to the contrary contained herein, if the Trading Market is the Nasdaq National Market or the Nasdaq SmallCap Market or any other market or exchange with similar applicable rules, then the maximum number of shares of Common Stock that the Company may issue pursuant to the Transaction Documents at an effective purchase price less than the Closing Price on the Trading Day immediately preceding the Closing Date equals 5,825,000 shares (as adjusted for stock splits, stock combinations or similar events) (the "ISSUABLE MAXIMUM"), unless the Company obtains shareholder approval in accordance with the rules and regulations of such Trading Market. If, at the time any Purchaser requests an exercise of any of the Warrants, the Actual Minimum (excluding any shares issued or issuable at an effective purchase price in excess of the Closing Price on the Trading Day immediately preceding the Closing Date) exceeds the Issuable Maximum (and if the Company has not previously obtained the required shareholder approval), then the Company shall issue to the Purchaser requesting such exercise a number of shares of Common Stock not exceeding such Purchaser's pro-rata portion of the Issuable Maximum (based on such Purchaser's share (vis-a-vis other Purchasers) of the aggregate purchase price paid under the Purchase Agreement and taking into account any Warrant Shares previously issued to such Purchaser), and the remainder of the Warrant Shares issuable in connection with such exercise or conversion (if any) shall constitute "Excess Shares" pursuant to Section 10(c) below.

(c) In the event that any Purchaser's receipt of shares of Common Stock upon restricted based on the Issuable Maximum, the Company shall either: (i) use its best efforts to obtain the required shareholder approval necessary to permit the issuance of such Excess Shares as soon as is reasonably possible, but in any event not later than the 60th day after the event giving rise to such Excess Shares, or (ii) within five Trading Days after such event, pay cash to such Purchaser, as liquidated damages and not as a penalty, in an amount equal to the difference between the Black-Scholes value of this Warrant assuming the limitations in Section 10(b) were not applicable and the Black-Scholes value of this Warrant after giving effect to the limitations in Section 10(b), measured as of the date of such event or, if greater, the date of payment (such difference, the "Cash Amount"). For the purposes of this Section 10(c) the Black-Scholes value of this Warrant shall be calculated in a manner consistent with the manner in which the Company performs Black-Scholes calculations to determine the fair value of option grants for the purposes of the financial statements contained in its SEC Reports. If the Company elects the first option under the preceding sentence and the Company fails to obtain the required shareholder approval on or prior to the 60th day after such event, then within three Trading Days after such 60th day, the Company shall pay the Cash Amount to such Purchaser, as liquidated damages and not as a penalty.

11. Fractional Shares. The Company shall not be required to issue or cause to be issued fractional Warrant Shares on the exercise of this Warrant. If any fraction of a Warrant Share would, except for the provisions of this Section, be issuable upon exercise of this Warrant, the number of Warrant Shares to be issued will be rounded up to the nearest whole share.

12. Notices. Any and all notices or other communications or deliveries hereunder (including without limitation any Exercise Notice) shall be in writing and shall be deemed given and effective on the earliest of (i) the date of transmission, if such notice or communication is delivered via facsimile at the facsimile number specified in this Section prior to 6:30 p.m. (New York City time) on a Trading Day, (ii) the next Trading Day after the date of transmission, if such notice or communication is delivered via facsimile at the facsimile number specified in this Section on a day that is not a Trading Day or later than 6:30 p.m. (New York City time) on any Trading Day, (iii) the Trading Day following the date of mailing, if sent by nationally recognized overnight courier service, or (iv) upon actual receipt by the party to whom such notice is required to be given. The address for such notices or communications shall be as set forth in the Purchase Agreement.

13. Warrant Agent. The Company shall serve as warrant agent under this Warrant. Upon 30 days' notice to the Holder, the Company may appoint a new warrant agent. Any corporation into which the Company or any new warrant agent may be merged or any corporation resulting from any consolidation to which the Company or any new warrant agent shall be a party or any corporation to which the Company or any new warrant agent transfers substantially all of its corporate trust or shareholders services business shall be a successor warrant agent under this Warrant without any further act. Any such successor warrant agent shall promptly cause notice of its succession as warrant agent to be mailed (by first class mail, postage prepaid) to the Holder at the Holder's last address as shown on the Warrant Register.

14. Loss, Theft or Destruction of Warrant. In the event that the Holder notifies the Company that this Warrant has been lost, stolen or destroyed, then a replacement Warrant,

identical in all respects to the original Warrant (except for any registration number and any adjustment pursuant hereto to the Exercise Price or number of Warrant Shares issuable hereunder, if different that the numbers shown on the original Warrant) shall be delivered to the Holder by the Company, provided that such Holder executes and delivers to the Company an agreement reasonably satisfactory to the Company to indemnify the Company from any loss incurred by the Company in connection with such Warrant.

15. No Rights as Stockholder until Exercise. Subject to Section 8 of this Warrant and the provisions of any other Transaction Documents, prior to the exercise of this Warrant as provided herein, the Holder shall not be entitled to vote or receive dividends or be deemed the holder of Warrant Shares or any other securities of the Company that may at any time be issuable on the exercise hereof for any purpose, nor shall anything contained herein be construed to confer upon the Holder, as such, any of the rights of a stockholder of the Company or any right to vote for the election of directors or upon any matter submitted to the stockholders at any meeting thereof, or to give or withhold consent to any corporate action or to receive notice of meetings, or to receive dividend or subscription rights.

16. Miscellaneous.

(a) This Warrant shall be binding on and inure to the benefit of the parties hereto and their respective successors and assigns. Subject to the preceding sentence, nothing in this Warrant shall be construed to give to any Person other than the Company and the Holder any legal or equitable right, remedy or cause of action under this Warrant. This Warrant may be amended only in writing signed by the Company and the Holder and their successors and assigns.

(b) The Company will not, by amendment of its governing documents or through any reorganization, transfer of assets, consolidation, merger, dissolution, issue or sale of securities or any other voluntary action, avoid or seek to avoid the observance or performance of any of the terms of this Warrant, but will at all times in good faith assist in the carrying out of all such terms and in the taking of all such action as may be necessary or appropriate in order to protect the rights of the Holder against impairment. Without limiting the generality of the foregoing, the Company (i) will not increase the par value of any Warrant Shares above the amount payable therefor on such exercise, (ii) will take all such action as may be reasonably necessary or appropriate in order that the Company may validly and legally issue fully paid and nonassessable Warrant Shares on the exercise of this Warrant, and (iii) will not close its shareholder books or records in any manner which interferes with the timely exercise of this Warrant.

(c) GOVERNING LAW; VENUE; WAIVER OF JURY TRIAL. THE CORPORATE LAWS OF THE STATE OF DELAWARE SHALL GOVERN ALL ISSUES CONCERNING THE RELATIVE RIGHTS OF THE COMPANY AND ITS STOCKHOLDERS. ALL QUESTIONS CONCERNING THE CONSTRUCTION, VALIDITY, ENFORCEMENT AND INTERPRETATION OF THIS WARRANT SHALL BE GOVERNED BY AND CONSTRUED AND ENFORCED IN ACCORDANCE WITH THE LAWS OF THE STATE OF NEW YORK. EACH PARTY HEREBY IRREVOCABLY SUBMITS TO THE EXCLUSIVE JURISDICTION OF THE STATE AND FEDERAL COURTS SITTING IN THE CITY OF NEW YORK, BOROUGH OF MANHATTAN, FOR THE ADJUDICATION OF ANY DISPUTE HEREUNDER OR IN CONNECTION HERewith OR WITH ANY

TRANSACTION CONTEMPLATED HEREBY OR DISCUSSED HEREIN (INCLUDING WITH RESPECT TO THE ENFORCEMENT OF ANY OF THE TRANSACTION DOCUMENTS), AND HEREBY IRREVOCABLY WAIVES, AND AGREES NOT TO ASSERT IN ANY SUIT, ACTION OR PROCEEDING, ANY CLAIM THAT IT IS NOT PERSONALLY SUBJECT TO THE JURISDICTION OF ANY SUCH COURT, THAT SUCH SUIT, ACTION OR PROCEEDING IS IMPROPER. EACH PARTY HEREBY IRREVOCABLY WAIVES PERSONAL SERVICE OF PROCESS AND CONSENTS TO PROCESS BEING SERVED IN ANY SUCH SUIT, ACTION OR PROCEEDING BY MAILING A COPY THEREOF VIA REGISTERED OR CERTIFIED MAIL OR OVERNIGHT DELIVERY (WITH EVIDENCE OF DELIVERY) TO SUCH PARTY AT THE ADDRESS IN EFFECT FOR NOTICES TO IT UNDER THIS AGREEMENT AND AGREES THAT SUCH SERVICE SHALL CONSTITUTE GOOD AND SUFFICIENT SERVICE OF PROCESS AND NOTICE THEREOF. NOTHING CONTAINED HEREIN SHALL BE DEEMED TO LIMIT IN ANY WAY ANY RIGHT TO SERVE PROCESS IN ANY MANNER PERMITTED BY LAW. THE COMPANY HEREBY WAIVES ALL RIGHTS TO A TRIAL BY JURY.

(d) The headings herein are for convenience only, do not constitute a part of this Warrant and shall not be deemed to limit or affect any of the provisions hereof.

(e) In case any one or more of the provisions of this Warrant shall be invalid or unenforceable in any respect, the validity and enforceability of the remaining terms and provisions of this Warrant shall not in any way be affected or impaired thereby and the parties will attempt in good faith to agree upon a valid and enforceable provision which shall be a commercially reasonable substitute therefor, and upon so agreeing, shall incorporate such substitute provision in this Warrant.

IN WITNESS WHEREOF, the Company has caused this Warrant to be duly executed by its authorized officer as of the date first indicated above.

ASPEN TECHNOLOGY, INC.

By: _____
Name: _____
Title: _____

FORM OF EXERCISE NOTICE

(To be executed by the Holder to exercise the right to purchase shares of Common Stock under the foregoing Warrant)

To: Aspen Technology, Inc.

The undersigned is the Holder of Warrant No. _____ (the "WARRANT") issued by Aspen Technology, Inc., a Delaware corporation (the "COMPANY"). Capitalized terms used herein and not otherwise defined have the respective meanings set forth in the Warrant.

1. The Warrant is currently exercisable to purchase a total of _____ Warrant Shares.
2. The undersigned Holder hereby exercises its right to purchase _____ Warrant Shares pursuant to the Warrant.
3. The Holder intends that payment of the Exercise Price shall be made as (check one):

 ____ "Cash Exercise" under Section 9(a)
 ____ "Cashless Exercise" under Section 9(b)
4. If the holder has elected a Cash Exercise, the holder shall pay the sum of \$_____ to the Company in accordance with the terms of the Warrant.
5. Pursuant to this exercise, the Company shall deliver to the holder _____ Warrant Shares in accordance with the terms of the Warrant.
6. Following this exercise, the Warrant shall be exercisable to purchase a total of _____ Warrant Shares.

