

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

SCHEDULE 14A

**Proxy Statement Pursuant to Section 14(a) of the
Securities Exchange Act of 1934
(Amendment No.)**

Filed by the Registrant Filed by a Party other than the Registrant

Check the appropriate box:

- Preliminary Proxy Statement
- Confidential, for Use of the Commission Only (as permitted by Rule 14a-6(e)(2))**
- Definitive Proxy Statement
- Definitive Additional Materials
- Soliciting Material Pursuant to §240.14a-12

Mercury Computer Systems, Inc.
(Name of Registrant as Specified In Its Charter)

(Name of Person(s) Filing Proxy Statement, if other than the Registrant)

Payment of Filing Fee (Check the appropriate box):

- No fee required.
- Fee computed on table below per Exchange Act Rules 14a-6(i)(1) and 0-11.

(1) Title of each class of securities to which transaction applies:

(2) Aggregate number of securities to which transaction applies:

(3) Per unit price or other underlying value of transaction computed pursuant to Exchange Act Rule 0-11 (set forth the amount on which the filing fee is calculated and state how it was determined):

(4) Proposed maximum aggregate value of transaction:

(5) Total fee paid:

- Fee paid previously with preliminary materials:
- Check box if any part of the fee is offset as provided by Exchange Act Rule 0-11(a)(2) and identify the filing for which the offsetting fee was paid previously. Identify the previous filing by registration statement number, or the form or schedule and the date of its filing.

(1) Amount previously paid:

(2) Form, Schedule or Registration Statement No.:

(3) Filing Party:

(4) Date Filed:



April 1, 2009

Dear Shareholder:

Mercury Computer Systems, Inc. will hold a Special Meeting of Shareholders on May 1, 2009 beginning at 10:00 a.m., local time, at the company's offices located at 201 Riverneck Road, Chelmsford, Massachusetts 01824. We look forward to your attending either in person or by proxy, but please note that due to security procedures you will be required to show a form of picture identification to gain access to the company's offices if you plan to attend the special meeting. The enclosed notice of meeting, the proxy statement and the proxy card from the Board of Directors describe the proposal to be acted upon at the meeting.

This special meeting has been called for the purpose of asking our shareholders to approve an option exchange program under which eligible employees would be able to elect to exchange certain outstanding stock options for a lesser number of shares of restricted stock. The exchange program's eligible participants would exclude, among others, our executive officers and Board of Directors. The Board of Directors recommends that you vote FOR the approval of the proposed option exchange program.

Please refer to the enclosed proxy statement for detailed information on the proposal. If you have any further questions concerning the meeting or the proposal, please feel free to contact us at (978) 256-1300. Your vote is important. Whether or not you expect to attend the meeting, your shares should be represented. Therefore, we urge you to complete, sign, date, and promptly return the enclosed proxy card.

On behalf of the Board of Directors, we would like to express our appreciation for your continued interest in our company.

Sincerely yours,
Mark Aslett
President, Chief Executive Officer,
and Director

MERCURY COMPUTER SYSTEMS, INC.
201 RIVERNECK ROAD
CHELMSFORD, MASSACHUSETTS 01824
(978) 256-1300

Notice of Special Meeting
of Shareholders

To Be Held May , 2009

To Shareholders:

A Special Meeting of Shareholders of MERCURY COMPUTER SYSTEMS, INC. will be held on , May , 2009 at 10:00 a.m., local time, at the company's offices located at 201 Riverneck Road, Chelmsford, Massachusetts 01824, in order to:

1. Approve a stock option exchange program under which eligible employees would be able to elect to exchange certain outstanding stock options for a lesser number of shares of restricted stock. The exchange program is more fully described in the proxy statement accompanying this Notice of Special Meeting of Shareholders.
2. Conduct such other business as may properly come before the meeting and at any adjournment or postponement of the meeting.

The Board of Directors has fixed the close of business on April 3, 2009 as the record date for the meeting. All shareholders of record on that date are entitled to notice of and to vote at the meeting.

YOUR VOTE IS IMPORTANT. PLEASE COMPLETE AND RETURN THE ENCLOSED PROXY CARD IN THE ENVELOPE PROVIDED WHETHER OR NOT YOU INTEND TO BE PRESENT AT THE MEETING IN PERSON. IF YOU ATTEND THE MEETING, YOU MAY CONTINUE TO HAVE YOUR SHARES VOTED AS INSTRUCTED IN THE PROXY CARD OR YOU MAY WITHDRAW YOUR PROXY AND VOTE YOUR SHARES IN PERSON.

By Order of the Board of Directors
ALEX A. VAN ADZIN
Secretary

Chelmsford, Massachusetts
April , 2009

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Cautionary Statement Concerning Forward-Looking Information

This proxy statement contains forward-looking statements about our strategies, plans and objectives. Forward-looking statements are statements that contain predictions or projections of future events or performance, and often contain words such as “anticipates,” “can,” “estimates,” “believe,” “expects,” “will,” or other words indicating a statement about the future. These forward-looking statements involve a number of risks, uncertainties or other assumptions that may cause actual results or performance to be materially different from those expressed or implied by such forward-looking statements. These risks and uncertainties include, but are not limited to: (1) general economic and business conditions, including the current adverse economic conditions in the United States and other countries in which we operate; (2) effects of continued geo-political unrest and regional conflicts; (3) competition; (4) changes in technology and methods of marketing; (5) delays in completing various engineering and manufacturing programs; (6) changes in customer order patterns; (7) changes in product mix; (8) continued success in technological advances and delivering technological innovations; (9) continued funding of defense programs and the timing of such funding; (10) changes in the U.S. Government’s interpretation of federal procurement rules and regulations; (11) market acceptance of our products; (12) shortages in components and production delays due to performance quality issues with outsourced components; (13) inability to fully realize the expected benefits from acquisitions or delays in realizing such benefits; (14) challenges in integrating acquired businesses and achieving anticipated synergies; (15) inability to identify opportunities to rationalize our business portfolio in a timely manner or at all; (16) timing and costs associated with disposing of businesses; and (17) difficulties in retaining key employees and customers, and other risks detailed in our filings with the Securities and Exchange Commission, including our annual report on Form 10-K for the fiscal year ended June 30, 2008 and our quarterly report on Form 10-Q for the fiscal quarter ended December 31, 2008.

You should not place undue reliance on forward-looking statements, which speak only as of the date made. We undertake no obligation to update any forward-looking statement to reflect events or circumstances after the date of this proxy statement.

**MERCURY COMPUTER SYSTEMS, INC.
201 RIVERNECK ROAD
CHELMSFORD, MASSACHUSETTS 01824
(978) 256-1300**

QUESTIONS AND ANSWERS ABOUT THESE PROXY MATERIALS AND VOTING

Why am I receiving these materials?

