

Registration

Number 333-

SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM S-8

REGISTRATION STATEMENT

under

THE SECURITIES ACT OF 1933

MERCURY COMPUTER SYSTEMS, INC.

(Exact name of issuer as specified in its charter)

Massachusetts 04-2741391

(State of Incorporation) (IRS Employer Identification Number)

199 Riverneck Road, Chelmsford, MA 01824

(Address of Principal Executive Offices)

(978) 256-1300

(Registrant's telephone number, including area code)

MERCURY COMPUTER SYSTEMS, INC.

1998 Stock Option Plan For

Non-Employee Directors

(Full title of the Plan)

Anthony J. Medaglia, Jr., Esquire

Hutchins, Wheeler & Dittmar

A Professional Corporation

101 Federal Street

Boston, Massachusetts 02110

(617) 951-6600

(Name, address and telephone number of agent for service)

CALCULATION OF REGISTRATION FEE

Title of securities to be registered	Amount to be registered	Proposed maximum offering price per share	Proposed maximum aggregate offering price	Amount of registration fee
Common value Stock, \$.01 par	49,870 shares	\$ 7.813	\$ 389,634.31	
Common value Stock, \$.01 par	14,220 shares	\$17.000	241,740.00	
Common value Stock, \$.01 par	15,440 shares	\$27.500	424,600.00	
TOTAL	79,530 shares		\$1,055,974.30	\$263.99

(1) Also registered hereunder are such additional number of shares of Common Stock, presently indeterminable, as may be necessary to satisfy the antidilution provisions of the Plan to which this Registration Statement relates.

(2) The registration fee has been calculated with respect to the 79,530 shares registered on the basis of the price at which options may be exercised.

PART II

INFORMATION REQUIRED IN THE REGISTRATION STATEMENT

Item 3. Incorporation of Documents by Reference

The Company hereby incorporates by reference the documents listed in (a) through (c) below. In addition, all documents subsequently filed by the Company pursuant to Section 13(a), 13(c), 14 and 15(d) of the Securities Exchange Act of 1934 (prior to filing of a Post-Effective Amendment which indicates that all securities offered have been sold or which deregisters all securities then remaining unsold) shall be deemed to be incorporated by reference in this Registration Statement and to be a part thereof from the date of filing of such documents.

(a) The Company's latest annual report filed pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934 or the latest Prospectus filed pursuant to Rule 424(b) under the Securities Act of 1933, which contains either directly or by incorporation by reference audited financial statements for the Company's latest fiscal year for which such statements have been filed.

(b) All of the reports filed by the Company pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934 since the end of the fiscal year covered by the annual report or the Prospectus referred to in (a) above.

(c) The description of the Company's Common Stock which is contained in the Registration Statement filed by the Company under the Securities Exchange Act of 1934, including any amendment or report filed for the purpose of updating such description.

Item 4. Description of Securities

Not applicable.

Item 5. Interests of Named Experts and Counsel

The validity of the authorization and issuance of the Common Stock offered hereby will be passed upon for the Company by Hutchins, Wheeler & Dittmar, A Professional Corporation, Boston, Massachusetts. Anthony J. Medaglia, Jr., a stockholder of Hutchins, Wheeler & Dittmar, A Professional Corporation, and the clerk of the Company beneficially owns 27,750 shares of the Company's Common Stock.

Item 6. Indemnification of Directors and Officers

Section 67 of Chapter 156B of the General Laws of the Commonwealth of Massachusetts provides as follows:

"Section 67. Indemnification of directors, officers, employees and other agents of a corporation, and persons who serve at its request as directors, officers, employees or other agents of another organization, or who serve at its request in any capacity with respect to any employee benefit plan, may be provided by it to whatever extent shall be specified in or authorized by (i) the articles of organization or (ii) a by-law adopted by the stockholders or (iii) a vote adopted by the holders of a majority of the shares of stock entitled to vote on the election of directors. Except as the articles of organization or by-laws otherwise require, indemnification of any persons referred to in the preceding sentence who are not directors of the corporation may be provided by it to the extent authorized by the directors. Such indemnification may include payment by the corporation of expenses incurred in defending a civil or criminal action or proceeding in advance of the final disposition of such action or proceeding, upon receipt of an undertaking by the person indemnified to repay such payment if he shall be adjudicated to be not entitled to indemnification under this section which undertaking may be accepted without reference to the financial ability of such person to make repayment. Any such indemnification may be provided although the person to be indemnified is no longer an officer, director, employee or agent of the corporation or of such other organization or no longer serves with respect to any such employee benefit plan.