Dated: _____, _____

Name of Holder:

(Print) _____

By: _____

Name: _____

Title: _____

(Signature must conform in all respects to name of holder as specified on the face of the Warrant)

FORM OF ASSIGNMENT

[To be completed and signed only upon transfer of Warrant]

FOR VALUE RECEIVED, the undersigned hereby sells, assigns and transfers unto _____ the right represented by the within Warrant to purchase _____ shares of Common Stock of Aspen Technology, Inc. to which the within Warrant relates and appoints _____ attorney to transfer said right on the books of Aspen Technology, Inc. with full power of substitution in the premises.

Dated: _____, _____

(Signature must conform in all respects to name of holder as specified on the face of the Warrant)

Address of Transferee

In the presence of:

FORM OF WARRANT FOR SECOND CLOSING

THESE SECURITIES HAVE NOT BEEN REGISTERED WITH THE SECURITIES AND EXCHANGE COMMISSION OR THE SECURITIES COMMISSION OF ANY STATE IN RELIANCE UPON AN EXEMPTION FROM REGISTRATION UNDER THE SECURITIES ACT OF 1933, AS AMENDED (THE "SECURITIES ACT"), AND, ACCORDINGLY, MAY NOT BE OFFERED OR SOLD EXCEPT PURSUANT TO AN EFFECTIVE REGISTRATION STATEMENT UNDER THE SECURITIES ACT OR PURSUANT TO AN AVAILABLE EXEMPTION FROM THE REGISTRATION REQUIREMENTS OF THE SECURITIES ACT AND IN COMPLIANCE WITH APPLICABLE STATE SECURITIES OR BLUE SKY LAWS. THESE SECURITIES AND THE SECURITIES ISSUABLE UPON EXERCISE OF THESE SECURITIES MAY BE PLEDGED IN CONNECTION WITH A BONA FIDE MARGIN ACCOUNT OR OTHER LOAN SECURED BY SUCH SECURITIES.

ASPEN TECHNOLOGY, INC.

WARRANT

Warrant No. []

Dated: February 28, 2002

Aspen Technology, Inc., a Delaware corporation (the "COMPANY"), hereby certifies that, for value received, [Name of Holder] or its registered assigns (the "HOLDER"), is entitled to purchase from the Company up to a total of [] shares of common stock, \$0.10 par value per share (the "COMMON STOCK"), of the Company (each such share, a "WARRANT SHARE" and all such shares, the "WARRANT SHARES") at an exercise price equal to \$[] per share (as adjusted from time to time as provided in Section 8, the "EXERCISE PRICE"), at any time and from time to time from and after the date hereof and through and including February 28, 2007 (the "EXPIRATION DATE"), and subject to the following terms and conditions. This Warrant (this "Warrant") is one of a series of similar warrants issued pursuant to that certain Securities Purchase Agreement, dated as of the date hereof, by and among the Company and the Purchasers identified therein (the "PURCHASE AGREEMENT"). All such warrants are referred to herein, collectively, as the "WARRANTS."

1. Definitions. In addition to the terms defined elsewhere in this Warrant, capitalized terms that are not otherwise defined herein have the meanings given to such terms in the Purchase Agreement.

2. Registration of Warrant. The Company shall register this Warrant, upon records to be maintained by the Company for that purpose (the "WARRANT REGISTER"), in the name of the record Holder hereof from time to time. The Company may deem and treat the registered Holder

of this Warrant as the absolute owner hereof for the purpose of any exercise hereof or any distribution to the Holder, and for all other purposes, absent actual notice to the contrary.

3. Registration of Transfers. The Company shall register the transfer of any portion of this Warrant in the Warrant Register, upon surrender of this Warrant, with the Form of Assignment attached hereto duly completed and signed by the Holder, to the Transfer Agent or to the Company at its address specified herein, provided that any such assignment shall be pursuant to a Qualified Transfer. Upon any such registration or transfer, a new warrant to purchase Common Stock, in substantially the form of this Warrant (any such new warrant, a "NEW WARRANT"), evidencing the portion of this Warrant so transferred shall be issued to the transferee and a New Warrant evidencing the remaining portion of this Warrant not so transferred, if any, shall be issued to the transferring Holder. The acceptance of the New Warrant by the transferee thereof shall be deemed the acceptance by such transferee of all of the rights and obligations of a holder of a Warrant.

4. Exercise and Duration of Warrant.

(a) This Warrant shall be exercisable by the registered Holder at any time and from time to time on or after the date hereof to and including the Expiration Date. At 6:30 P.M., New York City time on the Expiration Date, the portion of this Warrant not exercised prior thereto shall be and become void and of no value; provided that, if the average of the Closing Prices for the five Trading Days immediately prior to (but not including) the Expiration Date exceeds the Exercise Price on the Expiration Date, then this Warrant shall be deemed to have been exercised in full (to the extent not previously exercised) on a "cashless exercise" basis at 6:30 P.M. New York City time on the Expiration Date.

(b) Except as provided in Section 4(a), a Holder may exercise this Warrant by delivering to the Company (i) an Exercise Notice, in the form attached hereto, appropriately completed and duly signed, and (ii) payment of the Exercise Price for the number of Warrant Shares as to which this Warrant is being exercised (which may take the form of a "cashless exercise" if so indicated in the Exercise Notice), and the date such items are delivered to the Company (as determined in accordance with the notice provisions hereof), or the Warrant has been deemed to have been exercised pursuant to Section 4(a), is an "EXERCISE DATE." The Holder shall not be required to deliver the original Warrant in order to effect an exercise hereunder. Execution and delivery of the Exercise Notice shall have the same effect as cancellation of the original Warrant and issuance of a New Warrant evidencing the right to purchase the remaining number of Warrant Shares.

5. Delivery of Warrant Shares.

(a) Upon exercise of this Warrant, the Company shall promptly (but in no event later than three Trading Days after the Exercise Date) issue or cause to be issued and cause to be delivered to or upon the written order of the Holder and in such name or names as the Holder may designate, a certificate for the Warrant Shares issuable upon such exercise, free of restrictive legends unless a registration statement covering the resale of the Warrant Shares and naming the Holder as a selling stockholder thereunder is not then effective and the Warrant Shares are not freely transferable without volume restrictions pursuant to Rule 144 under the

Securities Act. Notwithstanding the foregoing, if the Warrant is deemed to have been exercised pursuant to Section 4(a), then the Company shall issue or cause to be issued a certificate for the Warrant Shares issuable upon such exercise no later than three Trading Days after the Holder delivers a notice to the Company in accordance with Section 12 that the Warrant was deemed to have been exercised pursuant to Section 4(a). The Holder, or any Person so designated by the Holder to receive Warrant Shares, shall be deemed to have become holder of record of such Warrant Shares as of the Exercise Date. The Company shall, upon request of the Holder, use its commercially reasonable best efforts to deliver Warrant Shares hereunder electronically through the Depository Trust Corporation or another established clearing corporation performing similar functions.

(b) This Warrant is exercisable, either in its entirety or, from time to time, for a portion of the number of Warrant Shares. Upon surrender of this Warrant following one or more partial exercises, the Company shall issue or cause to be issued, at its expense, a New Warrant evidencing the right to purchase the remaining number of Warrant Shares.

(c) The Company's obligations to issue and deliver Warrant Shares subject to and in accordance with the terms hereof are absolute and unconditional, irrespective of any action or inaction by the Holder to enforce the same, any waiver or consent with respect to any provision hereof, the recovery of any judgment against any Person or any action to enforce the same, or any setoff, counterclaim, recoupment, limitation or termination, or any breach or alleged breach by the Holder or any other Person of any obligation to the Company or any violation or alleged violation of law by the Holder or any other Person, and irrespective of any other circumstance which might otherwise limit such obligation of the Company to the Holder in connection with the issuance of Warrant Shares.

6. Charges, Taxes and Expenses. Issuance of certificates for shares of Common Stock upon exercise of this Warrant shall be made without charge to the Holder for any issue or transfer tax, withholding tax, transfer agent fee or other incidental tax or expense in respect of the issuance of such certificates, all of which taxes and expenses shall be paid by the Company; provided, however, that the Company shall not be required to pay any tax which may be payable in respect of any transfer involved in the registration of any certificates for Warrant Shares or Warrants in a name other than that of the Holder. The Holder shall be responsible for all other tax liability that may arise as a result of holding or transferring this Warrant or receiving Warrant Shares upon exercise hereof.

7. Reservation of Warrant Shares. The Company covenants that it will at all times reserve and keep available out of the aggregate of its authorized but unissued and otherwise unreserved Common Stock, solely for the purpose of enabling it to issue Warrant Shares upon exercise of this Warrant as herein provided, 665,854 shares of Common Stock (as adjusted for any stock splits, stock combinations or similar events), free from preemptive rights or any other contingent purchase rights of persons other than the Holder (taking into account the adjustments and restrictions of Section 8), less any shares of Common Stock issued upon exercise of the Warrants and reductions reasonably agreed to by the Purchasers to reflect shares of Common Stock issued upon exercise of the Warrants. The Company covenants that all Warrant Shares so issuable and deliverable shall, upon issuance and the payment of the applicable Exercise Price in accordance with the terms hereof, be duly and validly authorized, issued and fully paid and

nonassessable. The Company will take all such action as may be necessary to assure that such shares of stock may be issued as provided herein without violation of any applicable law or regulation, or of any requirements of any securities exchange or automated quotation system upon which the stock may be listed (it being understood that the Company shall not be required to take any action to assure the issuance of stock to any Purchaser to the extent that such issuance is prohibited by some act or failure to act of such Purchaser).

8. Certain Adjustments. The Exercise Price and number of Warrant Shares issuable upon exercise of this Warrant are subject to adjustment from time to time as set forth in this Section 8.

(a) Stock Dividends and Splits. If the Company, at any time while this Warrant is outstanding, (i) pays a stock dividend on its Common Stock or otherwise makes a distribution on any class of capital stock that is payable in shares of Common Stock, (ii) subdivides outstanding shares of Common Stock into a larger number of shares, or (iii) combines outstanding shares of Common Stock into a smaller number of shares, then in each such case the Exercise Price shall be multiplied by a fraction of which the numerator shall be the number of shares of Common Stock outstanding immediately before such event and of which the denominator shall be the number of shares of Common Stock outstanding immediately after such event. Any adjustment made pursuant to clause (i) of this paragraph shall become effective immediately after the record date for the determination of stockholders entitled to receive such dividend or distribution, and any adjustment pursuant to clause (ii) or (iii) of this paragraph shall become effective immediately after the effective date of such subdivision or combination.