We are mailing this proxy statement, with the accompanying proxy card, to you on or about April 7, 2009 in connection with the solicitation of proxies by the Board of Directors of Mercury Computer Systems, Inc., or “Mercury,” for a special meeting of shareholders to be held on May 7, 2009, and any adjournment or postponement of that meeting. The meeting will be held on May 7, 2009, beginning at 10:00 a.m., local time, at the company’s offices located at 201 Riverneck Road, Chelmsford, Massachusetts 01824. You are invited to attend the special meeting, and we request that you vote on the proposal described in this proxy statement. You do not need to attend the meeting in person to vote your shares. You may simply complete, sign, and return your proxy card in order to have your shares voted at the meeting on your behalf.

What am I voting on?

You are being asked to approve a stock option exchange program under which eligible employees would be able to elect to exchange certain outstanding stock options for a lesser number of shares of restricted stock. The exchange program’s eligible participants would exclude, among others, our executive officers and Board of Directors. Options held by eligible employees with exercise prices greater than the 52-week high price of our common stock as reported on the NASDAQ Global Select Market, measured as of the start of the exchange program, will be eligible to be surrendered for shares of restricted stock.

The exchange ratios will be established by grouping together eligible options with similar exercise prices, and then assigning an appropriate exchange ratio to each grouping. Exchange ratios will be designed to result in a fair value, for accounting purposes, of the replacement awards. That fair value will be approximately equal to the fair value of the eligible options that are surrendered in the exchange based on valuation assumptions made shortly before the offer to exchange commences. These ratios will be designed with the goal of making the grant of replacement awards a value-for-value exchange for participants, structured to avoid any incremental accounting charge to Mercury, to the extent practicable at the time that the ratios are established. The actual exchange ratios will be determined by the Compensation Committee shortly before the start of the exchange program, and will depend on the original exercise price of the eligible option, the then-current fair value of the stock option, and the fair value of one share of restricted stock.

Each restricted stock award granted in the exchange program will vest in three equal annual installments commencing on the first anniversary of the date of grant, provided that the grantee remains an employee of Mercury or one of our subsidiaries as of each such date.

Why are we recommending that shareholders approve this proposal?

This proposal is an important part of our strategy to execute a continued successful turnaround of Mercury’s business. We are currently engaged in an intensive effort to restructure the company and return it to sustained growth and profitability. In order to heighten our chances of success, we believe that:

- we must strengthen our retention of employees who are key to this effort; and
- employee retention and performance incentives are essential elements in maintaining the turnaround momentum that we have achieved to date.

Mindful of shareholder interests, we have designed the exchange program to include several shareholder-friendly features such as:

- the exclusion of our executive officers and members of our Board of Directors from participating;
- the goal of being a value-for-value exchange for participants, structured to avoid any incremental accounting charge under SFAS 123R to the extent practicable;
- the inclusion of only stock options with exercise prices that exceed the 52-week high price of our common stock; and
- a reduction in the equity award “overhang” represented by outstanding options that have high exercise prices and are no longer effective as performance and retention incentives.

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Our stock price has experienced a significant decline and volatility during the past several years as a result of a number of factors affecting our business. Over the past 16 months, we have been engaged in a strategic turnaround effort. In fiscal year 2008, our Advanced Computing Solutions (ACS) defense business performed relatively well, but we continued to see substantial revenue declines in the ACS commercial space due to a weakening of the market. We also experienced material operating losses in several of our non-core businesses. We believe that these declines and losses have obscured the value at the heart of our company. To unlock more of this value, we initiated a substantial restructuring effort aimed at (1) rationalizing our portfolio of unprofitable and non-core businesses, (2) redirecting our resources toward strengthening our defense business, (3) developing new products to facilitate future design wins, and (4) expanding our markets and repositioning our business for long-term growth.

While we believe that we have made progress toward these goals, our efforts have not yet yielded a sustained improvement in our stock price, which remains at a relatively low level. In addition, the profound economic downturn has imposed downward pressure on the price of our stock as well as the stock of many other companies. As a result, many of our employees hold options with exercise prices that are significantly higher than the current market price of our common stock. These out-of-the money options are no longer effective as performance and retention incentives, and at the same time they contribute to our equity award “overhang.”

We believe that the proposal is favorable to the interests of shareholders because it will permit us:

- to strengthen our employee retention as the market begins to recover and maintain the momentum that we have achieved through our recent restructuring efforts;
- to restore incentives for employees who participate in the exchange program by issuing them restricted stock awards that vest over a three-year period following the exchange if they remain with us; and
- to reduce the equity award “overhang” represented by outstanding options that have high exercise prices and are no longer effective as performance and retention incentives.

Why is this proposal being submitted at a special meeting instead of an annual meeting?

Our management and Board of Directors believe that the longer we wait to implement the exchange program, the greater the risk will be that we will not be able to retain employees who are essential to the future growth and success of our business. In addition, we believe that employee retention is particularly important in order to maintain momentum at this critical juncture in our turnaround efforts. Therefore, we did not believe that it would be prudent to wait until our annual meeting later in the year to act on this proposal.

Who can attend and vote at the meeting?

Shareholders of record at the close of business on April 3, 2009 are entitled to attend and vote at the meeting. Each share of our common stock is entitled to one vote on all matters to be voted on at the meeting, and can be voted only if the record owner is present to vote or is represented by proxy. The proxy card provided with this proxy statement indicates the number of shares of our common stock that you own and are entitled to vote at the meeting.

What constitutes a quorum at the meeting?

The presence at the meeting, in person or represented by proxy, of the holders of a majority of the common stock outstanding on April 3, 2009, the record date, will constitute a quorum for purposes of the meeting. On the record date, 1,000 shares of common stock were outstanding. For purposes of determining whether a quorum exists, proxies received but marked “abstain” and so-called “broker non-votes” (described below) will be counted as present.

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How do I vote by proxy?

If you properly fill in your proxy card and our transfer agent receives it in time to vote at the meeting, your “proxy” (one of the individuals named on your proxy card) will vote your shares as you have directed. No postage is required if your proxy card is mailed in the United States in the return envelope that has been enclosed with this proxy statement.

If you sign, date, and return the proxy card but do not specify how your shares are to be voted, then your proxy will vote your shares **FOR** approval of the stock option exchange program described in this proxy statement.

How do I vote if my shares are held by my broker?

If your shares are held by your broker in “street name,” you will need to instruct your broker concerning how to vote your shares in the manner provided by your broker. If your shares are held in “street name” and you wish to vote them in person at the meeting, you must obtain from your broker a properly executed legal proxy, identifying you as a shareholder of Mercury, authorizing you to act on behalf of the broker at the meeting, and specifying the number of shares with respect to which the authorization is granted.

What discretion does my broker have to vote my shares held in “street name”?

A broker holding your shares in “street name” must vote those shares according to any specific instructions it receives from you. In the absence of such instructions, your broker does not have discretion to vote your shares on the exchange program. Therefore, without receiving specific instructions from you, your broker will not vote your shares at the meeting, giving rise to what is called a “broker non-vote.” Shares represented by broker non-votes will be counted for purposes of determining the existence of a quorum for the transaction of business, but for purposes of determining the number of shares voting at the meeting, broker non-votes will not be counted as votes cast or shares voting.

Can I change my vote after I return my proxy card?

