



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

August 31, 2010

Mr. Martin S. Headley
Executive Vice President Finance and Chief Financial Officer
Brooks Automation, Inc.
15 Elizabeth Drive
Chelmsford, MA

**Re: Brooks Automation, Inc.
Form 10-K for the fiscal year ended September 30, 2009
Filed November 18, 2009
File No. 000-25434**

Dear Mr. Headley:

We have reviewed your filing and have the following comments. In some of our comments, we may ask you to provide us with information so we may better understand your disclosure.

Please respond to this letter within ten business days by providing the requested information or by advising us when you will provide the requested response. If you do not believe our comments apply to your facts and circumstances, please tell us why in your response.

After reviewing the information you provide in response to these comments, we may have additional comments.

Mr. Martin S. Headley
Brooks Automation, Inc.
August 31, 2010
Page 2

Form 10-K for the fiscal year ended September 30, 2009

Notes to Consolidated Financial Statements, page 40

Note 2. Summary of Significant Accounting Policies, page 40

Concentration of Credit Risk, page 41

1. We see disclosure that your investments may include repurchase agreements with major banks. Please address the following with regard to repurchase agreements:
 - Describe to us in detail repurchase and reverse repurchase agreement transactions, including the business purpose of the transactions and your accounting for those transactions under GAAP.
 - Tell us the impact of repurchase and reverse repurchase transactions on your financial statements as of the end of and during the years presented in your Form 10-K.
 - Tell us whether you account for any repurchase arrangements as sales for accounting purposes and, if so, cite GAAP accounting guidance that supports that treatment.
 - Tell us how you assessed whether the disclosures required by Rule 4-08(m) of Regulation S-X were required in your filings.

We urge all persons who are responsible for the accuracy and adequacy of the disclosure in the filing to be certain that the filing includes the information the Securities Exchange Act of 1934 and all applicable Exchange Act rules require. Since the company and its management are in possession of all facts relating to a company's disclosure, they are responsible for the accuracy and adequacy of the disclosures they have made.

In responding to our comments, please provide a written statement from the company acknowledging that:

- the company is responsible for the adequacy and accuracy of the disclosure in the filing;
- staff comments or changes to disclosure in response to staff comments do not foreclose the Commission from taking any action with respect to the filing; and

Mr. Martin S. Headley
Brooks Automation, Inc.
August 31, 2010
Page 3

- the company may not assert staff comments as a defense in any proceeding initiated by the Commission or any person under the federal securities laws of the United States.

You may contact Leigh Ann Schultz at 202-551-3628 or Gary Todd, Accounting Reviewer, at 202-551-3605 if you have questions regarding comments on the financial statements and related matters. You may also contact me at (202) 551-3676.

Sincerely,

for

Brian Cascio
Accounting Branch Chief