(b) Pro Rata Distributions. If the Company, at any time while this Warrant is outstanding, distributes to holders of Common Stock (i) evidences of its indebtedness, (ii) any security (other than a distribution of Common Stock covered by the preceding paragraph), (iii) rights or warrants to subscribe for or purchase any security, or (iv) any other asset (in each case, "DISTRIBUTED PROPERTY"), then in each such case the Exercise Price in effect immediately prior to the record date fixed for determination of stockholders entitled to receive such distribution shall be adjusted (effective on such record date) to equal the product of such Exercise Price times a fraction of which the denominator shall be the average of the Closing Prices for the last five Trading Days immediately prior to (but not including) such record date and of which the numerator shall be such average less the then fair market value of the Distributed Property distributed in respect of one outstanding share of Common Stock, as determined by the Company's independent certified public accountants that regularly examine the financial statements of the Company, or, if such accountants are unable or unwilling to make such determination for any reason, then a nationally recognized investment banking firm or accounting firm designated by the Company (an "APPRAISER"). In such event, the Holder, after receipt of the determination by the Appraiser, shall have the right to select an additional appraiser (which shall be a nationally recognized investment banking firm or accounting firm), in which case such fair market value shall be deemed to equal the average of the values determined by each of the Appraiser and such appraiser. As an alternative to the foregoing adjustment to the Exercise Price, at the request of the Holder delivered before the 90th day after such record date, the Company, within five Trading Days after such request (or, if later, on the effective date of such distribution), will place the Distributed Property that such Holder would have been entitled to receive in respect of the Warrant Shares for which this Warrant could have been exercised

immediately prior to such record date in escrow with an escrow agent selected by the Company and reasonably acceptable to the Holder. Thereafter, upon exercise of this Warrant in accordance with Section 4, the Holder shall be entitled to receive, in addition to the number of Warrant Shares issuable such exercise, that portion of the escrowed Distributed Property attributable to the number of Warrant Shares for which the Warrant has been exercised, giving effect to all applicable adjustments called for pursuant to this Section 8 during such escrow period.

(c) Fundamental Transactions. If, at any time while this Warrant is outstanding, (i) the Company effects any merger or consolidation of the Company with or into another Person, (ii) the Company effects any sale of all or substantially all of its assets in one or a series of related transactions, (iii) any tender offer or exchange offer (whether by the Company or another Person) is completed pursuant to which holders of Common Stock are permitted to tender or exchange their shares for other securities, cash or property, or (iv) the Company effects any reclassification of the Common Stock or any compulsory share exchange pursuant to which the Common Stock is effectively converted into or exchanged for other securities, cash or property (in any such case, a "FUNDAMENTAL TRANSACTION"), then the Holder shall have the right thereafter to receive, upon exercise of this Warrant, the same amount and kind of securities, cash or property as it would have been entitled to receive upon the occurrence of such Fundamental Transaction if it had been, immediately prior to such Fundamental Transaction, the holder of the number of Warrant Shares then issuable upon exercise in full of this Warrant (the "ALTERNATE CONSIDERATION"). The aggregate Exercise Price for this Warrant will not be affected by any such Fundamental Transaction, but the Company shall apportion such aggregate Exercise Price among the Alternate Consideration in a reasonable manner reflecting the relative value of any different components of the Alternate Consideration. If holders of Common Stock are given any choice as to the securities, cash or property to be received in a Fundamental Transaction, then the Holder shall be given the same choice as to the Alternate Consideration it receives upon any exercise of this Warrant following such Fundamental Transaction. At the Holder's request, any successor to the Company or surviving entity in such Fundamental Transaction shall issue to the Holder a new warrant consistent with the foregoing provisions, provided that

(i) the covenant set forth in Section 7 relating to the reservation of Common Stock shall be replaced with a covenant to the effect that sufficient Alternate Consideration shall be reserved for issuance upon exercise of the Warrant, and

(ii) Sections 8(d) and 10 shall be deleted in their entirety,

and evidencing the Holder's right to purchase the Alternate Consideration for the aggregate Exercise Price upon exercise thereof. The terms of any agreement pursuant to which a Fundamental Transaction is effected shall include terms requiring any such successor or surviving entity to comply with the provisions of this paragraph (c) and ensuring that the Warrant (or any such replacement security) will be similarly adjusted upon any subsequent transaction analogous to a Fundamental Transaction.

(d) Subsequent Equity Sales.

(i) If, at any time while this Warrant is outstanding, the Company or any Subsidiary issues additional shares of Common Stock or rights, warrants, options or other securities or debt convertible, exercisable or exchangeable for shares of Common Stock or otherwise entitling any Person to acquire shares of Common Stock (collectively, "Common Stock Equivalents") at an effective net price to the Company per share of Common Stock (the "Effective Price") less than the Exercise Price (as adjusted hereunder to such date), then the Exercise Price shall be reduced to equal the Effective Price. For purposes of this paragraph, in connection with any issuance of any Common Stock Equivalents, (A) the maximum number of shares of Common Stock potentially issuable at any time upon conversion, exercise or exchange of such Common Stock Equivalents (the "Deemed Number") shall be deemed to be outstanding upon issuance of such Common Stock Equivalents, (B) the Effective Price applicable to such Common Stock shall equal the minimum net dollar value of consideration payable to the Company to purchase such Common Stock Equivalents and to convert, exercise or exchange them into Common Stock, divided by the Deemed Number, and (C) no further adjustment shall be made to the Exercise Price upon the actual issuance of Common Stock upon conversion, exercise or exchange of such Common Stock Equivalents.

(ii) If, at any time while this Warrant is outstanding, the Company or any Subsidiary issues Common Stock Equivalents with an Effective Price or a number of underlying shares that floats or resets or otherwise varies or is subject to adjustment based (directly or indirectly) on market prices of the Common Stock (a "Floating Price Security"), then for purposes of applying the preceding paragraph in connection with any subsequent exercise, the Effective Price will be determined separately on each Exercise Date and will be deemed to equal the lowest Effective Price at which any holder of such Floating Price Security is entitled to acquire Common Stock on such Exercise Date (regardless of whether any such holder actually acquires any shares on such date).

(iii) Notwithstanding the foregoing, no adjustment will be made under this paragraph (d) in respect of any Excluded Stock.

(e) Number of Warrant Shares. Simultaneously with any adjustment to the Exercise Price pursuant to paragraphs (a), (b) or (d) of this Section, the number of Warrant Shares that may be purchased upon exercise of this Warrant shall be increased or decreased proportionately, so that after such adjustment the aggregate Exercise Price payable hereunder for the increased or decreased number of Warrant Shares shall be the same as the aggregate Exercise Price in effect immediately prior to such adjustment.

(f) Calculations. All calculations under this Section 8 shall be made to the nearest cent or the nearest 1/100th of a share, as applicable. The number of shares of Common Stock outstanding at any given time shall not include shares owned or held by or for the account of the Company, and the disposition of any such shares shall be considered an issue or sale of Common Stock.

(g) Notice of Adjustments. Upon the occurrence of each adjustment pursuant to this Section 8, the Company at its expense will promptly compute such adjustment in accordance with the terms of this Warrant and prepare a certificate setting forth such adjustment,

including a statement of the adjusted Exercise Price and adjusted number or type of Warrant Shares or other securities issuable upon exercise of this Warrant (as applicable), describing the transactions giving rise to such adjustments and showing in detail the facts upon which such adjustment is based. Upon written request, the Company will promptly deliver a copy of each such certificate to the Holder and to the Company's Transfer Agent.

(h) Notice of Corporate Events. If the Company (i) declares a dividend or any other distribution of cash, securities or other property in respect of its Common Stock, including without limitation any granting of rights or warrants to subscribe for or purchase any capital stock of the Company or any Subsidiary, (ii) authorizes or approves, enters into any agreement contemplating or solicits stockholder approval for any Fundamental Transaction or (iii) authorizes the voluntary dissolution, liquidation or winding up of the affairs of the Company, then the Company shall deliver to the Holder a notice describing the material terms and conditions of such transaction, at least 20 calendar days prior to the applicable record or effective date on which a Person would need to hold Common Stock in order to participate in or vote with respect to such transaction, and the Company will take all steps reasonably necessary in order to insure that the Holder is given the practical opportunity to exercise this Warrant prior to such time so as to participate in or vote with respect to such transaction; provided, however, that the failure to deliver such notice or any defect therein shall not affect the validity of the corporate action required to be described in such notice.

9. Payment of Exercise Price. The Holder shall pay the Exercise Price in one of the following manners:

(a) Cash Exercise. The Holder may deliver immediately available funds; or

(b) Cashless Exercise. The Holder may satisfy its obligation to pay the Exercise Price through a "cashless exercise," in which event the Company shall issue to the Holder the number of Warrant Shares determined as follows:

$$X = Y [(A-B)/A]$$

where:

X = the number of Warrant Shares to be issued to the Holder.

Y = the number of Warrant Shares with respect to which this Warrant is being exercised.

A = the average of the Closing Prices for the five Trading Days immediately prior to (but not including) the Exercise Date.

B = the Exercise Price.

For purposes of Rule 144 promulgated under the Securities Act, it is intended, understood and acknowledged that the Warrant Shares issued in a cashless exercise transaction shall be deemed to have been acquired by the Holder, and the holding period for the Warrant Shares shall be

deemed to have commenced, on the date this Warrant was originally issued pursuant to the Purchase Agreement.

10. Limitation on Exercise.

(a) Notwithstanding anything to the contrary contained herein, the number of shares of Common Stock that may be acquired by the Holder upon any exercise of this Warrant (or otherwise in respect hereof) shall be limited to the extent necessary to insure that, following such exercise (or other issuance), the total number of shares of Common Stock then beneficially owned by such Holder and its Affiliates and any other Persons whose beneficial ownership of Common Stock would be aggregated with the Holder's for purposes of Section 13(d) of the Exchange Act, does not exceed 4.999% (the "MAXIMUM PERCENTAGE") of the total number of issued and outstanding shares of Common Stock (including for such purpose the shares of Common Stock issuable upon such exercise). For such purposes, beneficial ownership shall be determined in accordance with Section 13(d) of the Exchange Act and the rules and regulations promulgated thereunder. Each delivery of an Exercise Notice hereunder will constitute a representation by the Holder that it has evaluated the limitation set forth in this paragraph and determined that issuance of the full number of Warrant Shares requested in such Exercise Notice is permitted under this paragraph. The Company's obligation to issue shares of Common Stock in excess of the limitation referred to in this Section shall be suspended (and shall not terminate or expire notwithstanding any contrary provisions hereof) until such time, if any, as such shares of Common Stock may be issued in compliance with such limitation. By written notice to the Company, the Holder may waive the provisions of this Section or increase or decrease the Maximum Percentage to any other percentage specified in such notice, but (i) any such waiver or increase will not be effective until the 61st day after such notice is delivered to the Company, and (ii) any such waiver or increase or decrease will apply only to the Holder and not to any other holder of Warrants.