No indemnification shall be provided for any person with respect to any matter as to which he shall have been adjudicated in any proceeding not to have acted in good faith in the reasonable belief that his action was in the best interest of the corporation or to the extent that such matter relates to service with respect to an employee benefit plan, in the best interests of the participants or beneficiaries of such employee benefit plan.

The absence of any express provision for indemnification shall not limit any right of indemnification existing independently of this section.

A corporation shall have power to purchase and maintain insurance on behalf of any person who is or was a director, officer, employee or other agent of the corporation, or is or was serving at the request of the corporation as a director, officer, employee or other agent of another organization or with respect to any employee benefit plan, against any liability incurred by him in any such capacity, or arising out of his status as such, whether or not the corporation would have the power to indemnify him against such liability."

Article 6 of the Restated Articles of Organization, as amended, of the Company reads as follows:

Article 6.

"Other lawful provisions for the conduct and regulation of the business and affairs of the Corporation, for its voluntary dissolution or for limiting, defining or regulating the powers of the Corporation, or of its directors or stockholders, or of any class of stockholders are as follows: [...]

No Director of the Corporation shall be liable to the Corporation or its stockholders for monetary damages for breach of fiduciary duty as a Director notwithstanding any statutory provision or other law imposing such liability, except for liability of a director (i) for any breach of the Director's duty of loyalty to the Corporation or its stockholders, (ii) for acts or omissions not in good faith or which involve intentional misconduct or a knowing violation of law, (iii) under Section 61 or 62 of Chapter 156 of the Massachusetts General Laws, or (iv) for any transaction from which the Director derived an improper personal benefit."

Article 7 of the Amended By-Laws of the Company provides as follows:

Article 7.

Indemnification of Directors and Officers

Section 7.1 Definitions

"For purposes of this Article 7:

(a) 'Director/officer' means any person who is serving or has served as a Director, officer or employee of the Corporation appointed or elected by the Board of Directors or the stockholders of the Corporation, or any Director, officer or employee of the Corporation who is serving or has served at the request of the Corporation as a Director, officer, trustee, principal, partner, employee or other agent of any other organization.

(b) 'Proceeding' means any action, suit or proceeding, civil or criminal, brought or threatened in or before any court, tribunal, administrative or legislative body or agency.

(c) 'Expense' means any fine or penalty, and any liability fixed by a judgment, order, decree or award in a Proceeding, any amount reasonably paid in settlement of a Proceeding and any professional fees and other disbursements reasonably incurred in connection with a Proceeding.

Section 7.2 Right to Indemnification

Except as limited by law or as provided in Sections 7.3 and 7.4 of this Article 7, each Director/officer (and his heirs and personal representatives) shall be indemnified by the Corporation against any Expense incurred by such Director/officer in connection with each Proceeding in which he or she is involved as a result of his or her serving or having served as a Director/officer.

Section 7.3 Indemnification Not Available

No indemnification shall be provided to a Director/officer with respect to a Proceeding as to which it shall have been adjudicated that he or she did not act in good faith in the reasonable belief that his or her action was in the best interests of the Corporation.

Section 7.4 Compromise or Settlement

In the event that a Proceeding is compromised or settled so as to impose any liability or obligation on a Director/officer or upon the Corporation, no indemnification shall be provided as to said Director/officer with respect to such Proceeding if such Director/officer shall have been adjudicated not to have acted in good faith in the reasonable belief that his or her action was in the best interests of the Corporation.

Section 7.5 Advances

The Corporation shall pay sums on account of indemnification in advance of a final disposition of a Proceeding upon receipt of an undertaking by the Director/officer to repay such sums if it is subsequently established that he or she is not entitled to indemnification pursuant to Sections 7.3 and 7.4 hereof, which undertaking may be accepted without reference to the financial ability of such person to make repayment.