Yes. You may change your vote at any time before your proxy is exercised. To change your vote, you may:

- deliver to our Corporation Secretary a written notice revoking your earlier vote;
- deliver to our transfer agent a properly completed and signed proxy card with a later date; or
- vote in person at the meeting.

Your attendance at the meeting will not be deemed to revoke a previously-delivered proxy unless you clearly indicate at the meeting that you intend to revoke your proxy and vote in person.

How are votes counted?

The approval of the exchange program requires the favorable vote of a majority of the votes cast on the matter. Abstentions and broker non-votes, which are described above, will have no effect on the outcome of voting on the proposal.

How is Mercury soliciting proxies?

We bear the cost of preparing, assembling, and mailing the proxy material relating to the solicitation of proxies by the Board of Directors for the meeting. In addition to the use of the mails, certain of our officers and regular employees may, without additional compensation, solicit proxies in person, by telephone, or by other means of communication. We will also request brokerage houses, custodians, nominees, and fiduciaries to

forward copies of the proxy material to those persons for whom they hold shares, and will reimburse those record holders for their reasonable expenses in transmitting this material. In addition, we have engaged the services of the Altman Group to assist in the solicitation of proxies for a fee of \$10,000, plus reimbursement of reasonable out-of-pocket expenses.

PROPOSAL TO APPROVE A STOCK OPTION EXCHANGE PROGRAM

Overview

On March 10, 2009, our Board of Directors authorized, subject to shareholder approval, a program (the “exchange program”) that will permit our eligible employees to exchange certain outstanding stock options for a lesser number of shares of restricted stock. The exchange program will be open to eligible employees of Mercury and any of our subsidiaries designated for participation by the Compensation Committee of our Board of Directors. However, members of our Board of Directors and our executive officers will not be eligible to participate.

The exchange ratios will be established by grouping together eligible options with similar exercise prices, and then assigning an appropriate exchange ratio to each grouping. Exchange ratios will be designed to result in a fair value, for accounting purposes, of the replacement awards, which will be approximately equal to the fair value of the eligible options that are surrendered in the exchange (based on valuation assumptions made shortly before the offer to exchange commences). These ratios will be designed with the goal of making the grant of replacement awards a value-for-value exchange for participants, structured to avoid any incremental accounting charge to Mercury, to the extent practicable at the time that the ratios are established. The actual exchange ratios will be determined by the Compensation Committee shortly before the start of the exchange program, and will depend on the original exercise price of the eligible option, the then-current fair value of the stock option, and the fair value of one share of restricted stock.

Each restricted stock award granted in the exchange program will vest in three equal annual installments commencing on the first anniversary of the date of grant, provided that the grantee remains an employee of Mercury or one of our subsidiaries as of each such date.

Options held by eligible employees with exercise prices greater than the 52-week high price of our common stock as reported on the NASDAQ Global Select Market, measured as of the start of the exchange program, will be eligible to be surrendered for shares of restricted stock. If the exchange program had commenced as of March 24, 2009, options to purchase approximately 468,605 shares of our common stock would have been eligible for exchange, and approximately 143,089 shares of restricted stock would have been issued if all eligible options were surrendered in the exchange program. The exercise prices of these eligible options range from \$12.80 to \$42.00 per share, and these options are held by 116 employees. All eligible options were granted under our 1997 Stock Option Plan, or the “1997 Plan,” and our Amended and Restated 2005 Stock Incentive Plan, or the “2005 Plan,” and the restricted stock awards in connection with the exchange program will be granted under the 2005 Plan.

The exchange program will not take place unless it is approved by shareholders. If shareholder approval of the exchange program is not obtained, currently outstanding options that would have been eligible for exchange in the program will remain outstanding and in effect in accordance with their existing terms.

We believe that the exchange program if approved by shareholders will permit us:

- to strengthen our employee retention as the market begins to recover and maintain the momentum that we have achieved through our recent restructuring efforts;
- to restore incentives for employees who participate in the exchange program by issuing them restricted stock awards that vest over a three-year period following the exchange if they remain with us; and
- to reduce the equity award “overhang” represented by outstanding options that have high exercise prices and are no longer effective as performance and retention incentives.

Therefore, the Board believes that the proposed exchange program is favorable to the interests of our shareholders and unanimously recommends a vote “FOR” approval of the exchange program.

Reasons for the Exchange Program

This proposal is an important part of our strategy to execute a continued successful turnaround of Mercury’s business. We are currently engaged in an intensive effort to restructure the company and return it to sustained growth and profitability. In order to heighten our chances of success, we believe that:

- we must strengthen our retention of employees who are key to this effort; and
- employee retention and performance incentives are essential elements in maintaining the turnaround momentum that we have achieved to date.

Mindful of shareholder interests, we have designed the exchange program to include several shareholder-friendly features such as:

- the exclusion of our executive officers and members of our Board of Directors from participating;
- the goal of being a value-for-value exchange for participants, structured to avoid any incremental accounting charge under SFAS 123R to the extent practicable;
- the inclusion of only stock options with exercise prices that exceed the 52-week high price of our common stock; and
- a reduction in the equity award “overhang” represented by outstanding options that have high exercise prices and are no longer effective as performance and retention incentives.

We have granted stock options annually to a substantial portion of our employees. When the Compensation Committee approves the grant of a stock option, it establishes the exercise price that the employee must pay to purchase shares of our common stock when the option is exercised. The per-share exercise price is set at the closing market price of a share of our common stock on the date the option is granted. Thus, an employee receives value only if he or she exercises an option and sells the purchased shares at a price that exceeds the option’s exercise price. The granting of stock options is intended to align the interests of our employees with those of our shareholders because the value of a stock option increases with the value of our common stock.

Our stock price has experienced a significant decline and volatility during the past several years as a result of a number of factors affecting our business. Over the past 16 months, we have been engaged in a strategic turnaround effort. In fiscal year 2008, our Advanced Computing Solutions (ACS) defense business performed relatively well, but we continued to see substantial revenue declines in the ACS commercial space due to a weakening of the market. We also experienced material operating losses in several of our non-core businesses. We believe that these declines and losses have obscured the value at the heart of our company. To unlock more of this value, we initiated a substantial restructuring effort aimed at (1) rationalizing our portfolio of unprofitable and non-core businesses, (2) redirecting our resources toward strengthening our defense business, (3) developing new products to facilitate future design wins, and (4) expanding our markets and repositioning our business for long-term growth.

We believe that we have made progress toward these goals. For instance, we executed a cost-reduction program in ACS in the fourth quarter of fiscal year 2008 to help focus and sustain this business on a going-forward basis. In addition, we have made progress in rationalizing our portfolio of businesses in fiscal year 2008, and also earlier this year, by discontinuing and/or selling certain of these businesses. Despite this progress, our efforts have not yet yielded a sustained improvement in our stock price, which remains at a relatively low level. In addition, the profound economic downturn has negatively impacted these efforts and imposed downward pressure on the price of our stock as well as the stock of many other companies. As a result, many of our employees hold options with exercise prices that are significantly higher than the current market price of our common stock. As of March 24, 2009, eligible employees held eligible options for 468,605 shares with exercise prices ranging from \$12.80 per share to \$42.00, while the closing price of our common stock on the NASDAQ Global Select Market on that date was \$5.02. These out-of-the-money options are no longer effective as performance and retention incentives.