(b) Notwithstanding anything to the contrary contained herein, if the Trading Market is the Nasdaq National Market or the Nasdaq SmallCap Market or any other market or exchange with similar applicable rules, then the maximum number of shares of Common Stock that the Company may issue pursuant to the Transaction Documents at an effective purchase price less than the Closing Price on the Trading Day immediately preceding the Closing Date equals 5,825,000 shares (as adjusted for stock splits, stock combinations or similar events) (the "ISSUABLE MAXIMUM"), unless the Company obtains shareholder approval in accordance with the rules and regulations of such Trading Market. If, at the time any Purchaser requests an exercise of any of the Warrants, the Actual Minimum (excluding any shares issued or issuable at an effective purchase price in excess of the Closing Price on the Trading Day immediately preceding the Closing Date) exceeds the Issuable Maximum (and if the Company has not previously obtained the required shareholder approval), then the Company shall issue to the Purchaser requesting such exercise a number of shares of Common Stock not exceeding such Purchaser's pro-rata portion of the Issuable Maximum (based on such Purchaser's share (vis-a-vis other Purchasers) of the aggregate purchase price paid under the Purchase Agreement and taking into account any Warrant Shares previously issued to such Purchaser), and the remainder of the Warrant Shares issuable in connection with such exercise or conversion (if any) shall constitute "Excess Shares" pursuant to Section 10(c) below.

(c) In the event that any Purchaser's receipt of shares of Common Stock upon restricted based on the Issuable Maximum, the Company shall either: (i) use its best efforts to obtain the required shareholder approval necessary to permit the issuance of such Excess Shares as soon as is reasonably possible, but in any event not later than the 60th day after the event giving rise to such Excess Shares, or (ii) within five Trading Days after such event, pay cash to such Purchaser, as liquidated damages and not as a penalty, in an amount equal to the difference between the Black-Scholes value of this Warrant assuming the limitations in Section 10(b) were not applicable and the Black-Scholes value of this Warrant after giving effect to the limitations in Section 10(b), measured as of the date of such event or, if greater, the date of payment (such difference, the "Cash Amount"). For the purposes of this Section 10(c) the Black-Scholes value of this Warrant shall be calculated in a manner consistent with the manner in which the Company performs Black-Scholes calculations to determine the fair value of option grants for the purposes of the financial statements contained in its SEC Reports. If the Company elects the first option under the preceding sentence and the Company fails to obtain the required shareholder approval on or prior to the 60th day after such event, then within three Trading Days after such 60th day, the Company shall pay the Cash Amount to such Purchaser, as liquidated damages and not as a penalty.

11. Fractional Shares. The Company shall not be required to issue or cause to be issued fractional Warrant Shares on the exercise of this Warrant. If any fraction of a Warrant Share would, except for the provisions of this Section, be issuable upon exercise of this Warrant, the number of Warrant Shares to be issued will be rounded up to the nearest whole share.

12. Notices. Any and all notices or other communications or deliveries hereunder (including without limitation any Exercise Notice) shall be in writing and shall be deemed given and effective on the earliest of (i) the date of transmission, if such notice or communication is delivered via facsimile at the facsimile number specified in this Section prior to 6:30 p.m. (New York City time) on a Trading Day, (ii) the next Trading Day after the date of transmission, if such notice or communication is delivered via facsimile at the facsimile number specified in this Section on a day that is not a Trading Day or later than 6:30 p.m. (New York City time) on any Trading Day, (iii) the Trading Day following the date of mailing, if sent by nationally recognized overnight courier service, or (iv) upon actual receipt by the party to whom such notice is required to be given. The address for such notices or communications shall be as set forth in the Purchase Agreement.

13. Warrant Agent. The Company shall serve as warrant agent under this Warrant. Upon 30 days' notice to the Holder, the Company may appoint a new warrant agent. Any corporation into which the Company or any new warrant agent may be merged or any corporation resulting from any consolidation to which the Company or any new warrant agent shall be a party or any corporation to which the Company or any new warrant agent transfers substantially all of its corporate trust or shareholders services business shall be a successor warrant agent under this Warrant without any further act. Any such successor warrant agent shall promptly cause notice of its succession as warrant agent to be mailed (by first class mail, postage prepaid) to the Holder at the Holder's last address as shown on the Warrant Register.

14. Loss, Theft or Destruction of Warrant. In the event that the Holder notifies the Company that this Warrant has been lost, stolen or destroyed, then a replacement Warrant,

identical in all respects to the original Warrant (except for any registration number and any adjustment pursuant hereto to the Exercise Price or number of Warrant Shares issuable hereunder, if different that the numbers shown on the original Warrant) shall be delivered to the Holder by the Company, provided that such Holder executes and delivers to the Company an agreement reasonably satisfactory to the Company to indemnify the Company from any loss incurred by the Company in connection with such Warrant.

15. No Rights as Stockholder until Exercise. Subject to Section 8 of this Warrant and the provisions of any other Transaction Documents, prior to the exercise of this Warrant as provided herein, the Holder shall not be entitled to vote or receive dividends or be deemed the holder of Warrant Shares or any other securities of the Company that may at any time be issuable on the exercise hereof for any purpose, nor shall anything contained herein be construed to confer upon the Holder, as such, any of the rights of a stockholder of the Company or any right to vote for the election of directors or upon any matter submitted to the stockholders at any meeting thereof, or to give or withhold consent to any corporate action or to receive notice of meetings, or to receive dividend or subscription rights.

16. Miscellaneous.

(a) This Warrant shall be binding on and inure to the benefit of the parties hereto and their respective successors and assigns. Subject to the preceding sentence, nothing in this Warrant shall be construed to give to any Person other than the Company and the Holder any legal or equitable right, remedy or cause of action under this Warrant. This Warrant may be amended only in writing signed by the Company and the Holder and their successors and assigns.

(b) The Company will not, by amendment of its governing documents or through any reorganization, transfer of assets, consolidation, merger, dissolution, issue or sale of securities or any other voluntary action, avoid or seek to avoid the observance or performance of any of the terms of this Warrant, but will at all times in good faith assist in the carrying out of all such terms and in the taking of all such action as may be necessary or appropriate in order to protect the rights of the Holder against impairment. Without limiting the generality of the foregoing, the Company (i) will not increase the par value of any Warrant Shares above the amount payable therefor on such exercise, (ii) will take all such action as may be reasonably necessary or appropriate in order that the Company may validly and legally issue fully paid and nonassessable Warrant Shares on the exercise of this Warrant, and (iii) will not close its shareholder books or records in any manner which interferes with the timely exercise of this Warrant.

(c) GOVERNING LAW; VENUE; WAIVER OF JURY TRIAL. THE CORPORATE LAWS OF THE STATE OF DELAWARE SHALL GOVERN ALL ISSUES CONCERNING THE RELATIVE RIGHTS OF THE COMPANY AND ITS STOCKHOLDERS. ALL QUESTIONS CONCERNING THE CONSTRUCTION, VALIDITY, ENFORCEMENT AND INTERPRETATION OF THIS WARRANT SHALL BE GOVERNED BY AND CONSTRUED AND ENFORCED IN ACCORDANCE WITH THE LAWS OF THE STATE OF NEW YORK. EACH PARTY HEREBY IRREVOCABLY SUBMITS TO THE EXCLUSIVE JURISDICTION OF THE STATE AND FEDERAL COURTS SITTING IN THE CITY OF NEW YORK, BOROUGH OF MANHATTAN, FOR THE ADJUDICATION OF ANY DISPUTE HEREUNDER OR IN CONNECTION HERewith OR WITH ANY

TRANSACTION CONTEMPLATED HEREBY OR DISCUSSED HEREIN (INCLUDING WITH RESPECT TO THE ENFORCEMENT OF ANY OF THE TRANSACTION DOCUMENTS), AND HEREBY IRREVOCABLY WAIVES, AND AGREES NOT TO ASSERT IN ANY SUIT, ACTION OR PROCEEDING, ANY CLAIM THAT IT IS NOT PERSONALLY SUBJECT TO THE JURISDICTION OF ANY SUCH COURT, THAT SUCH SUIT, ACTION OR PROCEEDING IS IMPROPER. EACH PARTY HEREBY IRREVOCABLY WAIVES PERSONAL SERVICE OF PROCESS AND CONSENTS TO PROCESS BEING SERVED IN ANY SUCH SUIT, ACTION OR PROCEEDING BY MAILING A COPY THEREOF VIA REGISTERED OR CERTIFIED MAIL OR OVERNIGHT DELIVERY (WITH EVIDENCE OF DELIVERY) TO SUCH PARTY AT THE ADDRESS IN EFFECT FOR NOTICES TO IT UNDER THIS AGREEMENT AND AGREES THAT SUCH SERVICE SHALL CONSTITUTE GOOD AND SUFFICIENT SERVICE OF PROCESS AND NOTICE THEREOF. NOTHING CONTAINED HEREIN SHALL BE DEEMED TO LIMIT IN ANY WAY ANY RIGHT TO SERVE PROCESS IN ANY MANNER PERMITTED BY LAW. THE COMPANY HEREBY WAIVES ALL RIGHTS TO A TRIAL BY JURY.

(d) The headings herein are for convenience only, do not constitute a part of this Warrant and shall not be deemed to limit or affect any of the provisions hereof.

(e) In case any one or more of the provisions of this Warrant shall be invalid or unenforceable in any respect, the validity and enforceability of the remaining terms and provisions of this Warrant shall not in any way be affected or impaired thereby and the parties will attempt in good faith to agree upon a valid and enforceable provision which shall be a commercially reasonable substitute therefor, and upon so agreeing, shall incorporate such substitute provision in this Warrant.

IN WITNESS WHEREOF, the Company has caused this Warrant to be duly executed by its authorized officer as of the date first indicated above.

ASPEN TECHNOLOGY, INC.

By: _____
Name: _____
Title: _____

FORM OF EXERCISE NOTICE

(To be executed by the Holder to exercise the right to purchase shares of Common Stock under the foregoing Warrant)

To: Aspen Technology, Inc.

The undersigned is the Holder of Warrant No. _____ (the "WARRANT") issued by Aspen Technology, Inc., a Delaware corporation (the "COMPANY"). Capitalized terms used herein and not otherwise defined have the respective meanings set forth in the Warrant.

1. The Warrant is currently exercisable to purchase a total of _____ Warrant Shares.
2. The undersigned Holder hereby exercises its right to purchase _____ Warrant Shares pursuant to the Warrant.
3. The Holder intends that payment of the Exercise Price shall be made as (check one):

 ___ "Cash Exercise" under Section 9(a)
 ___ "Cashless Exercise" under Section 9(b)
4. If the holder has elected a Cash Exercise, the holder shall pay the sum of \$_____ to the Company in accordance with the terms of the Warrant.
5. Pursuant to this exercise, the Company shall deliver to the holder _____ Warrant Shares in accordance with the terms of the Warrant.
6. Following this exercise, the Warrant shall be exercisable to purchase a total of _____ Warrant Shares.

Dated: _____, _____

Name of Holder:

(Print) _____

By: _____

Name: _____

Title: _____

(Signature must conform in all respects to name of holder as specified on the face of the Warrant)

FORM OF ASSIGNMENT

[To be completed and signed only upon transfer of Warrant]

FOR VALUE RECEIVED, the undersigned hereby sells, assigns and transfers unto _____ the right represented by the within Warrant to purchase _____ shares of Common Stock of Aspen Technology, Inc. to which the within Warrant relates and appoints _____ attorney to transfer said right on the books of Aspen Technology, Inc. with full power of substitution in the premises.