Section 7.6 Not Exclusive

Nothing in this Article 7 shall limit any lawful rights to indemnification existing independently of this Article 7.

Section 7.7 Insurance

The provisions of this Article 7 shall not limit the power of the Board of Directors to authorize the purchase and maintenance of insurance on behalf of any Director/officer against any Expense whether or not the Corporation would have the power to indemnify such Director/officer against such Expense under this Article 7."

Item 7. Exemption from Registration Claimed

Not Applicable.

Item 8. Exhibits

Number	Description
4.1	1998 Stock Option Plan for Non-Employee Directors
5.1	Opinion of Hutchins, Wheeler & Dittmar, A Professional Corporation
23.1	Consent of Independent Public Accountants
23.2	Consent of Hutchins, Wheeler & Dittmar, A Professional Corporation (included in Exhibit 5.1)

Item 9. Undertakings

The undersigned Registrant hereby undertakes the following:

(a) The undersigned Registrant hereby undertakes:

(1) To file, during any period in which offers or sales are being made, a post-effective amendment to this registration statement:

(i) To include any prospectus required by Section 10(a)(3) of the Securities Act of 1933;

(ii) To reflect in the prospectus any facts or events arising after the effective date of the registration statement (or the most recent post-effective amendment thereof) which, individually or in the aggregate, represent a fundamental change in the information set forth in the registration statement;

(iii) To include any material information with respect to the plan of distribution not previously disclosed in the registration statement or any material change to such information in the registration statement.

Provided, however, that paragraphs (a)(1)(i) and (a)(1)(ii) do not apply if the information required to be included in a post-effective amendment by those paragraphs is contained in periodic reports filed by the Registrant pursuant to Section 13 or Section 15(d) of the Securities Exchange Act of 1934 that are incorporated by reference in the registration statement.

(2) That, for the purpose of determining any liability under the Securities Act of 1933, each such post-effective amendment shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

(3) To remove from registration by means of a post-effective amendment any of the securities being registered which remain unsold at the termination of the offering.

(b) The undersigned Registrant hereby undertakes that, for purposes of determining any liability under the Securities Act of 1933, each filing of the Registrant's annual report pursuant to Section 13(a) or Section 15(d) of the Securities Exchange Act of 1934 (and, where applicable, each filing of an employee benefit plan's annual report pursuant to Section 15(d) of the Securities Exchange Act of 1934) that is incorporated by reference in the registration statement shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

(c) The undersigned Registrant hereby undertakes, that, insofar as indemnification for liabilities arising under the Securities Act of 1933 may be permitted to directors, officers and controlling persons of the Registrant pursuant to the foregoing provisions, or otherwise, the Registrant has been advised that in the opinion of the Securities and Exchange Commission such indemnification is against public policy as expressed in the Act and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the Registrant of expenses incurred or paid by a director, officer or controlling person of the Registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being - registered, the Registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Act and will be governed by the final adjudication of such issue.

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, the Registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-8 and has duly caused this Registration Statement to be signed on its behalf by the undersigned, thereunto duly authorized, in Chelmsford, Massachusetts on December 28, 2000.

MERCURY COMPUTER SYSTEMS, INC.

By /s/ James R. Bertelli

James R. Bertelli
President

Pursuant to the requirements of the Securities Act of 1933, this Registration Statement has been signed by the following persons in the capacities and on the dates indicated.

Signature	Title	Date
/s/ James R. Bertelli James R. Bertelli	President, Chief Executive Officer and Director	December 28, 2000
G. Mead Wyman G. Mead Wyman	Vice President, Chief Financial Officer and Treasurer	
/s/ Gordon B. Baty Gordon B. Baty	Director	December 28, 2000
/s/ Albert P. Belle Isle Albert P. Belle Isle	Director	December 28, 2000
James A. Dwyer	Director	
/s/ Sherman N. Mullin Sherman N. Mullin	Director	December 28, 2000
/s/ Melvin Sallen Melvin Sallen	Director	December 28, 2000

SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

EXHIBITS

to

FORM S-8

REGISTRATION STATEMENT

under

THE SECURITIES ACT OF 1933

MERCURY COMPUTER SYSTEMS, INC.