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We believe that to enhance long-term shareholder value we need to maintain competitive employee compensation, incentive, and retention programs. An equity stake in Mercury's success is a critical component of these programs. In 2006, we conducted an option exchange program through which eligible employees were provided the opportunity to exchange stock options with exercise prices greater than \$23.00 for a lesser number of shares of restricted stock. The 2006 exchange program was conducted because, at that time, our employees held a significant number of out-of-the-money options due to decreases in the market price of our common stock as a result of a number of business-related factors. Since the 2006 exchange program, we have continued to annually grant stock options as performance and retention incentives, and the subsequent decline in our stock price has resulted in our employees again having stock options with exercise prices significantly higher than the current market price of our stock. Given this significant period of strategic changes for our company, we believe it is important to conduct the proposed option exchange program to maintain and enhance the effectiveness of the outstanding equity awards as performance and retention incentives and to restore for eligible employees an incentive to remain with us and contribute to the future growth and success of our business.

Moreover, many of the eligible options have been out of the money for an extended period of time and, therefore, have not been exercised by our employees. Coupled with periodic grants of options and other equity-based awards to new and continuing employees, the number of shares subject to outstanding stock options and other unvested equity awards has contributed to our equity award "overhang." Under the proposed exchange program, participating employees will receive significantly fewer shares of restricted stock than the number of shares subject to the surrendered options. Because participating employees will exchange a greater number of options for a lesser number of shares of restricted stock, the number of shares of stock subject to all outstanding stock options and other unvested equity awards will be reduced, thereby reducing the equity award overhang.

Based on the assumptions described below (see "Description of the Exchange Program – How many shares of restricted stock will an employee receive if he or she participates in the exchange program?"), if all of the eligible options were exchanged for shares of restricted stock in accordance with the assumed exchange ratios, eligible options for 468,605 shares would be surrendered and cancelled, while approximately 143,089 shares of restricted stock would be issued, resulting in a net reduction in the equity award overhang by approximately 325,516 shares or approximately 1.4% of the number of shares of our common stock outstanding as of March 24, 2009. All eligible options that are not exchanged will remain outstanding and in effect in accordance with their existing terms.

When considering how best to continue to incentivize, reward, and retain our employees who have out-of-the-money options, we considered:

- *Increasing cash compensation.* To replace equity incentives, we considered whether we could increase base and target bonus cash compensation. However, significant increases in cash compensation would substantially increase our compensation expenses and reduce our cash flow from operations, which could adversely affect our operating results. In addition, these increases would not reduce our overhang.
- *Granting additional equity awards.* We also considered making special grants of additional stock options at current market prices or another form of equity award such as restricted stock to the eligible employees in addition to our annual equity grants. However, these additional grants to the eligible employees would increase our overhang and the dilution of our shareholders.
- *Exchanging options for cash.* We also considered implementing a program to exchange out-of-the-money options for cash payments. However, an exchange program for cash would increase our compensation expenses and reduce our cash flow from operations, which could adversely affect our business and operating results. In addition, we do not believe that such a program would have significant long-term retention value.
- *Exchanging options for options.* We also considered implementing a program to exchange out-of-the-money options for new option awards with lower exercise prices. The reason that we decided upon an options-for-restricted-stock program is that, in a very volatile equity market, we believe that restricted stock provides greater retention value than options.

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As a result, we determined that a program under which our employees could exchange out-of-the-money stock options for a lesser number of shares of restricted stock, with a new three-year vesting schedule, was the most attractive means available to us to restore incentives for our employees.

Implementing the Exchange Program

We have not commenced the exchange program and will not do so unless our shareholders approve this proposal. Provided that such approval is received, the exchange program will commence at a time determined by the Compensation Committee of our Board of Directors. It is currently anticipated that the exchange program will commence as promptly as practicable following approval of this proposal by our shareholders. However, even if the exchange program is approved by our shareholders, the Compensation Committee will retain the authority, in its discretion, to terminate or postpone the exchange program at any time prior to expiration of the election period under the exchange program.

Upon the commencement of the exchange program, eligible employees holding eligible options will receive written materials explaining the precise terms and timing of the exchange program (an “offer to exchange”). Employees will be given at least 20 business days to elect to exchange some or all of their eligible options for shares of restricted stock on a grant-by-grant basis. They will make this election by filling out an election form which will be distributed to them as part of the offer to exchange and submitting the form to our stock plan administrator within the 20-business-day period (or such longer period as we choose to keep the offer to exchange open). Once the offer to exchange is closed, eligible options that were surrendered for exchange will be cancelled, and the Compensation Committee will approve grants of restricted stock awards to participating employees in accordance with the established exchange ratios. All such restricted stock awards will be granted under the 2005 Plan and will be subject to the terms of such plan and a restricted stock award agreement to be entered into between Mercury and each participating employee.

At or before commencement of the exchange program, we will file the offer to exchange with the Securities and Exchange Commission, or the “SEC,” as part of a tender offer statement on Schedule TO. Eligible employees, as well as shareholders and members of the public, will be able to obtain the offer to exchange and other documents we file with the SEC free of charge from the SEC’s website at www.sec.gov.

Description of the Exchange Program

Who is eligible to participate in the exchange program?

Only employees based in the United States as of the start of the exchange program may participate in the exchange program. The exchange program’s eligible participants would exclude, among others, our executive officers and Board of Directors. To be eligible, an employee must be employed by us or one of our participating subsidiaries both at the time the offer to exchange commences and on the date on which the surrendered options are cancelled and the restricted stock awards are granted to replace them. Any employee holding eligible options who elects to participate but whose employment terminates for any reason prior to the grant of the restricted stock awards, including voluntary resignation, retirement, involuntary termination, layoff, death, or disability, will not be eligible to participate in the exchange program and will instead retain his or her eligible options subject to their existing terms. As of March 24, 2009, options were held by approximately 116 eligible employees.

Which stock options will be eligible for the exchange program?

Stock options held by eligible employees with exercise prices greater than the 52-week high price of our common stock as reported by the NASDAQ Global Select Market, measured as of the start of the exchange program, will be eligible to be surrendered for shares of restricted stock. The 52-week high price of our common stock as reported by the NASDAQ Global Select Market for the period ended March 24, 2009, was \$10.12. In addition, stock options must have time-based vesting to be eligible for exchange (including both the vested and unvested portions). Stock options with performance-based vesting will not be eligible for exchange.

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As of March 24, 2009, options for 3,479,074 shares of our common stock were outstanding under all of our equity compensation plans. If the exchange program had commenced as of such date, options to purchase approximately 468,605 shares of our common stock would have been eligible for exchange. The exercise prices of such options range from \$12.80 to \$42.00 per share, and are held by 116 employees.