Dated: _____, _____

(Signature must conform in all respects to name of holder as specified on the face of the Warrant)

Address of Transferee

In the presence of:

AMENDMENT NO. 1
TO
WARRANT NO. ___
OF
ASPEN TECHNOLOGY, INC.

This Amendment No. 1 (the "AMENDMENT") to Warrant No. ___ dated February ___, 2002 (the "WARRANT"), is entered into as of March 19, 2002 between Aspen Technology, Inc., a Delaware corporation (the "Company"), and [_____] (the "Holder"). Terms used and not otherwise defined herein shall have the meanings ascribed to them in the Warrant.

WHEREAS, the Company and the Purchasers, including the Holder, are contemporaneously entering into the Amended and Restated Securities Purchase Agreement dated as of the date hereof (the "PURCHASE AGREEMENT") and consummating the Third Closing under the Purchase Agreement;

WHEREAS, in connection with the execution and delivery of the Purchase Agreement and the consummation of the Third Closing, the Company and the Purchasers wish to amend certain provisions of each of the Warrants previously issued to the Purchasers by the Company;

NOW, THEREFORE, in consideration of the premises and mutual agreements set forth herein, the Company and the Holder agree as follows:

1. Section 7 of the Warrant is hereby deleted in its entirety and the following is substituted in lieu thereof:

"7. Reservation of Warrant Shares. The Company covenants that it will at all times reserve and keep available out of the aggregate of its authorized but unissued and otherwise unreserved Common Stock, solely for the purpose of enabling it to issue Warrant Shares upon exercise of the Warrants, each as therein provided, 791,044 shares of Common Stock (as adjusted for any stock splits, stock combinations or similar events), free from preemptive rights or any other contingent purchase rights of persons other than the Holder (taking into account the adjustments and restrictions of Section 8), less any shares of Common Stock issued upon exercise of the Warrants and reductions reasonably agreed to by the Purchasers to reflect shares of Common Stock issued upon exercise of the Warrants. The Company covenants that all Warrant Shares so issuable and deliverable shall, upon issuance and the payment of the applicable Exercise Price in accordance with the terms hereof, be duly and validly authorized, issued and fully paid and nonassessable. The Company will take all such action as may be necessary to assure that such shares of stock may be issued as provided herein without violation of any applicable law or regulation, or of any requirements of any securities exchange or automated quotation system upon which the stock may be listed (it being understood that the Company shall not be required to take any action to assure the issuance of stock to any Purchaser to the extent that such issuance is prohibited by some act or failure to act of such Purchaser)."

2. Section 10(c) of the Warrant is hereby deleted in its entirety and the following is substituted in lieu thereof:

"(c) In the event that any Purchaser's receipt of shares of Common Stock is restricted based on the Issuable Maximum, the Company shall either: (i) use its best efforts to obtain the required shareholder approval necessary to permit the issuance of such Excess Shares as soon as is reasonably possible, but in any event not later than the 60th day after the event giving rise to such Excess Shares, or (ii) within five Trading Days after such event, pay to such Purchaser, as liquidated damages and not as a penalty, in an amount equal to the difference between the Black-Scholes value of this Warrant assuming the limitations in Section 10(b) were not applicable and the Black-Scholes value of this Warrant after giving effect to the limitations in Section 10(b), measured as of the date of such event or, if greater, the date of payment (such difference, the "WARRANT DAMAGE AMOUNT"). For the purposes of this Section 10(c) the Black-Scholes value of this Warrant shall be calculated in a manner consistent with the manner in which the Company performs Black-Scholes calculations to determine the fair value of option grants for the purposes of the financial statements contained in its SEC Reports. If the Company elects the option set forth in clause (i) above and the Company fails to obtain the required shareholder approval on or prior to the 60th day after such event, then within three Trading Days after such 60th day, the Company shall pay the Warrant Damage Amount to such Purchaser, as liquidated damages and not as a penalty. Any Warrant Damage Amount may be paid at the Company's option in cash or in Series C Preferred Stock. In the event that the Company elects to pay the Warrant Damage Amount in shares of Series C Preferred Stock, the number of shares of Series C Preferred Stock to be issued to the Purchaser in payment of the Warrant Damage Amount shall be determined by dividing the total Warrant Damage Amount then payable to such Purchaser by \$10,000 (the initial Stated Value per share of the Series C Preferred Stock) and rounding downward to the nearest whole number of shares of Series C Preferred Stock. In addition, the Company shall pay to the Purchaser in cash the amount, if any, by which the Warrant Damage Amount payable to such Purchaser exceeds the aggregate Stated Value of the Series C Preferred Stock issued pursuant to the preceding sentence. If the Warrant Damage Amount payable to such Purchaser is less than \$10,000, then the Corporation shall pay such amount to such Purchaser entirely in cash."

3. This Amendment may be executed in counterparts, both of which when taken together shall be considered one and the same agreement and shall become effective when counterparts have been signed by both parties to this Amendment and each party has delivered its counterpart to the other party.

4. Except as otherwise set forth in this Amendment, all other terms and conditions of the Warrant shall remain the same and in full force and effect.

[REMAINDER OF PAGE INTENTIONALLY LEFT BLANK
SIGNATURE PAGE TO FOLLOW]

IN WITNESS WHEREOF, the parties hereto have caused this Amendment No. 1 to be duly executed by their respective authorized signatories as of the date first indicated above.

ASPEN TECHNOLOGY, INC.

By: _____
Lisa W. Zappala
Senior Vice President and
Chief Financial Officer

[HOLDER]

By: _____
Name: _____
Title: _____

FORM OF WARRANT FOR THIRD CLOSING

THESE SECURITIES HAVE NOT BEEN REGISTERED WITH THE SECURITIES AND EXCHANGE COMMISSION OR THE SECURITIES COMMISSION OF ANY STATE IN RELIANCE UPON AN EXEMPTION FROM REGISTRATION UNDER THE SECURITIES ACT OF 1933, AS AMENDED (THE "SECURITIES ACT"), AND, ACCORDINGLY, MAY NOT BE OFFERED OR SOLD EXCEPT PURSUANT TO AN EFFECTIVE REGISTRATION STATEMENT UNDER THE SECURITIES ACT OR PURSUANT TO AN AVAILABLE EXEMPTION FROM THE REGISTRATION REQUIREMENTS OF THE SECURITIES ACT AND IN COMPLIANCE WITH APPLICABLE STATE SECURITIES OR BLUE SKY LAWS. THESE SECURITIES AND THE SECURITIES ISSUABLE UPON EXERCISE OF THESE SECURITIES MAY BE PLEDGED IN CONNECTION WITH A BONA FIDE MARGIN ACCOUNT OR OTHER LOAN SECURED BY SUCH SECURITIES.

ASPEN TECHNOLOGY, INC.

WARRANT

Warrant No. []

Dated: March 19, 2002

Aspen Technology, Inc., a Delaware corporation (the "COMPANY"), hereby certifies that, for value received, [Name of Holder] or its registered assigns (the "HOLDER"), is entitled to purchase from the Company up to a total of [_____] shares of common stock, \$0.10 par value per share (the "COMMON STOCK"), of the Company (each such share, a "WARRANT SHARE" and all such shares, the "WARRANT SHARES") at an exercise price equal to \$23.99 per share (as adjusted from time to time as provided in Section 8, the "EXERCISE PRICE"), at any time and from time to time from and after the date hereof and through and including March 19, 2007 (the "EXPIRATION DATE"), and subject to the following terms and conditions. This Warrant (this "Warrant") is one of a series of similar warrants issued pursuant to that certain Amended and Restated Securities Purchase Agreement, dated as of the date hereof, by and among the Company and the Purchasers identified therein (the "PURCHASE AGREEMENT"). All such warrants are referred to herein, collectively, as the "WARRANTS."

1. Definitions. In addition to the terms defined elsewhere in this Warrant, capitalized terms that are not otherwise defined herein have the meanings given to such terms in the Purchase Agreement.

2. Registration of Warrant. The Company shall register this Warrant, upon records to be maintained by the Company for that purpose (the "WARRANT REGISTER"), in the name of the record Holder hereof from time to time. The Company may deem and treat the registered Holder of this Warrant as the absolute owner hereof for the purpose of any exercise hereof or any distribution to the Holder, and for all other purposes, absent actual notice to the contrary.

3. Registration of Transfers. The Company shall register the transfer of any portion of this Warrant in the Warrant Register, upon surrender of this Warrant, with the Form of Assignment attached hereto duly completed and signed by the Holder, to the Transfer Agent or to the Company at its address specified herein, provided that any such assignment shall be pursuant to a Qualified Transfer. Upon any such registration or transfer, a new warrant to purchase Common Stock, in substantially the form of this Warrant (any such new warrant, a "NEW WARRANT"), evidencing the portion of this Warrant so transferred shall be issued to the transferee and a New Warrant evidencing the remaining portion of this Warrant not so transferred, if any, shall be issued to the transferring Holder. The acceptance of the New Warrant by the transferee thereof shall be deemed the acceptance by such transferee of all of the rights and obligations of a holder of a Warrant.

4. Exercise and Duration of Warrant.

(a) This Warrant shall be exercisable by the registered Holder at any time and from time to time on or after the date hereof to and including the Expiration Date. At 6:30 P.M., New York City time on the Expiration Date, the portion of this Warrant not exercised prior thereto shall be and become void and of no value; provided that, if the average of the Closing Prices for the five Trading Days immediately prior to (but not including) the Expiration Date exceeds the Exercise Price on the Expiration Date, then this Warrant shall be deemed to have been exercised in full (to the extent not previously exercised) on a "cashless exercise" basis at 6:30 P.M. New York City time on the Expiration Date.

(b) Except as provided in Section 4(a), a Holder may exercise this Warrant by delivering to the Company (i) an Exercise Notice, in the form attached hereto, appropriately completed and duly signed, and (ii) payment of the Exercise Price for the number of Warrant Shares as to which this Warrant is being exercised (which may take the form of a "cashless exercise" if so indicated in the Exercise Notice), and the date such items are delivered to the Company (as determined in accordance with the notice provisions hereof), or the Warrant has been deemed to have been exercised pursuant to Section 4(a), is an "EXERCISE DATE." The Holder shall not be required to deliver the original Warrant in order to effect an exercise hereunder. Execution and delivery of the Exercise Notice shall have the same effect as cancellation of the original Warrant and issuance of a New Warrant evidencing the right to purchase the remaining number of Warrant Shares.