(Exact name of registrant as specified in its charter)

MERCURY COMPUTER SYSTEMS, INC.

1998 STOCK OPTION PLAN

FOR NON-EMPLOYEE DIRECTORS

1. PURPOSE

The purpose of this Mercury Computer Systems, Inc. 1998 Stock Option Plan for Non-Employee Directors (the "Plan") is to attract and retain the services of experienced and knowledgeable independent directors who are not employees (sometimes referred to herein collectively as "Participants") of Mercury Computer Systems, Inc. ("Mercury") for the benefit of Mercury and its stockholders and to provide additional incentive for such Participants to continue to work in the best interests of Mercury and its stockholders through continuing ownership of its common stock.

2. SHARES SUBJECT TO THE PLAN

The total number of shares of common stock, par value \$.01 per share ("Shares"), of Mercury for which options may be granted under the Plan shall not exceed 100,000 in the aggregate, subject to adjustment in accordance with Section 9 hereof.

3. ELIGIBILITY; GRANT OF OPTION

On September 30 of each of 1998, 1999, 2000, 2001 and 2002, each person who is then a member of the Board of Directors of Mercury (the "Board") and who is not then an employee of Mercury or any subsidiary shall be granted an option to acquire the Formula Number of Shares under the Plan. Any options granted prior to stockholder approval of this Plan shall become effective as of their date of grant only upon stockholder approval of this Plan in accordance with Section 13 hereof. The options shall be non-qualified options not intended to meet the requirements of Section 422 of the Internal Revenue Code of 1986, as amended (the "Code").

The Formula Number shall be that number equal to one percent (1%) of the net income of Mercury for the most recent fiscal year ending prior to the grant date as shown on Mercury's audited financial statements divided by the fair market value of a share of Mercury common stock, as determined under Section 5 hereof, on the first day of such most recent fiscal year, divided by the number of the non-employee Directors of Mercury granted options hereunder on such grant date. No fractional shares shall be issued.

4. OPTION AGREEMENT

Each option granted under the Plan shall be evidenced by an option agreement (the "Agreement") duly executed on behalf of Mercury and by the director to whom such option is granted, which Agreements shall comply with and be subject to the terms and conditions of the Plan.

5. OPTION EXERCISE PRICE

Subject to the provisions of Section 9 hereof, the option exercise price for an option granted under the Plan shall be the fair market value of the Shares of the common stock of Mercury covered by the option on the date of grant of the option. For the purposes hereof, the fair market value of the Shares of the common stock of Mercury shall be determined as follows. If such shares are then listed on any national securities exchange, the fair market value shall be the mean between the high and low sales prices, if any, on the largest such exchange on the date of the grant of the option or, if none, shall be determined by taking a weighted average of the means between the highest and lowest sales

prices on the nearest date before and the nearest date after the date of grant in accordance with Treasury Regulations Section 25.2512-2. If the shares are not then listed on any such exchange, the fair market value of such shares shall be the mean between the high and low sales prices, if any, as reported in the National Association of Securities Dealers Automated Quotation System National Market System ("NASDAQ/NMS") for the date of the grant of the option, or, if none, shall be determined by taking a weighted average of the means between the highest and lowest sales on the nearest date before and the nearest date after the date of grant in accordance with Treasury Regulations Section 25.2512-2. If the shares are not then either listed on any such exchange or quoted in NASDAQ/NMS, the fair market value shall be the mean between the average of the "Bid" and the average of the "Ask" prices, if any, as reported in the National Daily Quotation Service for the date of the grant of the option, or, if none, shall be determined by taking a weighted average of the means between the highest and lowest sales prices on the nearest date before and the nearest date after the date of grant in accordance with Treasury Regulations Section 25.2512-2. If the fair market value cannot be determined under the preceding three sentences, it shall be determined by the Company's independent auditors.

