



DIVISION OF
CORPORATION FINANCE

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549-4628

April 19, 2010

Richard A. Degner
Chairman and Chief Executive Officer
Global Geophysical Services, Inc.
13927 South Gessner Road
Missouri City, TX 77489

**Re: Global Geophysical Services, Inc.
Amendment No. 4 to Form S-1
Filed April 6, 2010
Amendment No. 5 to Form S-1
Filed April 16, 2010
File No. 333-162540**

Dear Mr. Degner:

We have reviewed your amended filings and have the following comments. Where indicated, we think you should revise your registration statement in response to these comments. If you disagree, we will consider your explanation as to why our comments are inapplicable or a revision is unnecessary. Please be as detailed as necessary in your explanation. After reviewing this information, we may raise additional comments.

Please understand that the purpose of our review process is to assist you in your compliance with the applicable disclosure requirements and to enhance the overall disclosure in your filing. We look forward to working with you in these respects. We welcome any questions you might have about our comments or any other aspect of our review. Feel free to call us at the telephone numbers listed at the end of this letter.

Use of Proceeds, page 29

1. We note that you have allocated a substantial majority of the proceeds to be raised in this offering for "Capital Expenditures and General Working Capital Purposes." Please break out the capital expenditures portion from this amount and provide a reasonably detailed explanation of how you intend to use these funds both with and without a concurrent notes offering closing. In this regard, we note your disclosure at pages 52 and 53. Please refer to comment twelve from our letter dated November 13, 2009.

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2. Please also provide additional detailed disclosure regarding how you intend to use any proceeds that result from the exercise of the over-allotment option by the underwriters.

Closing Comments

As appropriate, please amend your registration statement in response to these comments. You may wish to provide us with marked copies of the amendment to expedite our review. With your amendment, please furnish a cover letter that keys your responses to our comments and provides any requested information. Detailed cover letters greatly facilitate our review. Please understand that we may have additional comments after reviewing your amendment and responses to our comments.

Please contact John P. Lucas at (202) 551-5798 or, in his absence, Timothy S. Levenberg, Special Counsel, at (202) 551-3707 with any questions.

Sincerely,

H. Roger Schwall
Assistant Director

cc: Via Facsimile

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