5. Delivery of Warrant Shares.

(a) Upon exercise of this Warrant, the Company shall promptly (but in no event later than three Trading Days after the Exercise Date) issue or cause to be issued and cause to be delivered to or upon the written order of the Holder and in such name or names as the Holder may designate, a certificate for the Warrant Shares issuable upon such exercise, free of restrictive legends unless a registration statement covering the resale of the Warrant Shares and naming the Holder as a selling stockholder thereunder is not then effective and the Warrant Shares are not freely transferable without volume restrictions pursuant to Rule 144 under the Securities Act. Notwithstanding the foregoing, if the Warrant is deemed to have been exercised pursuant to Section 4(a), then the Company shall issue or cause to be issued a certificate for the Warrant Shares issuable upon such exercise no later than three Trading Days after the Holder

delivers a notice to the Company in accordance with Section 12 that the Warrant was deemed to have been exercised pursuant to Section 4(a). The Holder, or any Person so designated by the Holder to receive Warrant Shares, shall be deemed to have become holder of record of such Warrant Shares as of the Exercise Date. The Company shall, upon request of the Holder, use its commercially reasonable best efforts to deliver Warrant Shares hereunder electronically through the Depository Trust Corporation or another established clearing corporation performing similar functions.

(b) This Warrant is exercisable, either in its entirety or, from time to time, for a portion of the number of Warrant Shares. Upon surrender of this Warrant following one or more partial exercises, the Company shall issue or cause to be issued, at its expense, a New Warrant evidencing the right to purchase the remaining number of Warrant Shares.

(c) The Company's obligations to issue and deliver Warrant Shares subject to and in accordance with the terms hereof are absolute and unconditional, irrespective of any action or inaction by the Holder to enforce the same, any waiver or consent with respect to any provision hereof, the recovery of any judgment against any Person or any action to enforce the same, or any setoff, counterclaim, recoupment, limitation or termination, or any breach or alleged breach by the Holder or any other Person of any obligation to the Company or any violation or alleged violation of law by the Holder or any other Person, and irrespective of any other circumstance which might otherwise limit such obligation of the Company to the Holder in connection with the issuance of Warrant Shares.

6. Charges, Taxes and Expenses. Issuance of certificates for shares of Common Stock upon exercise of this Warrant shall be made without charge to the Holder for any issue or transfer tax, withholding tax, transfer agent fee or other incidental tax or expense in respect of the issuance of such certificates, all of which taxes and expenses shall be paid by the Company; provided, however, that the Company shall not be required to pay any tax which may be payable in respect of any transfer involved in the registration of any certificates for Warrant Shares or Warrants in a name other than that of the Holder. The Holder shall be responsible for all other tax liability that may arise as a result of holding or transferring this Warrant or receiving Warrant Shares upon exercise hereof.

7. Reservation of Warrant Shares. The Company covenants that it will at all times reserve and keep available out of the aggregate of its authorized but unissued and otherwise unreserved Common Stock, solely for the purpose of enabling it to issue Warrant Shares upon exercise of the Warrants, each as therein provided, 791,044 shares of Common Stock (as adjusted for any stock splits, stock combinations or similar events), free from preemptive rights or any other contingent purchase rights of persons other than the Holder (taking into account the adjustments and restrictions of Section 8), less any shares of Common Stock issued upon exercise of the Warrants and reductions reasonably agreed to by the Purchasers to reflect shares of Common Stock issued upon exercise of the Warrants. The Company covenants that all Warrant Shares so issuable and deliverable shall, upon issuance and the payment of the applicable Exercise Price in accordance with the terms hereof, be duly and validly authorized, issued and fully paid and nonassessable. The Company will take all such action as may be necessary to assure that such shares of stock may be issued as provided herein without violation of any applicable law or regulation, or of any requirements of any securities exchange or

automated quotation system upon which the stock may be listed (it being understood that the Company shall not be required to take any action to assure the issuance of stock to any Purchaser to the extent that such issuance is prohibited by some act or failure to act of such Purchaser).

8. Certain Adjustments. The Exercise Price and number of Warrant Shares issuable upon exercise of this Warrant are subject to adjustment from time to time as set forth in this Section 8.

(a) Stock Dividends and Splits. If the Company, at any time while this Warrant is outstanding, (i) pays a stock dividend on its Common Stock or otherwise makes a distribution on any class of capital stock that is payable in shares of Common Stock, (ii) subdivides outstanding shares of Common Stock into a larger number of shares, or (iii) combines outstanding shares of Common Stock into a smaller number of shares, then in each such case the Exercise Price shall be multiplied by a fraction of which the numerator shall be the number of shares of Common Stock outstanding immediately before such event and of which the denominator shall be the number of shares of Common Stock outstanding immediately after such event. Any adjustment made pursuant to clause (i) of this paragraph shall become effective immediately after the record date for the determination of stockholders entitled to receive such dividend or distribution, and any adjustment pursuant to clause (ii) or (iii) of this paragraph shall become effective immediately after the effective date of such subdivision or combination.

(b) Pro Rata Distributions. If the Company, at any time while this Warrant is outstanding, distributes to holders of Common Stock (i) evidences of its indebtedness, (ii) any security (other than a distribution of Common Stock covered by the preceding paragraph), (iii) rights or warrants to subscribe for or purchase any security, or (iv) any other asset (in each case, "DISTRIBUTED PROPERTY"), then in each such case the Exercise Price in effect immediately prior to the record date fixed for determination of stockholders entitled to receive such distribution shall be adjusted (effective on such record date) to equal the product of such Exercise Price times a fraction of which the denominator shall be the average of the Closing Prices for the last five Trading Days immediately prior to (but not including) such record date and of which the numerator shall be such average less the then fair market value of the Distributed Property distributed in respect of one outstanding share of Common Stock, as determined by the Company's independent certified public accountants that regularly examine the financial statements of the Company, or, if such accountants are unable or unwilling to make such determination for any reason, then a nationally recognized investment banking firm or accounting firm designated by the Company (an "APPRAISER"). In such event, the Holder, after receipt of the determination by the Appraiser, shall have the right to select an additional appraiser (which shall be a nationally recognized investment banking firm or accounting firm), in which case such fair market value shall be deemed to equal the average of the values determined by each of the Appraiser and such appraiser. As an alternative to the foregoing adjustment to the Exercise Price, at the request of the Holder delivered before the 90th day after such record date, the Company, within five Trading Days after such request (or, if later, on the effective date of such distribution), will place the Distributed Property that such Holder would have been entitled to receive in respect of the Warrant Shares for which this Warrant could have been exercised immediately prior to such record date in escrow with an escrow agent selected by the Company and reasonably acceptable to the Holder. Thereafter, upon exercise of this Warrant in accordance with Section 4, the Holder shall be entitled to receive, in addition to the number of

Warrant Shares issuable such exercise, that portion of the escrowed Distributed Property attributable to the number of Warrant Shares for which the Warrant has been exercised, giving effect to all applicable adjustments called for pursuant to this Section 8 during such escrow period.

(c) Fundamental Transactions. If, at any time while this Warrant is outstanding, (i) the Company effects any merger or consolidation of the Company with or into another Person, (ii) the Company effects any sale of all or substantially all of its assets in one or a series of related transactions, (iii) any tender offer or exchange offer (whether by the Company or another Person) is completed pursuant to which holders of Common Stock are permitted to tender or exchange their shares for other securities, cash or property, or (iv) the Company effects any reclassification of the Common Stock or any compulsory share exchange pursuant to which the Common Stock is effectively converted into or exchanged for other securities, cash or property (in any such case, a "FUNDAMENTAL TRANSACTION"), then the Holder shall have the right thereafter to receive, upon exercise of this Warrant, the same amount and kind of securities, cash or property as it would have been entitled to receive upon the occurrence of such Fundamental Transaction if it had been, immediately prior to such Fundamental Transaction, the holder of the number of Warrant Shares then issuable upon exercise in full of this Warrant (the "ALTERNATE CONSIDERATION"). The aggregate Exercise Price for this Warrant will not be affected by any such Fundamental Transaction, but the Company shall apportion such aggregate Exercise Price among the Alternate Consideration in a reasonable manner reflecting the relative value of any different components of the Alternate Consideration. If holders of Common Stock are given any choice as to the securities, cash or property to be received in a Fundamental Transaction, then the Holder shall be given the same choice as to the Alternate Consideration it receives upon any exercise of this Warrant following such Fundamental Transaction. At the Holder's request, any successor to the Company or surviving entity in such Fundamental Transaction shall issue to the Holder a new warrant consistent with the foregoing provisions, provided that

(i) the covenant set forth in Section 7 relating to the reservation of Common Stock shall be replaced with a covenant to the effect that sufficient Alternate Consideration shall be reserved for issuance upon exercise of the Warrant, and

(ii) Sections 8(d) and 10 shall be deleted in their entirety,

and evidencing the Holder's right to purchase the Alternate Consideration for the aggregate Exercise Price upon exercise thereof. The terms of any agreement pursuant to which a Fundamental Transaction is effected shall include terms requiring any such successor or surviving entity to comply with the provisions of this paragraph (c) and ensuring that the Warrant (or any such replacement security) will be similarly adjusted upon any subsequent transaction analogous to a Fundamental Transaction.

(d) Subsequent Equity Sales.

(i) If, at any time while this Warrant is outstanding, the Company or any Subsidiary issues additional shares of Common Stock or rights, warrants, options or other securities or debt convertible, exercisable or exchangeable for shares of Common Stock or otherwise entitling any Person to acquire shares of Common Stock (collectively,

"Common Stock Equivalents") at an effective net price to the Company per share of Common Stock (the "Effective Price") less than the Exercise Price (as adjusted hereunder to such date), then the Exercise Price shall be reduced to equal the Effective Price. For purposes of this paragraph, in connection with any issuance of any Common Stock Equivalents, (A) the maximum number of shares of Common Stock potentially issuable at any time upon conversion, exercise or exchange of such Common Stock Equivalents (the "Deemed Number") shall be deemed to be outstanding upon issuance of such Common Stock Equivalents, (B) the Effective Price applicable to such Common Stock shall equal the minimum net dollar value of consideration payable to the Company to purchase such Common Stock Equivalents and to convert, exercise or exchange them into Common Stock, divided by the Deemed Number, and (C) no further adjustment shall be made to the Exercise Price upon the actual issuance of Common Stock upon conversion, exercise or exchange of such Common Stock Equivalents.

(ii) If, at any time while this Warrant is outstanding, the Company or any Subsidiary issues Common Stock Equivalents with an Effective Price or a number of underlying shares that floats or resets or otherwise varies or is subject to adjustment based (directly or indirectly) on market prices of the Common Stock (a "Floating Price Security"), then for purposes of applying the preceding paragraph in connection with any subsequent exercise, the Effective Price will be determined separately on each Exercise Date and will be deemed to equal the lowest Effective Price at which any holder of such Floating Price Security is entitled to acquire Common Stock on such Exercise Date (regardless of whether any such holder actually acquires any shares on such date).

(iii) Notwithstanding the foregoing, no adjustment will be made under this paragraph (d) in respect of any Excluded Stock.