6. TIME AND MANNER OF EXERCISE OF OPTION

(a) Options granted under the Plan shall, subject to the provisions of Section 7, be exercisable as provided in this Section 6(a). The options granted under this Plan shall vest 1/3 on each of the first, second, and third anniversaries of the date of grant. Following the third anniversary of the date of grant, all options granted pursuant to a particular grant shall be exercisable in full.

(b) To the extent that the right to exercise an option has accrued and is in effect, the option may be exercised in full at one time or in part from time to time by giving written notice, signed by the person or persons exercising the option, to Mercury, stating the number of Shares with respect to which the option is being exercised, accompanied by payment in full for such Shares, which payment must be in cash or certified check payable to the order of the Company; provided, however, that there shall be no such exercise at any one time as to fewer than Two Hundred Fifty (250) Shares or all of the remaining Shares then purchasable by the person or persons exercising the option, if fewer than Two Hundred Fifty (250) Shares. Upon such exercise, delivery of a certificate for paid-up non-assessable Shares shall be made at the principal Massachusetts office of Mercury to the person or persons exercising the option at such time, during ordinary business hours, not more than thirty (30) days from the date of receipt of the notice by Mercury, as shall be designated in such notice, or at such time, place and manner as may be agreed upon by Mercury and the person or persons exercising the option.

7. TERM OF OPTIONS

(a) Each option shall expire ten (10) years from the date of the granting thereof, but shall be subject to earlier termination as herein provided.

(b) In the event of the death of an optionee, the option granted to such optionee may be exercised, to the extent the optionee was entitled to do so on the date of such optionee's death, by the estate of such optionee or by any person or persons who acquired the right to exercise such option by bequest or inheritance or otherwise by reason of the death of such optionee. Such option may be exercised at any time within one (1) year after the date of death of such optionee, at which time the option shall terminate, or prior to the date on which the option otherwise expires by its terms, whichever is earlier.

(c) In the event that an optionee ceases to be a director of Mercury, the option granted to such optionee may be exercised by him, but only to the extent that under Section 6 hereof the right to exercise the option has accrued and is in effect. Such option may be exercised at any time within one (1) month after the date such optionee ceases to be a director of Mercury, at which time the option shall terminate, but in any event prior to the date on which the option expires by its terms, whichever is earlier, unless termination as a director (a) was by Mercury for cause, in which case the option shall terminate immediately at the time the optionee ceases to be a director of Mercury, (b) was because the optionee has become disabled (within the meaning of Section 22(e)(3) of the Code), or (c) was by reason of the death of the optionee. In the case of death, see Section 7(b) of the Plan. In the case of disability, the option may be exercised, to the extent then exercisable under Section 6 hereof, at any time within one (1) year after the date of termination of the optionee's directorship with Mercury, at which time the option shall terminate, but in any event prior to the date on which the option otherwise expires by its terms, whichever is earlier.

8. OPTIONS NOT TRANSFERABLE

The right of any optionee to exercise an option granted to him under the Plan shall not be assignable or transferable by such optionee otherwise than by will or the laws of descent and distribution, or pursuant to a qualified domestic relations order as defined by the Code or Title I of the Employee Retirement Income Security Act, or the rules thereunder. Any option granted under the Plan shall be exercisable during the lifetime of such optionee only by him. Any option granted under the Plan shall be null and void and without effect upon the bankruptcy of the optionee, or upon any attempted assignment or transfer, except as herein provided, including without limitation any purported assignment, whether voluntary or by operation of law, pledge, hypothecation or other disposition, attachment, trustee process or similar process, whether legal or equitable, upon such option.

9. ADJUSTMENTS UPON CHANGES IN CAPITALIZATION

In the event that the outstanding Shares of the common stock of Mercury are changed into or exchanged for a different number or kind of shares or other securities of Mercury or of another corporation by reason of any reorganization, merger, consolidation, recapitalization, reclassification, stock split-up, combination of shares or dividends payable in capital stock, appropriate adjustment shall be made in the number and kind of shares as to which outstanding options, or portions thereof then unexercised, shall be exercisable, to the end that the proportionate interest of the optionee shall be maintained as before the occurrence of such event, and such adjustment in outstanding options shall be made without change in the total price applicable to the unexercised portion of such options and with a corresponding adjustment in the option price per share.