The 3,479,074 options that were outstanding as of March 24, 2009 have a weighted average exercise price of \$19.33 and a weighted average remaining term of 5.6 years. Of these options, the 468,605 options that would have been eligible for exchange if the exchange program had been commenced as of such date, have a weighted average exercise price of \$20.24 and a weighted average remaining term of 5.0 years. The 3,010,469 options that were outstanding as of March 24, 2009, and would not have been so eligible for the exchange program have a weighted average exercise price of \$13.90 and a weighted average remaining term of 5.7 years.

How many shares of restricted stock will an employee receive if he or she participates in the exchange program?

The exchange ratios will be established by grouping together eligible options with similar exercise prices, and then assigning an appropriate exchange ratio to each grouping. Exchange ratios will be designed to result in a fair value, for accounting purposes, of the replacement awards, which will be approximately equal to the fair value of the eligible options that are surrendered in the exchange (based on valuation assumptions made shortly before the offer to exchange commences). These ratios will be designed with the goal of making the grant of replacement awards a value-for-value exchange for participants, structured to avoid any incremental accounting charge to Mercury, to the extent practicable at the time that the ratios are established. The actual exchange ratios will be determined by the Compensation Committee shortly before the start of the exchange program, and will depend on the original exercise price of the eligible option, the then-current fair value of the stock option, and the fair value of one share of restricted stock.

The exchange ratios will be established by assigning an appropriate exchange ratio to each grouping of stock options, and will be based on the fair value of the eligible options (calculated using the Black-Scholes option-valuation model) within the relevant grouping. The calculation of fair value using the Black-Scholes option-valuation model takes into account many variables, such as the volatility of our common stock and the expected term of an eligible option. As a result, the exchange ratios do not necessarily increase as the exercise price of the eligible option increases. As indicated, setting the exchange ratios in this manner is intended to result in the issuance of shares of restricted stock that have a fair value that is approximately equal to the fair value of the exchanged eligible options. This should minimize any additional compensation cost that we must recognize upon granting the shares of restricted stock, subject to any incremental compensation expense that might result from fluctuations in the fair market value of our common stock after the exchange ratios have been established, but before the date on which eligible options are exchanged for shares of restricted stock.

Although the exchange ratios cannot be currently finalized, we can provide an example based on certain assumptions regarding the start date of the exchange program, the fair value of the eligible options and the fair market value of our common stock. For purposes of illustration only, assuming a fair market value of our common stock of \$5.02 per share (the closing price of our common stock as reported by the NASDAQ Global Select Market on March 24, 2009), then based on the above method of determining the exchange ratios, the following exchange ratios would apply:

<u>If the Exercise Price of an Eligible Option is:</u>	<u>The Exchange Ratio is:</u>
\$10.13 – \$14.99	1.79-to-1
\$15.00 – \$19.99	4.01-to-1
\$20.00 – \$24.99	4.01-to-1
\$25.00 and above	6.46-to-1

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The eligible options in the table above were grouped together based on similar exercise prices, and the exchange ratios were calculated with the goal of being accounting expense-neutral under SFAS 123R. While we would normally expect the exchange ratios to increase as the exercise prices increase, the ratios in Tier 2 (eligible options with exercise prices between \$15.00 and \$19.99) and Tier 3 (eligible options with exercise prices between \$20.00 and \$24.99) are equal due to the weighted average remaining contractual term of the options within each Tier. Since the remaining contractual term of the options in Tier 3 is greater than that of Tier 2, the cost-neutral exchange ratio for Tier 3 was naturally lowered, and vice versa for Tier 2. The identical exchange ratios for Tier 2 and Tier 3 in this illustrative example are purely coincidental.

The foregoing exchange ratios are provided merely as an example of how we would determine the exchange ratios if we were commencing the exchange offer based on a \$5.02 share price. We will apply the same methodology once these factors are decided closer to the time of commencement of the exchange program. The total number of shares of restricted stock an eligible employee holding eligible options will receive with respect to an exchanged eligible option will be determined by converting the number of shares underlying the surrendered eligible option in accordance with the applicable exchange ratio and then rounding down to the nearest whole share. The exchange ratios will be applied on a grant-by-grant basis.

For example, if an eligible employee exchanged an eligible option to purchase 401 shares with an exercise price of \$20.00 per share, and the exchange ratio was one share of restricted stock for every 4.01 surrendered eligible option shares, the eligible employee would receive 100 shares of restricted stock in exchange for the surrendered eligible option (401 divided by 4.01).

Continuing this example, if we assume that all eligible options (as of March 24, 2009) remain outstanding and the eligible employees remain eligible to participate in the exchange program, the following table summarizes information regarding the eligible options and the shares of restricted stock that could be granted in the exchange program:

<u>Exercise Price Range</u>	<u>Total Shares Underlying Options</u>	<u>Weighted Average Remaining Term of Eligible Options (Years)</u>	<u>Exchange Ratio: Option Shares per Share of Restricted Stock</u>	<u>Maximum Number of Shares of Restricted Stock to be Granted</u>
\$10.13 – \$14.99	102,400	8.0	1.79-to-1	57,069
\$15.00 – \$19.99	167,030	3.9	4.01-to-1	41,662
\$20.00 – \$24.99	143,675	4.7	4.01-to-1	35,791
\$25.00 and above	55,500	3.7	6.46-to-1	8,567
Total	468,605	5.0		143,089

Must eligible employees participate in the exchange program?

No. Participation in the exchange program will be voluntary.

How long will eligible employees have to decide whether to participate in the exchange program?

Eligible employees will have an election period of at least 20 business days from the commencement of the offer to exchange in which to determine whether they wish to participate. If an eligible employee does not elect to participate in the exchange program, then his or her eligible options will remain outstanding in accordance with their current terms.

How will the shares of restricted stock granted in connection with the exchange program vest?

Restricted stock awards granted in the exchange program will be subject to a risk of forfeiture at the time they are granted, and the risk of forfeiture will lapse in three equal annual installments commencing on the first anniversary of the date of grant, provided that the grantee remains employed by us or one of our subsidiaries as of each such date. A participant in the exchange program will forfeit any portion of a restricted stock award that

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remains subject to a risk of forfeiture at the time his or her employment with us or one of our subsidiaries terminates for any reason. The 2005 Plan currently provides that upon the completion of a change in control (as defined in the 2005 Plan), 50% of the unvested awards of each grantee with a minimum of six months of service will automatically be fully vested. If such change in control is not approved by our Board of Directors, all of the outstanding awards will automatically become fully vested. In addition, certain key employees have change in control severance agreements with Mercury. Under these agreements, if the key employee is employed by Mercury upon the occurrence of a change in control (as defined in the agreements), then vesting of all of such employee's then outstanding stock options and other stock-based awards immediately accelerates and all such awards become exercisable and non-forfeitable.

What terms and conditions will apply to the restricted stock awards?

The shares of restricted stock issued in the exchange program will be granted pursuant to the 2005 Plan and will be subject to the terms and conditions of the 2005 Plan and a restricted stock award agreement to be entered into between Mercury and each participating employee. The holder of the restricted stock will have the rights of a shareholder of our company upon issuance of the shares, including the right to vote the shares and the right to receive dividends, if any.

What will be the effect of the exchange program on the 2005 Plan?

