



DIVISION OF
CORPORATION FINANCE

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

Mail Stop 3030

April 6, 2009

VIA U.S. MAIL

Mr. Stephen G. Bassett
Axcelis Technologies, Inc.
Executive Vice President and Chief Financial Officer
108 Cherry Hill Drive
Beverly, MA 01915

RE: Axcelis Technologies, Inc.
Form 10-K for the fiscal year ended December 31, 2007
Filed March 17, 2008
File No. 000-30941

Dear Mr. Bassett:

We have completed our review of your Form 10-K and related filings and do not, at this time, have any further comments.

Sincerely,

Brian Cascio
Accounting Branch Chief