(e) Number of Warrant Shares. Simultaneously with any adjustment to the Exercise Price pursuant to paragraphs (a), (b) or (d) of this Section, the number of Warrant Shares that may be purchased upon exercise of this Warrant shall be increased or decreased proportionately, so that after such adjustment the aggregate Exercise Price payable hereunder for the increased or decreased number of Warrant Shares shall be the same as the aggregate Exercise Price in effect immediately prior to such adjustment.

(f) Calculations. All calculations under this Section 8 shall be made to the nearest cent or the nearest 1/100th of a share, as applicable. The number of shares of Common Stock outstanding at any given time shall not include shares owned or held by or for the account of the Company, and the disposition of any such shares shall be considered an issue or sale of Common Stock.

(g) Notice of Adjustments. Upon the occurrence of each adjustment pursuant to this Section 8, the Company at its expense will promptly compute such adjustment in accordance with the terms of this Warrant and prepare a certificate setting forth such adjustment, including a statement of the adjusted Exercise Price and adjusted number or type of Warrant Shares or other securities issuable upon exercise of this Warrant (as applicable), describing the transactions giving rise to such adjustments and showing in detail the facts upon which such

adjustment is based. Upon written request, the Company will promptly deliver a copy of each such certificate to the Holder and to the Company's Transfer Agent.

(h) Notice of Corporate Events. If the Company (i) declares a dividend or any other distribution of cash, securities or other property in respect of its Common Stock, including without limitation any granting of rights or warrants to subscribe for or purchase any capital stock of the Company or any Subsidiary, (ii) authorizes or approves, enters into any agreement contemplating or solicits stockholder approval for any Fundamental Transaction or (iii) authorizes the voluntary dissolution, liquidation or winding up of the affairs of the Company, then the Company shall deliver to the Holder a notice describing the material terms and conditions of such transaction, at least 20 calendar days prior to the applicable record or effective date on which a Person would need to hold Common Stock in order to participate in or vote with respect to such transaction, and the Company will take all steps reasonably necessary in order to insure that the Holder is given the practical opportunity to exercise this Warrant prior to such time so as to participate in or vote with respect to such transaction; provided, however, that the failure to deliver such notice or any defect therein shall not affect the validity of the corporate action required to be described in such notice.

9. Payment of Exercise Price. The Holder shall pay the Exercise Price in one of the following manners:

(a) Cash Exercise. The Holder may deliver immediately available funds; or

(b) Cashless Exercise. The Holder may satisfy its obligation to pay the Exercise Price through a "cashless exercise," in which event the Company shall issue to the Holder the number of Warrant Shares determined as follows:

where:

$$X = Y [(A-B)/A]$$

X = the number of Warrant Shares to be issued to the Holder.

Y = the number of Warrant Shares with respect to which this Warrant is being exercised.

A = the average of the Closing Prices for the five Trading Days immediately prior to (but not including) the Exercise Date.

B = the Exercise Price.

For purposes of Rule 144 promulgated under the Securities Act, it is intended, understood and acknowledged that the Warrant Shares issued in a cashless exercise transaction shall be deemed to have been acquired by the Holder, and the holding period for the Warrant Shares shall be deemed to have commenced, on the date this Warrant was originally issued pursuant to the Purchase Agreement.

10. Limitation on Exercise.

(a) Notwithstanding anything to the contrary contained herein, the number of shares of Common Stock that may be acquired by the Holder upon any exercise of this Warrant (or otherwise in respect hereof) shall be limited to the extent necessary to insure that, following such exercise (or other issuance), the total number of shares of Common Stock then beneficially owned by such Holder and its Affiliates and any other Persons whose beneficial ownership of Common Stock would be aggregated with the Holder's for purposes of Section 13(d) of the Exchange Act, does not exceed 4.999% (the "MAXIMUM PERCENTAGE") of the total number of issued and outstanding shares of Common Stock (including for such purpose the shares of Common Stock issuable upon such exercise). For such purposes, beneficial ownership shall be determined in accordance with Section 13(d) of the Exchange Act and the rules and regulations promulgated thereunder. Each delivery of an Exercise Notice hereunder will constitute a representation by the Holder that it has evaluated the limitation set forth in this paragraph and determined that issuance of the full number of Warrant Shares requested in such Exercise Notice is permitted under this paragraph. The Company's obligation to issue shares of Common Stock in excess of the limitation referred to in this Section shall be suspended (and shall not terminate or expire notwithstanding any contrary provisions hereof) until such time, if any, as such shares of Common Stock may be issued in compliance with such limitation. By written notice to the Company, the Holder may waive the provisions of this Section or increase or decrease the Maximum Percentage to any other percentage specified in such notice, but (i) any such waiver or increase will not be effective until the 61st day after such notice is delivered to the Company, and (ii) any such waiver or increase or decrease will apply only to the Holder and not to any other holder of Warrants.

(b) Notwithstanding anything to the contrary contained herein, if the Trading Market is the Nasdaq National Market or the Nasdaq SmallCap Market or any other market or exchange with similar applicable rules, then the maximum number of shares of Common Stock that the Company may issue pursuant to the Transaction Documents at an effective purchase price less than the Closing Price on the Trading Day immediately preceding the Closing Date equals 6,401,394 shares (as adjusted for stock splits, stock combinations or similar events) (the "ISSUABLE MAXIMUM"), unless the Company obtains shareholder approval in accordance with the rules and regulations of such Trading Market. If, at the time any Purchaser requests an exercise of any of the Warrants, the Actual Minimum (excluding any shares issued or issuable at an effective purchase price in excess of the Closing Price on the Trading Day immediately preceding the Closing Date) exceeds the Issuable Maximum (and if the Company has not previously obtained the required shareholder approval), then the Company shall issue to the Purchaser requesting such exercise a number of shares of Common Stock not exceeding such Purchaser's pro-rata portion of the Issuable Maximum (based on such Purchaser's share (vis-a-vis other Purchasers) of the aggregate purchase price paid under the Purchase Agreement and taking into account any Warrant Shares previously issued to such Purchaser), and the remainder of the Warrant Shares issuable in connection with such exercise or conversion (if any) shall constitute "Excess Shares" pursuant to Section 10(c) below.

(c) In the event that any Purchaser's receipt of shares of Common Stock is restricted based on the Issuable Maximum, the Company shall either: (i) use its best efforts to obtain the required shareholder approval necessary to permit the issuance of such Excess Shares

as soon as is reasonably possible, but in any event not later than the 60th day after the event giving rise to such Excess Shares, or (ii) within five Trading Days after such event, pay to such Purchaser, as liquidated damages and not as a penalty, in an amount equal to the difference between the Black-Scholes value of this Warrant assuming the limitations in Section 10(b) were not applicable and the Black-Scholes value of this Warrant after giving effect to the limitations in Section 10(b), measured as of the date of such event or, if greater, the date of payment (such difference, the "WARRANT DAMAGE AMOUNT"). For the purposes of this Section 10(c) the Black-Scholes value of this Warrant shall be calculated in a manner consistent with the manner in which the Company performs Black-Scholes calculations to determine the fair value of option grants for the purposes of the financial statements contained in its SEC Reports. If the Company elects the option set forth in clause (i) above and the Company fails to obtain the required shareholder approval on or prior to the 60th day after such event, then within three Trading Days after such 60th day, the Company shall pay the Warrant Damage Amount to such Purchaser, as liquidated damages and not as a penalty. Any Warrant Damage Amount may be paid at the Company's option in cash or in Series C Preferred Stock. In the event that the Company elects to pay the Warrant Damage Amount in shares of Series C Preferred Stock, the number of shares of Series C Preferred Stock to be issued to the Purchaser in payment of the Warrant Damage Amount shall be determined by dividing the total Warrant Damage Amount then payable to such Purchaser by \$10,000 (the initial Stated Value per share of the Series C Preferred Stock) and rounding downward to the nearest whole number of shares of Series C Preferred Stock. In addition, the Company shall pay to the Purchaser in cash the amount, if any, by which the Warrant Damage Amount payable to such Purchaser exceeds the aggregate Stated Value of the Series C Preferred Stock issued pursuant to the preceding sentence. If the Warrant Damage Amount payable to such Purchaser is less than \$10,000, then the Corporation shall pay such amount to such Purchaser entirely in cash.

11. Fractional Shares. The Company shall not be required to issue or cause to be issued fractional Warrant Shares on the exercise of this Warrant. If any fraction of a Warrant Share would, except for the provisions of this Section, be issuable upon exercise of this Warrant, the number of Warrant Shares to be issued will be rounded up to the nearest whole share.

12. Notices. Any and all notices or other communications or deliveries hereunder (including without limitation any Exercise Notice) shall be in writing and shall be deemed given and effective on the earliest of (i) the date of transmission, if such notice or communication is delivered via facsimile at the facsimile number specified in this Section prior to 6:30 p.m. (New York City time) on a Trading Day, (ii) the next Trading Day after the date of transmission, if such notice or communication is delivered via facsimile at the facsimile number specified in this Section on a day that is not a Trading Day or later than 6:30 p.m. (New York City time) on any Trading Day, (iii) the Trading Day following the date of mailing, if sent by nationally recognized overnight courier service, or (iv) upon actual receipt by the party to whom such notice is required to be given. The address for such notices or communications shall be as set forth in the Purchase Agreement.

13. Warrant Agent. The Company shall serve as warrant agent under this Warrant. Upon 30 days' notice to the Holder, the Company may appoint a new warrant agent. Any corporation into which the Company or any new warrant agent may be merged or any corporation resulting from any consolidation to which the Company or any new warrant agent

shall be a party or any corporation to which the Company or any new warrant agent transfers substantially all of its corporate trust or shareholders services business shall be a successor warrant agent under this Warrant without any further act. Any such successor warrant agent shall promptly cause notice of its succession as warrant agent to be mailed (by first class mail, postage prepaid) to the Holder at the Holder's last address as shown on the Warrant Register.

14. Loss, Theft or Destruction of Warrant. In the event that the Holder notifies the Company that this Warrant has been lost, stolen or destroyed, then a replacement Warrant, identical in all respects to the original Warrant (except for any registration number and any adjustment pursuant hereto to the Exercise Price or number of Warrant Shares issuable hereunder, if different that the numbers shown on the original Warrant) shall be delivered to the Holder by the Company, provided that such Holder executes and delivers to the Company an agreement reasonably satisfactory to the Company to indemnify the Company from any loss incurred by the Company in connection with such Warrant.

15. No Rights as Stockholder until Exercise. Subject to Section 8 of this Warrant and the provisions of any other Transaction Documents, prior to the exercise of this Warrant as provided herein, the Holder shall not be entitled to vote or receive dividends or be deemed the holder of Warrant Shares or any other securities of the Company that may at any time be issuable on the exercise hereof for any purpose, nor shall anything contained herein be construed to confer upon the Holder, as such, any of the rights of a stockholder of the Company or any right to vote for the election of directors or upon any matter submitted to the stockholders at any meeting thereof, or to give or withhold consent to any corporate action or to receive notice of meetings, or to receive dividend or subscription rights.