As of March 24, 2009, there were 1,341,289 shares of common stock available for future grants under the 2005 Plan. Under the terms of the 2005 Plan, the grant of a restricted stock award reduces the number of shares of common stock available for issuance under the 2005 Plan by one and thirty-six hundredths (1.36) shares of common stock for each such share actually subject to a restricted stock award. Also under the terms of the 2005 Plan, any shares subject to outstanding awards granted under the 2005 Plan or the 1997 Plan that are forfeited, are cancelled, expire, or are terminated (other than by exercise) are added back to the number of shares available for issuance under the 2005 Plan. Assuming all of the eligible options described above are surrendered and cancelled in the exchange program, and restricted stock awards are granted in accordance with the illustrative exchange ratios describe above, a net of approximately 274,004 shares would be added back to the number of shares available for issuance under the 2005 Plan.

Moreover, in order to address potential shareholder concerns regarding the number of options or stock awards we intend to grant in a given year, the Board previously committed to our shareholders that for fiscal years 2009 through 2011, we would not grant during such three fiscal years a number of shares subject to options or stock awards to employees or non-employee directors, such that the average number of shares granted in each of such fiscal years over such three-year period is greater than 4.8% of the average number of shares of our common stock that were outstanding at the end of each of such three fiscal years. For purposes of calculating the number of shares granted in a fiscal year with respect to this commitment, stock awards will count as equivalent to 1.5 option shares. Any restricted stock awards granted in the exchange program will count toward this calculation.

Will the terms of the exchange program be exactly as described in this proposal?

While the terms of the exchange program are expected to be materially similar to the terms described in this proposal, we may find it necessary or appropriate to change the terms of the exchange program to take into account our administrative needs, requirements of applicable law, accounting rules, and company policy decisions that make it appropriate to change the exchange program. We also may alter the method of determining the exchange ratios if we decide that there is a more efficient and appropriate way to set the ratios while still continuing to avoid any incremental accounting charge to Mercury to the extent practicable. However, we will not in any circumstances permit the members of our Board of Directors or our executive officers to participate, allow options priced below the applicable 52-week high price of our common stock as of the start of the exchange program to be eligible options, or establish exchange ratios that, as of the date of determination of the exchange ratios and based on the valuation assumptions then made, would result in a fair value, for accounting purposes, of the replacement awards that is not approximately equal to the fair value of the eligible options to be surrendered in the exchange as described above.

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Additionally, we may decide not to implement the exchange program even if shareholder approval of the exchange program is obtained, or may amend or terminate the exchange program once it is in progress. The final terms of the exchange program will be described in an offer to exchange that will be filed with the SEC. Although we do not anticipate that the staff of the SEC will require us to materially modify the terms of the exchange program, it is possible that we may need to alter the terms of the exchange program to comply with comments from the staff.

What are the tax consequences to employees if they participate in the exchange program?

The following is a summary of the anticipated material U.S. federal income tax consequences of participating in the exchange program. A more detailed summary of the applicable tax considerations to participants will be provided in the exchange program documents. The law and regulations themselves are subject to change, and the Internal Revenue Service is not precluded from adopting a contrary position. The exchange of eligible options for shares of restricted stock pursuant to the exchange program should be treated as a non-taxable exchange and Mercury, our shareholders, and our employees generally should recognize no income for U.S. federal income tax purposes upon the surrender of eligible options and the grant of restricted stock awards. Employees would recognize compensation income at the time the risk of forfeiture lapses under the restricted stock awards, based on the then fair market value of our shares of common stock.

How will the restricted stock awards be treated from an accounting perspective?

On July 1, 2005, we adopted the provisions of Financial Accounting Standards Board Statement of Financial Accounting Standards No. 123R, or SFAS 123R, on accounting for share-based payments. Under SFAS 123R, we expect to recognize the unamortized compensation cost of the surrendered options as well as any incremental compensation cost of the restricted stock awards granted in the exchange program. The incremental compensation cost will be measured as the excess, if any, of the fair value of each restricted stock award granted to employees in exchange for surrendered stock options, measured as of the date such awards are granted, over the fair value of the original stock option grant surrendered in exchange for such awards, measured immediately before the exchange. The incremental and remaining compensation expense associated with the exchange program will be recognized over the three-year service period of such awards. If any portion of the restricted stock awards is forfeited prior to the completion of the service condition due to termination of employment, the compensation cost for the forfeited portion of the restricted stock award will be reversed and will not be recognized; however, we would recognize any unamortized compensation expense from the surrendered options which would have been recognized under the original vesting schedules.

What is the impact of the exchange program on our shareholders?

We are unable to predict the impact of the exchange program on our shareholders because we are unable to predict how many or which employees will exchange their eligible options. The exchange program was designed to be value-neutral to our shareholders to the extent practicable and to reduce the dilution in ownership from outstanding equity awards. Based on the assumptions described above, if all of the eligible options are exchanged for shares of restricted stock, eligible options for approximately 468,605 shares would be surrendered and cancelled, while approximately 143,089 shares of restricted stock would be issued, resulting in a net reduction in the equity award overhang of approximately 325,516 shares, or approximately 1.4% of the number of shares of our common stock outstanding as of March 24, 2009.

What vote is required to approve this proposal?

The approval of the exchange program requires the favorable vote of a majority of the votes cast on the matter.

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New Plan Benefits

Because the decision whether to participate in the exchange program is completely voluntary, we are not able to predict who or how many employees will elect to participate, how many options will be surrendered for exchange, or the number of shares of restricted stock that may be issued. As noted above, members of our Board of Directors and our executive officers are not eligible to participate in the exchange program.

The information in the following table assumes that all eligible options are exchanged and restricted stock awards are granted in accordance with the illustrative exchange ratios described above.

Name and Position	Eligible Options			Restricted Stock Awards	
	Dollar Value(1)	Number	Exercise Prices	Dollar Value(2)	Number
All executive officers as a group(3)	—	—	—	—	—
All non-executive officer directors(4)	—	—	—	—	—
Employees as a group (excluding executive officers)	\$ 718,755	468,605	\$ 12.80-\$42.00	\$ 718,307	143,089

- (1) The estimated dollar value of the eligible options was calculated using the Black-Scholes option-valuation model, using the assumptions described under the heading “Description of the Exchange Program—How many shares of restricted stock will an employee receive if he or she participates in the exchange program?”
- (2) The estimated dollar value of the restricted stock awards represents the closing price of our common stock on the NASDAQ Global Select Market on March 24, 2009 (\$5.02), multiplied by the number of shares of restricted stock covered by the award.
- (3) Our executive officers will not be eligible to participate in the exchange program.
- (4) Members of our Board of Directors will not be eligible to participate in the exchange program.

Equity Compensation Plans

Based on information existing as of June 30, 2008, the following table sets forth the total number of securities outstanding under our stock option plans, the weighted average exercise price of such options, and the number of options available for grant under such plans. Subsequent to June 30, 2008, the Board adopted, and our shareholders approved, an amendment and restatement of our 2005 Plan. The amendment and restatement, among other things, increased the aggregate number of shares authorized for issuance under the 2005 Plan by 650,000 shares.

