

SCHEDULE 13G

(Rule 13d-102)

INFORMATION STATEMENT PURSUANT TO RULES 13d-1 AND 13d-2

Under the Securities Exchange Act of 1934
(Amendment No.)

MERCURY COMPUTER SYSTEMS INC

(Name of Issuer)
Common Stock

(Title of Class of Securities)

589378108

(CUSIP Number)

Check the following box if a fee is being paid with this statement [].

*The remainder of this cover page shall be filled out for a reporting person's initial filing on this form with respect to the subject class of securities, and for any subsequent amendment containing information which would alter the disclosures provided in a prior cover page.

The information required in the remainder of this cover page shall not be deemed to be "filed" for the purpose of Section 18 of the Securities Exchange Act of 1934 ("Act") or otherwise subject to the liabilities of that section of the Act but shall be subject to all other provisions of the Act (however, see the Notes).

CUSIP No. 589378108

13G

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1. NAME OF REPORTING PERSON(S)
S.S. OR I.R.S. IDENTIFICATION NO. OF ABOVE PERSON(S)

Morgan Stanley Dean Witter & Co.
IRS # 39-314-5972

2. CHECK THE APPROPRIATE BOX IF A MEMBER OF A GROUP*

(a) []
(b) []

3. SEC USE ONLY

4. CITIZENSHIP OR PLACE OF ORGANIZATION

The state of organization is Delaware.

NUMBER OF
SHARES
BENEFICIALLY
OWNED BY
EACH
REPORTING
PERSON
WITH

5. SOLE VOTING POWER
0

6. SHARED VOTING POWER
1,143,156

7. SOLE DISPOSITIVE POWER
0

8. SHARED DISPOSITIVE POWER

1,145,759

9. AGGREGATE AMOUNT BENEFICIALLY OWNED BY EACH REPORTING PERSON

1,145,759

10. CHECK BOX IF THE AGGREGATE AMOUNT IN ROW (9) EXCLUDES CERTAIN SHARES*

11. PERCENT OF CLASS REPRESENTED BY AMOUNT IN ROW (9)

5.2157%

12. TYPE OF REPORTING PERSON*

IA, CO

*SEE INSTRUCTIONS BEFORE FILLING OUT!

- Item 1. (a) Name of Issuer:
MERCURY COMPUTER SYSTEMS INC

- (b) Address of Issuer's Principal Executive Offices:
199 RIVERNECK RD
CHELMSFORD, MA 01824

- Item 2. (a) Name of Person Filing:
Morgan Stanley Dean Witter & Co.

- (b) Address of Principal Business Office, or if None, Residence:
1585 Broadway
New York, New York 10036

- (c) Citizenship:

Incorporated by reference to Item 4 of the cover page
pertaining to each reporting person.

- (d) Title of Class of Securities:
Common Stock

- (e) CUSIP Number:
589378108

- Item 3. Morgan Stanley Dean Witter & Co. is a parent holding company.

Item 4. Ownership.

Incorporated by reference to Items (5) - (9) and (11) of the cover page.

(a) Morgan Stanley Dean Witter & Co. is filing solely in its capacity as the parent company of, and indirect beneficial owner of securities held by, one of its business units.

Item 5. Ownership of Five Percent or Less of a Class.

Inapplicable

Item 6. Ownership of More Than Five Percent on Behalf of Another Person.

Accounts managed on a discretionary basis by Morgan Stanley Dean Witter & Co. are known to have the right to receive or the power to direct the receipt of dividends from, or the proceeds from, the sale of such securities. No such account holds more than 5 percent of the class.

See item 4 (a)

Item 7. Identification and Classification of the Subsidiary which Acquired the Security Being Reported on By the Parent Holding Company.

Item 8. Identification and Classification of Members of the Group.

Item 9. Notice of Dissolution of Group.

Item 10. Certification.

By signing below I certify that, to the best of my knowledge and belief, the securities referred to above were acquired in the ordinary course of business and were not acquired for the purpose of and do not have the effect of changing or influencing the control of the issuer of such securities and were not acquired in connection with or as a participant in any transaction having such purpose or effect.

Signature.

After reasonable inquiry and to the best of my knowledge and belief, I certify that the information set forth in this statement is true, complete and correct.

Date: January 31, 2002

Signature: /s/ Dennine Bullard

Name/Title Dennine Bullard /Vice President Morgan Stanley & Co. Incorporated

MORGAN STANLEY DEAN WITTER & CO.

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* Attention. Intentional misstatements or omissions of fact constitute federal criminal violations (see 18 U.S.C. 1001).

(022597DTI)

EX-99.b
SECRETARY'S CERTIFICATE

EXHIBIT 1

MORGAN STANLEY, DEAN WITTER, DISCOVER & CO.

SECRETARY'S CERTIFICATE

I, Charlene R. Herzer, a duly elected and Assistant Secretary of Morgan Stanley Dean Witter & Co., a corporation organized and existing under the laws of the State of Delaware (the "Corporation"), certify that Stuart J.M. Breslow, Robert G. Koppenol and Dennine Bullard are authorized to sign reports to be filed under Sections 13 and 16 of the Securities Exchange Act of 1934 (the "Act") pursuant to the following:

- (1) On May 31, 1997, the Board of Directors of the Corporation granted authority to Stuart J.M. Breslow and Robert G. Koppenol to sign reports to be filed under Sections 13 and 16 of the Act on behalf of the Corporation.
- (2) On February 23, 2000, Donald G. Kempf, Jr., the Executive Vice President, Chief Legal Officer and Secretary of the Corporation, delegated authority to Dennine Bullard to sign reports to be filed under Sections 13 and 16 of the Act on behalf of the Corporation. Pursuant to Section 7.01 of the Bylaws of the Corporation and resolutions approved by the Board of Directors of the Corporation on September 25, 1998, the Chief Legal Officer is authorized to enter into agreements and other instruments on behalf of the Corporation and may delegate such powers to others under his jurisdiction.

IN WITNESS WHEREOF, I have hereunto set my name and affixed the seal of the Corporation as of the 1st day of March, 2000.

Charlene R. Herzer
Assistant Secretary