

STATEMENT OF CHANGES IN BENEFICIAL OWNERSHIP

Check this box if no longer subject to Section 16. Form 4 or Form 5 obligations may continue. See Instruction 1(b).

Filed pursuant to Section 16(a) of the Securities Exchange Act of 1934 or Section 30(h) of the Investment Company Act of 1940

| OMB APPROVAL | |
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|---|---|--|
| 1. Name and Address of Reporting Person * BREWER KEVIN J (Last) (First) (Middle) C/O AXCELIS TECHNOLOGIES, INC. 108 CHERRY HILL DRIVE (Street) BEVERLY MA 01915 (City) (State) (Zip) | 2. Issuer Name and Ticker or Trading Symbol AXCELIS TECHNOLOGIES INC [ACLS] | 5. Relationship of Reporting Person(s) to Issuer (Check all applicable) Director 10% Owner <input checked="" type="checkbox"/> Officer (give title below) Other (specify below) EVP & Chief Financial Officer |
| | 3. Date of Earliest Transaction (Month/Day/Year) 02/06/2017 | |
| | | 6. Individual or Joint/Group Filing (Check Applicable Line) <input checked="" type="checkbox"/> Form filed by One Reporting Person <input type="checkbox"/> Form filed by More than One Reporting Person |

Table I - Non-Derivative Securities Acquired, Disposed of, or Beneficially Owned

| 1. Title of Security (Instr. 3) | 2. Transaction Date (Month/Day/Year) | 2A. Deemed Execution Date, if any (Month/Day/Year) | 3. Transaction Code (Instr. 8) | | 4. Securities Acquired (A) or Disposed Of (D) (Instr. 3, 4 and 5) | | | 5. Amount of Securities Beneficially Owned Following Reported Transaction(s) (Instr. 3 and 4) | 6. Ownership Form: Direct (D) or Indirect (I) (Instr. 4) | 7. Nature of Indirect Beneficial Ownership (Instr. 4) |
|---------------------------------|--------------------------------------|--|--------------------------------|---|---|------------|---------|---|--|---|
| | | | Code | V | Amount | (A) or (D) | Price | | | |
| Common Stock | 02/06/2017 | | M | | 18,478 | A | \$3.72 | 80,114 ⁽¹⁾ | D | |
| Common Stock | 02/06/2017 | | M | | 31,250 | A | \$4.64 | 111,364 | D | |
| Common Stock | 02/06/2017 | | S | | 4,500 | D | \$16.8 | 106,864 | D | |
| Common Stock | 02/06/2017 | | S | | 300 | D | \$16.75 | 106,564 | D | |
| Common Stock | 02/06/2017 | | S | | 300 | D | \$16.7 | 106,264 | D | |
| Common Stock | 02/06/2017 | | S | | 600 | D | \$16.65 | 105,664 | D | |
| Common Stock | 02/06/2017 | | S | | 500 | D | \$16.6 | 105,164 | D | |
| Common Stock | 02/06/2017 | | S | | 1,750 | D | \$16.55 | 103,414 | D | |
| Common Stock | 02/06/2017 | | S | | 18,066 | D | \$16.5 | 85,348 | D | |
| Common Stock | 02/06/2017 | | S | | 1,600 | D | \$16.53 | 83,748 | D | |
| Common Stock | 02/06/2017 | | S | | 100 | D | \$16.43 | 83,648 | D | |
| Common Stock | 02/06/2017 | | S | | 19,812 | D | \$16.4 | 63,836 | D | |
| Common Stock | 02/06/2017 | | S | | 2,200 | D | \$16.45 | 61,636 ⁽¹⁾ | D | |
| Common Stock | 02/07/2017 | | M | | 146 | A | \$3.72 | 61,782 | D | |
| Common Stock | 02/07/2017 | | S | | 146 | D | \$16.5 | 61,636 ⁽¹⁾ | D | |

Table II - Derivative Securities Acquired, Disposed of, or Beneficially Owned (e.g., puts, calls, warrants, options, convertible securities)

| 1. Title of Derivative Security (Instr. 3) | 2. Conversion or Exercise Price of Derivative Security | 3. Transaction Date (Month/Day/Year) | 3A. Deemed Execution Date, if any (Month/Day/Year) | 4. Transaction Code (Instr. 8) | | 5. Number of Derivative Securities Acquired (A) or Disposed of (D) (Instr. 3, 4 and 5) | | 6. Date Exercisable and Expiration Date (Month/Day/Year) | | 7. Title and Amount of Securities Underlying Derivative Security (Instr. 3 and 4) | 8. Price of Derivative Security (Instr. 5) | 9. Number of derivative Securities Beneficially Owned Following Reported Transaction(s) (Instr. 4) | 10. Ownership Form: Direct (D) or Indirect (I) (Instr. 4) | 11. Nature of Indirect Beneficial Ownership (Instr. 4) | |
|--|--|--------------------------------------|--|--------------------------------|---|--|-----|--|-----------------|---|--|--|---|--|-------|
| | | | | Code | V | (A) | (D) | Date Exercisable | Expiration Date | | | | | | Title |
| Stock Option (right to buy) | \$3.72 | 02/06/2017 | | M | | 18,478 | | 07/16/2016 | 07/16/2019 | Common Stock | 18,478 | \$0.00 | 19,022 | D | |
| Stock option (right to buy) | \$4.64 | 02/06/2017 | | M | | 31,250 | | 11/16/2013 | 11/16/2019 | Common Stock | 31,250 | \$0.00 | 0 | D | |
| Stock option (right to buy) | \$3.72 | 02/06/2017 | | M | | 146 | | 07/16/2016 | 07/16/2019 | Common Stock | 146 | \$0.00 | 18,876 | D | |

Explanation of Responses:

1. Of the shares held as of February 6, 2017 and February 7, 2017, 40,000 were issuable on vesting of restricted stock units granted under the 2012 Equity Incentive Plan and are subject to forfeiture.

Remarks:

Lynette C. Fallon, as attorney.
in fact for Kevin J. Brewer

02/07/2017

** Signature of Reporting Person

Date

Reminder: Report on a separate line for each class of securities beneficially owned directly or indirectly.

* If the form is filed by more than one reporting person, see Instruction 4 (b)(v).

** Intentional misstatements or omissions of facts constitute Federal Criminal Violations See 18 U.S.C. 1001 and 15 U.S.C. 78ff(a).

Note: File three copies of this Form, one of which must be manually signed. If space is insufficient, see Instruction 6 for procedure.

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