16. Miscellaneous.

(a) This Warrant shall be binding on and inure to the benefit of the parties hereto and their respective successors and assigns. Subject to the preceding sentence, nothing in this Warrant shall be construed to give to any Person other than the Company and the Holder any legal or equitable right, remedy or cause of action under this Warrant. This Warrant may be amended only in writing signed by the Company and the Holder and their successors and assigns.

(b) The Company will not, by amendment of its governing documents or through any reorganization, transfer of assets, consolidation, merger, dissolution, issue or sale of securities or any other voluntary action, avoid or seek to avoid the observance or performance of any of the terms of this Warrant, but will at all times in good faith assist in the carrying out of all such terms and in the taking of all such action as may be necessary or appropriate in order to protect the rights of the Holder against impairment. Without limiting the generality of the foregoing, the Company (i) will not increase the par value of any Warrant Shares above the amount payable therefor on such exercise, (ii) will take all such action as may be reasonably necessary or appropriate in order that the Company may validly and legally issue fully paid and nonassessable Warrant Shares on the exercise of this Warrant, and (iii) will not close its shareholder books or records in any manner which interferes with the timely exercise of this Warrant.

(c) GOVERNING LAW; VENUE; WAIVER OF JURY TRIAL. THE CORPORATE LAWS OF THE STATE OF DELAWARE SHALL GOVERN ALL ISSUES CONCERNING THE RELATIVE RIGHTS OF THE COMPANY AND ITS STOCKHOLDERS. ALL QUESTIONS CONCERNING THE CONSTRUCTION, VALIDITY, ENFORCEMENT AND INTERPRETATION OF THIS WARRANT SHALL BE GOVERNED BY AND CONSTRUED AND ENFORCED IN ACCORDANCE WITH THE LAWS OF THE STATE OF NEW YORK. EACH PARTY HEREBY IRREVOCABLY SUBMITS TO THE EXCLUSIVE JURISDICTION OF THE STATE AND FEDERAL COURTS SITTING IN THE CITY OF NEW YORK, BOROUGH OF MANHATTAN, FOR THE ADJUDICATION OF ANY DISPUTE HEREUNDER OR IN CONNECTION HERewith OR WITH ANY TRANSACTION CONTEMPLATED HEREBY OR DISCUSSED HEREIN (INCLUDING WITH RESPECT TO THE ENFORCEMENT OF ANY OF THE TRANSACTION DOCUMENTS), AND HEREBY IRREVOCABLY WAIVES, AND AGREES NOT TO ASSERT IN ANY SUIT, ACTION OR PROCEEDING, ANY CLAIM THAT IT IS NOT PERSONALLY SUBJECT TO THE JURISDICTION OF ANY SUCH COURT, THAT SUCH SUIT, ACTION OR PROCEEDING IS IMPROPER. EACH PARTY HEREBY IRREVOCABLY WAIVES PERSONAL SERVICE OF PROCESS AND CONSENTS TO PROCESS BEING SERVED IN ANY SUCH SUIT, ACTION OR PROCEEDING BY MAILING A COPY THEREOF VIA REGISTERED OR CERTIFIED MAIL OR OVERNIGHT DELIVERY (WITH EVIDENCE OF DELIVERY) TO SUCH PARTY AT THE ADDRESS IN EFFECT FOR NOTICES TO IT UNDER THIS AGREEMENT AND AGREES THAT SUCH SERVICE SHALL CONSTITUTE GOOD AND SUFFICIENT SERVICE OF PROCESS AND NOTICE THEREOF. NOTHING CONTAINED HEREIN SHALL BE DEEMED TO LIMIT IN ANY WAY ANY RIGHT TO SERVE PROCESS IN ANY MANNER PERMITTED BY LAW. THE COMPANY HEREBY WAIVES ALL RIGHTS TO A TRIAL BY JURY.

(d) The headings herein are for convenience only, do not constitute a part of this Warrant and shall not be deemed to limit or affect any of the provisions hereof.

(e) In case any one or more of the provisions of this Warrant shall be invalid or unenforceable in any respect, the validity and enforceability of the remaining terms and provisions of this Warrant shall not in any way be affected or impaired thereby and the parties will attempt in good faith to agree upon a valid and enforceable provision which shall be a commercially reasonable substitute therefor, and upon so agreeing, shall incorporate such substitute provision in this Warrant.

IN WITNESS WHEREOF, the Company has caused this Warrant to be duly executed by its authorized officer as of the date first indicated above.

ASPEN TECHNOLOGY, INC.

By: _____
Name: _____
Title: _____

FORM OF EXERCISE NOTICE

(To be executed by the Holder to exercise the right to purchase shares of Common Stock under the foregoing Warrant)

To: Aspen Technology, Inc.

The undersigned is the Holder of Warrant No. _____ (the "WARRANT") issued by Aspen Technology, Inc., a Delaware corporation (the "COMPANY"). Capitalized terms used herein and not otherwise defined have the respective meanings set forth in the Warrant.

1. The Warrant is currently exercisable to purchase a total of _____ Warrant Shares.
2. The undersigned Holder hereby exercises its right to purchase _____ Warrant Shares pursuant to the Warrant.
3. The Holder intends that payment of the Exercise Price shall be made as (check one):

 ___ "Cash Exercise" under Section 9(a)
 ___ "Cashless Exercise" under Section 9(b)
4. If the holder has elected a Cash Exercise, the holder shall pay the sum of \$_____ to the Company in accordance with the terms of the Warrant.
5. Pursuant to this exercise, the Company shall deliver to the holder _____ Warrant Shares in accordance with the terms of the Warrant.
6. Following this exercise, the Warrant shall be exercisable to purchase a total of _____ Warrant Shares.

Dated: _____, _____

Name of Holder:

(Print)_____

By:_____

Name:_____

Title:_____

(Signature must conform in all respects to name of holder as specified on the face of the Warrant)

FORM OF ASSIGNMENT

[To be completed and signed only upon transfer of Warrant]

FOR VALUE RECEIVED, the undersigned hereby sells, assigns and transfers unto _____ the right represented by the within Warrant to purchase _____ shares of Common Stock of Aspen Technology, Inc. to which the within Warrant relates and appoints _____ attorney to transfer said right on the books of Aspen Technology, Inc. with full power of substitution in the premises.

Dated: _____, _____

(Signature must conform in all respects to name of holder as specified on the face of the Warrant)

Address of Transferee

In the presence of:

AMENDMENT AGREEMENT NO. 4
TO CREDIT AGREEMENT

This AMENDMENT AGREEMENT NO. 4 (this "Amendment"), made effective as of March 19, 2002, by and between ASPEN TECHNOLOGY, a Delaware corporation ("Borrower") and FLEET NATIONAL BANK, a national banking association (the "Bank"), amends the Credit Agreement dated as of October 27, 2000, as amended as of June 29, 2001, November 2, 2001 and February 6, 2002 (as the same may be further amended, modified, or supplemented from time to time, the "Credit Agreement"), by and between the Borrower and the Bank. Capitalized terms used but not defined herein shall have the meanings set forth for such terms in the Credit Agreement.

WHEREAS, the Borrower has requested that the Bank agree to amend the Credit Agreement in certain respects; and

WHEREAS, subject to the terms and provisions hereof, the Bank is willing to do so;

NOW, THEREFORE, the parties hereto hereby agree as follows:

1. Amendment to Credit Agreement. The definition of "Permitted Restricted Payments" set forth in Section 1.1 of the Credit Agreement is hereby deleted in its entirety and replaced with the following:

"Permitted Restricted Payments" shall mean any dividend, distribution or other payment, or any purchase, redemption or other acquisition for value of capital stock of the Borrower, pursuant to (i) Section 3, 9 or 10 of the Certificate of Designations of Series B-I Convertible Preferred Stock and Series B-II Convertible Preferred Stock (as amended from time to time, the "Series B Certificate") forming part of the Certificate of Incorporation, as amended, of the Borrower, (ii) Section 4.5, 4.9, 4.10, 4.11 or 6.2 of the Amended and Restated Securities Purchase Agreement, dated as of even date herewith, by and between the Borrower and the entities listed on the signature pages thereto (as amended from time to time, the "Purchase Agreement"), (iii) Section 6 or 10(c) of the warrants to purchase common stock (the "Warrants") issued by the Borrower pursuant to the Purchase Agreement (or any warrant issued upon the transfer thereof, in connection with a partial exercise thereof or otherwise as contemplated thereby), (iv) Section 2(e), 2(g), 4 or 5 of the Amended and Restated Registration Rights Agreement, dated of even date herewith, by and between the Borrower and the entities listed on the signature pages thereto (as amended from time to time, the "Rights Agreement") and (v) Section 3 or 7 of the Certificate of Designations of Series C Preferred Stock (as amended from time to time, the "Series C Certificate").

2. Representations and Warranties. The Borrower hereby confirms (a) that the representations of the Borrower contained in Section 4 of the Credit Agreement are true and correct on and as of the date hereof as if made on the date hereof, treating this Amendment, the

Credit Agreement as amended hereby, and the other Loan Document as amended hereby, as "Loan Documents" for the purposes of making said representations; and (b) after giving effect to this Amendment, no Default or Event of Default has occurred and is continuing under the Credit Agreement.

3. Delivery of Documents. Promptly following the date hereof, the Borrower shall provide to the Bank final definitive copies of the following documents, bearing signatures where appropriate: (a) the Purchase Agreement, (b) the Series B Certificate, (c) the Warrants, (d) the Rights Agreement and (e) the Series C Certificate.

4. Miscellaneous Provisions. Except as otherwise expressly provided by this Amendment, all of the terms, conditions and provisions of the Credit Agreement and the other Loan Documents shall remain in full force and effect. The parties hereto hereby acknowledge and agree that all references to the Credit Agreement contained in any of the Loan Documents shall be references to the Credit Agreement as amended hereby and as the same has been or may be amended, modified, supplemented, or restated from time to time. This Amendment may be executed in any number of counterparts, but all such counterparts shall together constitute but one instrument. In making proof of this Amendment it shall not be necessary to produce or account for more than one counterpart signed by each party hereto by and against which enforcement hereof is sought. The Borrower hereby confirms its obligations to pay promptly upon request all reasonable out-of-pocket costs and expenses incurred or sustained by the Bank in connection with this Amendment, including the reasonable fees and expenses of Sullivan & Worcester LLP.

5. Governing Law. This Amendment shall be construed according to and governed by the internal laws of The Commonwealth of Massachusetts without reference to principles of conflicts of law.

IN WITNESS WHEREOF, the parties hereto have executed this Amendment as a sealed instrument as of the date first above written.

ASPEN TECHNOLOGY, INC.

By: /s/ Lisa W. Zappala

Name: Lisa W. Zappala
Title: Senior Vice President and
Chief Financial Officer

FLEET NATIONAL BANK

By: /s/ Larisa B Chilton

Name: Larisa B. Chilton
Title: Vice President