



DIVISION OF  
CORPORATION FINANCE

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

February 4, 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. 2 to Form S-1  
Filed January 19, 2010  
File No. 333-162540**

Dear Mr. Degner:

We have reviewed your filing 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.

General

1. File all remaining exhibits as soon as possible and allow time for staff review and comment. We will issue under separate cover comments relating to your recent confidential treatment request. All outstanding items including the request must be resolved prior to your requesting accelerated effectiveness for the registration statement.

Inside Front Cover Page – Photographs / Artwork

2. We note that you have added a photograph to the version of the prospectus that you filed with the most recent amendment. If you intend to include artwork or a photograph on the inside front cover page or elsewhere in the document, it should be clear to the reader by the

concise textual explanation that accompanies the material what it is that is being depicted. Moreover, such materials typically are limited to a company's products or services and should not include another company's products or services. We may have additional comments once you provide accompanying text.

Use of Proceeds, page 30

3. Provide tabular disclosure which provides necessary detail for all proposed uses, both with and without the newly disclosed "Proposed Refinancing Transactions." We note the disclosure at page 5 that such transactions are not assured and are not a precondition to closing of the offering. Therefore, provide first and with appropriate emphasis separate disclosure which does not assume the consummation of the Proposed Refinancing Transactions.

Principal and Selling Stockholders, page 103

4. Expand the footnote references for the directors and named executive officers to indicate briefly each individual's current position with the company.

Description of our Proposed Refinancing Transactions, page 116

5. We may have additional comments once you provide further updates to this new disclosure.

Exhibits

6. It is unclear why you filed an unexecuted version of the document filed as exhibit 10.32. Please file final versions of all documents you file as exhibits.

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.

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 all information required under the Securities Act of 1933 and that they have provided all information investors require for an informed investment decision. 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.

Notwithstanding our comments, in the event the company requests acceleration of the effective date of the pending registration statement, it should furnish a letter, at the time of such request, acknowledging that:

- should the Commission or the staff, acting pursuant to delegated authority, declare the filing effective, it does not foreclose the Commission from taking any action with respect to the filing;
- the action of the Commission or the staff, acting pursuant to delegated authority, in declaring the filing effective, does not relieve the company from its full responsibility for the adequacy and accuracy of the disclosure in the filing; and
- the company may not assert staff comments and the declaration of effectiveness as a defense in any proceeding initiated by the Commission or any person under the federal securities laws of the United States.

In addition, please be advised that the Division of Enforcement has access to all information you provide to the staff of the Division of Corporation Finance in connection with our review of your filing or in response to our comments on your filing.

We will consider a written request for acceleration of the effective date of the registration statement as confirmation of the fact that those requesting acceleration are aware of their respective responsibilities under the Securities Act of 1933 and the Securities Exchange Act of 1934 as they relate to the proposed public offering of the securities specified in the above registration statement. We will act on the request and, pursuant to delegated authority, grant acceleration of the effective date.

We direct your attention to Rules 460 and 461 regarding requesting acceleration of a registration statement. Please allow adequate time after the filing of any amendment for further review before submitting a request for acceleration. Please provide this request at least two business days in advance of the requested effective date.

Richard A. Degner  
Global Geophysical Services, Inc.  
February 4, 2010  
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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

Bryce D. Linsenmayer, Esq.  
John W. Menke, Esq.  
Haynes and Boone, LLP  
(713) 236-5540