10. RESTRICTIONS ON ISSUE OF SHARES

Notwithstanding the provisions of Section 6 hereof, Mercury may delay the issuance of Shares covered by the exercise of any option and the delivery of a certificate for such Shares until one of the following conditions shall be satisfied:

(i) the Shares with respect to which an option has been exercised are at the time of the issue of such Shares effectively registered under applicable Federal and state securities acts now in force or hereafter amended; or

(ii) counsel for Mercury shall have given an opinion, which opinion shall not be unreasonably conditioned or withheld, that such Shares are exempt from registration under applicable Federal and state securities acts now in force or hereafter amended.

It is intended that all exercises of options shall be effective. Accordingly, Mercury shall use its best efforts to bring about compliance with the above conditions within a reasonable time, except that Mercury shall be under no obligation to cause a registration statement or a post-effective amendment to any registration statement to be prepared at its expense solely for the purpose of covering the issue of Shares in respect of which any option may be exercised, except as otherwise agreed to by Mercury in writing.

11. RIGHTS OF HOLDER ON PURCHASE FOR INVESTMENT; SUBSEQUENT REGISTRATION

Unless the Shares to be issued upon exercise of an option granted under the Plan have been effectively registered under the Securities Act of 1933, as now in force or hereafter amended, Mercury shall be under no obligation to issue any Shares covered by any option unless the person who exercises such option, in whole or in part, shall give a written representation and undertaking to Mercury which is satisfactory in form and scope to counsel to Mercury and upon which, in the opinion of such counsel, Mercury may reasonably rely, that he is acquiring the Shares issued to him pursuant to such exercise of the option for his own account as an investment and not with a view to, or for sale in connection with, the distribution of any such Shares, and that he will make no transfer of the same except in compliance with any rules and regulations in force at the time of such transfer under the Securities Act of 1933, or any other applicable law, and that if Shares are issued without such registration a legend to this effect may be endorsed upon the securities so issued. In the event that Mercury shall, nevertheless, deem it necessary or desirable to register under the Securities Act of 1933 or other applicable statutes any Shares with respect to which an option shall have been exercised, or to qualify any such Shares for exemption from the Securities Act of 1933 or other applicable statutes, then Mercury shall take such action at its own expense and may require from each optionee such information in writing for use in any registration statement, prospectus, preliminary prospectus or offering circular as is reasonably necessary for such purpose and may require reasonable indemnity to Mercury and its officers and directors from such holder against all losses, claims, damages and liabilities arising from such use of the information so furnished and caused by any untrue statement of any material fact therein or caused by the omission to state a material fact required to be stated therein or necessary to make the statements therein not misleading in light of the circumstances under which they were made.

12. LOANS PROHIBITED

Mercury shall not, directly or indirectly, lend money to an optionee or to any person or persons entitled to exercise an option by reason of the death of an optionee for the purpose of assisting him or them in the acquisition of Shares covered by an option granted under the Plan.

13. APPROVAL OF STOCKHOLDERS

The Plan shall be subject to approval by the vote of stockholders holding at least a majority of the voting stock of Mercury voting in person or by proxy at a duly held stockholders' meeting, or by written consent of all of the stockholders, and shall take effect immediately as of its date of adoption upon such approval.

14. EXPENSES OF THE PLAN

All costs and expenses of the adoption and administration of the Plan shall be borne by Mercury, and none of such expenses shall be charged to any optionee.