Plan Category	(a)	(b)	(c)
	Number of Securities to be Issued upon Exercise of Outstanding Options, Warrants and Rights(1)	Weighted-Average Exercise Price of Outstanding Options, Warrants and Rights	Number of Securities Remaining Available for Future Issuance under Equity Compensation Plans (excluding securities reflected in column (a))
Equity compensation plans approved by shareholders(2)	3,732,671(3)	\$ 16.88	337,849(4)
Equity compensation plans not approved by shareholders	—	—	—
TOTAL	3,732,671	\$ 16.88	337,849

- (1) Does not include outstanding unvested restricted stock or deferred stock awards.
- (2) Consists of our 1997 and 1998 Stock Option Plans, the 2005 Plan, and our 1997 Employee Stock Purchase Plan (“ESPP”).
- (3) Does not include purchase rights under the ESPP.
- (4) Includes 144,324 shares available for future issuance under the ESPP and 193,525 shares available for future issuance under the 2005 Plan. We are no longer permitted to grant options or other awards under our 1997 and 1998 Stock Option Plans. Does not include the additional 650,000 shares authorized for issuance under the 2005 Plan in November 2008.

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The only stock option plan under which we are currently permitted to make awards is the 2005 Plan. As of March 24, 2009, there were 1,341,289 shares available for future grants under the 2005 Plan. Also as of that date, there were options to purchase a total of 3,479,074 shares outstanding under all of our equity compensation plans, with a weighted-average exercise price of \$19.33 and a weighted remaining contractual term of 5.6 years. In addition, as of March 24, 2009, 456,872 restricted stock awards were outstanding.

VOTING SECURITIES

Who owns more than 5% of our stock?

On March 24, 2009, there were 22,656,660 shares of our common stock outstanding. On that date, to our knowledge, there were six shareholders who owned beneficially more than 5% of our common stock. The table below contains information, as of the dates noted below, regarding the beneficial ownership of these persons or entities. The “Percent of Class” was calculated using the number of shares of our common stock outstanding as of March 24, 2009. Unless otherwise indicated, we believe that each of the persons or entities listed below has sole voting and investment power with respect to all of the shares of common stock indicated.

<u>Name and Address of Beneficial Owner</u>	<u>Number of Shares Beneficially Owned</u>	<u>Percent of Class</u>
Royce & Associates, LLC(1)	3,080,160	13.6%
Barclays Global Investors, N.A. Barclays Global Fund Advisors Barclays Global Investors, Ltd(2)	1,865,172	8.2
Barrow, Hanley, Mewhinney & Strauss, Inc.(3)	1,778,653	7.9
Renaissance Technologies LLC James H. Simons(4)	1,691,535	7.5
Dimensional Fund Advisors LP(5)	1,556,285	6.9
Neuberger Berman Inc. Neuberger Berman, LLC(6)	1,154,952	5.1

- (1) Based on a Schedule 13G/A filed with the SEC on January 27, 2009, reporting beneficial ownership as of December 31, 2008. The reporting entity’s address is 1414 Avenue of the Americas, New York, New York 10019.
- (2) Based on a Schedule 13G filed by Barclays Global Investors, N.A., Barclays Global Fund Advisors, and Barclays Global Investors, Ltd, together with Barclays Global Investors Japan Limited, Barclays Global Investors Canada Limited, Barclays Global Investors Australia Limited, and Barclays Global Investors (Deutschland) AG, with the SEC on February 5, 2009, reporting beneficial ownership as of December 31, 2008. The filing reported sole voting power with respect to an aggregate of 1,447,943 shares and sole investment power with respect to an aggregate of 1,865,172 shares for the reporting entities. The reporting entities’ addresses are 400 Howard Street, San Francisco, California 94105; Murray House, 1 Royal Mint Court, London, EC3N 4HH England; Ebisu Prime Square Tower 8th Floor, 1-1-39 Hiroo Shibuya-Ku, Tokyo 150-0012 Japan; Brookfield Place 161 Bay Street, Suite 2500, P.O. Box 614, Toronto, Canada, Ontario M5J 2S1; Level 43, Grosvenor Place, 225 George Street, P.O. Box N43, Sydney, Australia NSW 1220; and Apianstrasse 6, D-85774, Unterföhring, Germany.
- (3) Based on a Schedule 13G/A filed with the SEC on February 12, 2009, reporting beneficial ownership as of December 31, 2008. The filing reported sole voting power with respect to 813,520 shares, shared voting power with respect to 965,133 shares, and sole investment power with respect to 1,778,653 shares. The reporting entity’s address is 2200 Ross Avenue, 31st Floor, Dallas, Texas 75201.
- (4) Based on a Schedule 13G/A filed by Renaissance Technologies LLC and James H. Simons with the SEC on February 13, 2009, reporting beneficial ownership as of December 31, 2008. For each reporting person, the filing reported sole voting power with respect to 1,674,500 shares, sole investment power with respect to 1,690,335 shares, and shared investment power with respect to 1,200 shares. The address of the reporting persons is 800 Third Avenue, New York, New York 10022.
- (5) Based on a Schedule 13G/A filed with the SEC on February 9, 2009, reporting beneficial ownership as of December 31, 2008. The filing reported sole voting power with respect to an aggregate of 1,521,414 shares

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and sole investment power with respect to an aggregate of 1,556,285 shares. The reporting entity's address is Palisades West, Building One, 6300 Bee Cave Road, Austin, Texas 78746.

- (6) Based on a Schedule 13G/A filed with the SEC on February 11, 2009, reporting beneficial ownership as of December 31, 2008. The filing reported sole voting power with respect to an aggregate of 1,147,352 shares and shared investment power with respect to an aggregate of 1,154,952 shares for the reporting entities. The address of the reporting entities is 605 Third Avenue, New York, New York 10158.

How much stock does each of Mercury's directors and executive officers own?

The following information is furnished with respect to common stock beneficially owned by: (1) our directors (which also includes our chief executive officer); (2) our chief executive officer, our chief financial officer and our other named executive officers for fiscal year 2008 who remain with our company; and (3) all directors and executive officers as a group. Unless otherwise indicated, the individuals named below held sole voting and investment power over the shares listed.

<u>Name and Address of Beneficial Owner*</u>	<u>Number of Shares Beneficially Owned</u>	<u>Percent of Class(1)</u>
Mark Aslett(2)	167,713	**
Dr. Albert P. Belle Isle(3)	88,952	**
George W. Chamillard(4)	77,000	**
Russell K. Johnsen(5)	103,520	**
William K. O'Brien	0	**
Lee C. Steele(6)	88,500	**
Vincent Vitto(7)	54,000	**
Dr. Richard P. Wishner(8)	103,400	**
Robert E. Hult(9)	206,859	**
Didier M.C. Thibaud(10)	243,806	1.1%
All directors and executive officers as a group (13 persons)(11)	1,173,109	5.0

* Unless otherwise indicated, the address is c/o Mercury Computer Systems, Inc., 201 Riverneck Road, Chelmsford, Massachusetts 01824.

** Less than 1.0%.

- (1) The number and percent of the shares of common stock with respect to each beneficial owner are calculated by assuming that all shares which may be acquired by such person within 60 days of April 3, 2009 are outstanding, and are otherwise based upon the ownership and outstanding shares of our common stock as of the date of filing of this proxy statement.
- (2) Includes (a) 32,000 shares owned by Mr. Aslett individually; (b) 50,000 shares which may be acquired by Mr. Aslett within 60 days of April 3, 2009 through the exercise of stock options; and (c) 85,713 restricted shares awarded to Mr. Aslett under our stock-based plans (as to which Mr. Aslett has sole voting power, but which are subject to restrictions on transfer).
- (3) Includes (a) 5,000 shares owned by Dr. Belle Isle individually; and (b) 83,952 shares which may be acquired by Dr. Belle Isle within 60 days of April 3, 2009 through the exercise of stock options.
- (4) Includes (a) 10,000 shares owned by Mr. Chamillard individually; and (b) 67,000 shares which may be acquired by Mr. Chamillard within 60 days of April 3, 2009 through the exercise of stock options.
- (5) Includes (a) 10,000 shares owned by Mr. Johnsen individually; (b) 3,000 shares owned by a family trust (as to which Mr. Johnsen has sole voting and investment power); and (c) 90,520 shares which may be acquired by Mr. Johnsen within 60 days of April 3, 2009 through the exercise of stock options.
- (6) Includes (a) 12,000 shares owned by Mr. Steele individually; and (b) 76,500 shares which may be acquired by Mr. Steele within 60 days of April 3, 2009 through the exercise of stock options.
- (7) Includes 54,000 shares which may be acquired by Mr. Vitto within 60 days of April 3, 2009 through the exercise of stock options.

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- (8) Includes (a) 2,000 shares owned by Dr. Wishner individually; (b) 24,900 shares owned by a family trust (as to which Dr. Wishner has sole voting and investment power); and (c) 76,500 shares which may be acquired by Dr. Wishner within 60 days of April 3, 2009 through the exercise of stock options.
- (9) Includes (a) 16,348 shares owned by Mr. Hult individually; (b) 177,625 shares which may be acquired by Mr. Hult within 60 days of April 3, 2009 through the exercise of stock options; and (c) 12,886 restricted shares awarded to Mr. Hult under our stock-based plans (as to which Mr. Hult has sole voting power, but which are subject to restrictions on transfer).
- (10) Includes (a) 12,914 shares owned by Mr. Thibaud individually; (b) 211,440 shares which may be acquired by Mr. Thibaud within 60 days of April 3, 2009 through the exercise of stock options; and (c) 19,452 restricted shares awarded to Mr. Thibaud under our stock-based plans (as to which Mr. Thibaud has sole voting power, but no investment power).
- (11) Includes (a) 144,991 shares owned by directors and executive officers individually or by family trusts as to which each has sole voting and investment power; (b) 902,537 shares which may be acquired within 60 days of April 3, 2009 through the exercise of stock options; and (c) 125,581 restricted shares awarded to the executive officers under our stock-based plans (as to which each has sole voting power, but which are subject to restrictions on transfer).

SHAREHOLDER PROPOSALS FOR THE 2009 ANNUAL MEETING

Under regulations adopted by the SEC, any shareholder proposal submitted for inclusion in Mercury's proxy statement relating to the 2009 annual meeting of shareholders must be received at our principal executive offices on or before June 19, 2009. In addition to the SEC requirements regarding shareholder proposals, our by-laws contain provisions regarding matters to be brought before shareholder meetings. If shareholder proposals, including proposals relating to the election of directors, are to be considered at the 2009 annual meeting, notice of them, whether or not they are included in Mercury's proxy statement and form of proxy, must be given by personal delivery or by United States mail, postage prepaid, to the Corporation Secretary on or before August 8, 2009. The notice must include the information set forth in our by-laws. Proxies solicited by the Board will confer discretionary voting authority with respect to these proposals, subject to SEC rules governing the exercise of this authority.

It is suggested that any shareholder proposal be submitted by certified mail, return receipt requested.

OTHER MATTERS

We are aware of no other matters that are to be presented at the meeting other than the matters discussed in this proxy statement.

By Order of the Board of Directors

ALEX A. VAN ADZIN, *Secretary*

Chelmsford, Massachusetts
April 1, 2009

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Dear Shareholder:

Please take note of the important information enclosed with this proxy card. There is an important issue related to your company that requires your immediate attention and approval. This issue is discussed in the enclosed proxy materials.

Your vote counts, and you are strongly encouraged to exercise your right to vote your shares.

Please mark the appropriate box on this proxy card to indicate how your shares will be voted. Then sign the card, and return your proxy vote in the enclosed postage paid envelope.

Your vote must be received prior to the Special Meeting of Shareholders on May —, 2009.

Thank you in advance for your prompt consideration of this matter.

Sincerely,

Mercury Computer Systems, Inc.

Important Notice Regarding the Availability of Proxy Materials for the Special Meeting of Shareholders To Be Held on May —, 2009: The Notice of Special Meeting and Proxy Statement are available at —.

Ú PLEASE FOLD ALONG THE PERFORATION, DETACH AND RETURN THE BOTTOM PORTION IN THE ENCLOSED ENVELOPE. Ú



Proxy — Mercury Computer Systems, Inc.

201 RIVERNECK ROAD,
CHELMSFORD, MASSACHUSETTS 01824

THIS PROXY IS SOLICITED ON BEHALF OF THE BOARD OF DIRECTORS

The undersigned hereby appoints Mark Aslett, Robert E. Hult and Alex A. Van Adzin, and each of them singly, with full power of substitution, proxies to represent the undersigned at the Special Meeting of Shareholders of Mercury Computer Systems, Inc. to be held on May —, 2009 at 10:00 a.m., local time, at the company's offices located at 201 Riverneck Road, Chelmsford, Massachusetts 01824, and at any adjournments or postponements thereof, to vote in the name and place of the undersigned, with all powers which the undersigned would possess if personally present, upon the proposals set forth on the reverse side of this proxy card.

The undersigned hereby acknowledge(s) receipt of a copy of the accompanying Notice of Special Meeting and the Proxy Statement with respect thereto and hereby revoke(s) any proxy or proxies heretofore given.

THIS PROXY WHEN PROPERLY EXECUTED WILL BE VOTED AS SPECIFIED. IF NO SPECIFICATION IS MADE, THE SHARES REPRESENTED WILL BE VOTED FOR THE STOCK OPTION EXCHANGE PROGRAM DESCRIBED IN THE PROXY STATEMENT, AND IN ACCORDANCE WITH THE PROXIES' DISCRETION ON SUCH OTHER BUSINESS THAT MAY PROPERLY COME BEFORE THE MEETING.

PLEASE VOTE, DATE AND SIGN THIS PROXY IN THE SPACE PROVIDED AND RETURN IT IN THE ENCLOSED ENVELOPE, WHETHER OR NOT YOU EXPECT TO ATTEND THE MEETING IN PERSON.