15. TERMINATION AND AMENDMENT OF PLAN

Unless sooner terminated as herein provided, the Plan shall terminate ten (10) years from the date upon which the Plan was duly approved by the stockholders. The Board may at any time terminate the Plan or make such modification or amendment thereof as it deems advisable, provided however that, except as provided in Section 9 hereof, no modification or amendment to the provisions of the Plan may be made more than once every six (6) months other than to comport with changes in the Code, the Employee Retirement Income Security Act, or the rules thereunder, if the effect of such amendment or modification would be to change (i) the requirements for eligibility under the Plan, (ii) the timing of the grants of options to be granted under the Plan or the exercise price or vesting schedule thereof, or (iii) the number of Shares subject to options to be granted under the Plan either in the aggregate or to one director. Any amendment to the provisions of the Plan which (i) materially increases the number of Shares which may be subject to options granted under the Plan, (ii) materially increases the benefits accruing to Participants under the Plan, or (iii) materially modifies the requirement for eligibility to participate in the Plan, shall be subject to approval by the stockholders of Mercury obtained in the manner stated in Section 13 hereof. Termination or any modification or amendment of the Plan shall not, without the consent of an optionee, affect his rights under an option previously granted to him.

16. LIMITATION OF RIGHTS IN THE OPTION SHARES

An optionee shall not be deemed for any purpose to be a stockholder of Mercury with respect to any of the options except to the extent that the option shall have been exercised with respect thereto and, in addition, a certificate shall have been issued theretofore and delivered to the optionee.

17. NOTICES

Any communication or notice required or permitted to be given under the Plan shall be in writing, and mailed by registered or certified mail or delivered by hand, if to Mercury, to its principal place of business, attention: President, and, if to an optionee, to the address as appearing on the records of Mercury.

18. COMPLIANCE WITH RULE 16b-3

It is the intention of Mercury that the Plan comply in all respects with Rule 16b-3 promulgated under Section 16(b) of the Securities Exchange Act of 1934 (the "Act") and that Participants remain disinterested persons for purposes of administering other employee benefit plans of Mercury and having transactions under such other plans be exempt from Section 16(b) of the Act. Therefore, if any Plan provision is found not to be in compliance with Rule 16b-3 or if any Plan provisions would disqualify Participants from remaining disinterested persons, that provisions shall be deemed null and void, and in all events the Plan shall be construed in favor of its meeting the requirements of Rule 16b-3.

APPROVED BY BOARD OF DIRECTORS: June 15, 1998

APPROVED BY THE STOCKHOLDERS: October 27, 1998

Exhibit 5.1 Opinion of Hutchins, Wheeler & Dittmar, A Professional Corporation

December 28, 2000

Mercury Computer Systems, Inc.
199 Riverneck Road
Chelmsford, MA 01824

Ladies and Gentlemen:

We are general counsel to Mercury Computer Systems, Inc., a Massachusetts corporation (the "Company"), and as such counsel we are familiar with the corporate proceedings taken in connection with the adoption of the Company's 1998 Stock Option Plan for Non-Employee Directors. We are also familiar with the registration statement on Form S-8 to which a copy of this opinion will be attached as an exhibit.

As such counsel, we have examined the corporate records of the Company, including the Restated Articles of Organization, By-laws, stock records, minutes of meetings of its Board of Directors and stockholders and such other documents as we have deemed necessary as a basis for the opinions herein expressed.

Based upon the foregoing, and having regard for such legal considerations as we deem relevant, we are of the opinion that:

1. The Company is duly organized and validly existing under the laws of the Commonwealth of Massachusetts;
2. The Company has authorized the issuance of 40,000,000 shares of common stock having a par value of \$.01 per share and 1,000,000 shares of preferred stock having a par value of \$.01 per share.
3. The shares of common stock issuable pursuant to the Plan, when sold in accordance with the terms thereof, will be legally issued, fully paid and non-assessable.

We hereby consent to the filing of this opinion as an exhibit to the Registration Statement on Form S-8 and to the reference to us under the caption "Interests of Named Experts and Counsel" in the Registration Statement.

Very truly yours,

/s/Hutchins, Wheeler & Dittmar

HUTCHINS, WHEELER & DITTMAR
A Professional Corporation

CONSENT OF INDEPENDENT ACCOUNTANTS

We hereby consent to the incorporation by reference in this Registration Statement on Form S-8 of our report dated August 17, 2000 relating to the financial statements and financial statement schedule of Mercury Computer Systems, Inc., which appears in Mercury Computer Systems, Inc.'s Annual Report on Form 10-K for the year ended June 30, 2000.

PricewaterhouseCooper LLP

Boston, Massachusetts
December 28, 2000