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May 31, 2007

VIA EDGAR (as correspondence) and FEDERAL EXPRESS

Securities and Exchange Commission
100 F Street NE
Washington, D.C. 20549-7010

Attention: Gary Newberry, Division of Corporation Finance

Re: Natural Gas Services Group, Inc.
Annual Report on Form 10-K for the fiscal year ended December 31, 2006
Filed March 15, 2007
Quarterly Report on Form 10-Q for the quarterly period ended March 31, 2007
Filed May 10, 2007
File No. 1-31398

Dear Ladies and Gentlemen:

We write this letter on behalf of Natural Gas Services Group, Inc. ("NGS") in response to the comment letter received from the Staff on May 16, 2007, relating to the above-referenced Annual Report on Form 10-K of NGS and Quarterly Report on Form 10-Q.

Under cover of a letter dated May 8, 2007, we responded to the previous comment letter furnished by the Staff on April 24, 2007. We included with our response letter of May 8, 2007, marked, draft pages from NGS's 2006 Annual Report on Form 10-K that set forth certain revisions proposed by NGS in response to the Staff's comment letter of April 24, 2007. The marked pages included herewith reflect the revisions we made to the draft pages we submitted in response to the Staff's comment letter of April 24, 2007. In addition to the revisions proposed under Response No. 1 below, NGS will make the revisions we proposed in our response letter of May 8, 2007, and other conforming changes to its Annual Report on Form 10-K in the nature of general updating.

Subject to any additional comments or questions the Staff may have, the proposed revisions previously submitted to the Staff, the general updates mentioned above and the revisions described in Response No. 1 below will be made in an amendment on Form 10-K/A to be filed by NGS.

We have numbered each of NGS's responses to correspond to the numbering of the comments in the Staff's comment letter. We have repeated each comment immediately preceding NGS's response for the convenience of the Staff.

Form 10-K for the Fiscal Year Ended December 31, 2006

Consolidated Statements of Cash Flows, page F-6

- 1. We have considered your response to our prior comment number 5 in our letter of April 24, 2007. The revised descriptions suggest you are presenting cash flows under the direct method, while the statement appears to be presented under the indirect method. It is unclear why you would need to include an adjustment for the proceeds and gross profit if the sales of your rental equipment are included in revenues and cost of sales. Revise your cash flows as appropriate for presentation under the indirect method.**

Response No. 1.

NGS has revised its cash flows as appropriate for presentation under the indirect method, to properly reflect the transfer of rental equipment to inventory and the subsequent sale of such as recorded in revenues and cost of sales. See the marked revisions set forth on the attached pages 29 and F-6.

Form 10-Q for the Quarter Ended March 31, 2007

Exhibits 31.1 and 31.2

- 2. These certifications omit paragraph 4(b) referring to internal control over financial reporting. Please file an abbreviated amendment that consists of a cover page, explanatory note, signature page, and paragraphs 1, 2, 4 and 5 of the certification.**

Response No. 2.

Contemporaneously herewith, NGS has filed an abbreviated amendment to its Quarterly Report on Form 10Q for the Quarter Ended March 31, 2007 that addresses this comment. The amendment consists of a cover page, explanatory note, signature page, and paragraphs 1, 2, 4, and 5 of the certification.

If any member of the Staff has questions regarding the foregoing or the marked revisions set forth on the attached pages, please contact Joshua P. Ham at (432) 683-3351 or (432) 688-1380.

Very truly yours,

Lynch, Chappell & Alsup

/s/ Joshua P. Ham

Joshua P. Ham

Enclosures (via Federal Express only)

cc: Gary Newberry (SEC)(w/encl.)

Cash flows

At December 31, 2005, we had cash and cash equivalents of approximately \$3.3 million, working capital of \$13.4 million and total debt of \$28.2 million, of which approximately \$6.0 million was classified as current. At that same date, we also had letters of credit outstanding in the aggregate face amount of \$2.0 million which secured payment of our subordinated debt in the amount of \$3.0 million. We had positive net cash flow from operating activities of approximately \$3.8 million during 2005. This was primarily from net income of \$4.4 million, plus depreciation and amortization of \$4.2 million, an increase in deferred taxes of \$2.4 million, an increase in accounts payable and accrued liabilities of \$0.4 million, offset by an increase in trade accounts receivable of \$1.4 million, deferred income of \$0.9 million, and an increase in inventory of \$5.7 million.

At December 31, 2006, we had cash and cash equivalents of approximately \$4.4 million, working capital of \$44.5 million and total debt of \$18.4 million, of which approximately \$4.4 million was classified as current. At that same date, we also had letters of credit outstanding in the aggregate face amount of \$2.0 million. We had positive net cash flow from operating activities of approximately \$16.1 million during 2006. This was primarily from net income of \$7.6 million, plus depreciation and amortization of \$6.0 million, an increase in deferred taxes of \$2.5 million and ~~proceeds from the sales of rental equipment,~~ offset by an increase in trade accounts receivable of \$2.3 million, ~~and an increase in inventory of \$2.2 million.~~

Short term investments increased to \$25.1 million from December 31, 2005 to December 31, 2006. This increase is the remaining proceeds from our March 2006 secondary public offering. The initial net proceeds from the offering was \$47.1 million, from this we paid down of \$5.0 million of debt and the remainder was used for capital expenditures to build additional units for our compressor rental fleet.

Trade accounts receivable increased \$2.3 million to \$8.5 million at December 31, 2006 as compared to \$6.2 million at December 31, 2005, largely reflecting the impact of higher sales.

Inventory increased \$2.2 million to \$16.9 million as of the end of 2006 as compared to \$14.7 million as of the end of 2005. This increase is mainly a reflection of increased sales activity. Inventory turnover was 7.97 at December 31, 2005 and improved to 7.41 at December 31, 2006

Long term debt decreased \$9.8 million to \$18.4 million at December 31, 2006 compared to \$28.2 million at December 31, 2005. The current portion of long term debt decreased \$1.5 million to \$4.4 million at December 31, 2006 compared to \$6.0 million at December 31, 2005, mainly the result of normal amortization of debt and a one time payment of \$5 million from offering proceeds.

Contractual Obligations and Commitments

We have contractual obligations and commitments that affect our consolidated results of operations, financial condition and liquidity. The following table is a summary of our significant cash contractual obligations:

NATURAL GAS SERVICES GROUP, INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CASH FLOWS
(amounts in thousands)

	For the Years Ended December 31,		
	2004	2005	2006
CASH FLOWS FROM OPERATING ACTIVITIES:			
Net income	\$ 3,374	\$ 4,446	\$ 7,588
Adjustments to reconcile net income to net cash provided by operating activities:			
Depreciation and amortization	2,444	4,224	6,020
Deferred taxes	1,120	2,408	2,544
Employee stock option expense	—	135	376
Loss (gain) on disposal of assets	71	(28)	13
Proceeds from sale of rental equipment	—	—	4,232
Gross profit from sale of rental equipment	—	—	(1,263)
Changes in current assets:			
Trade accounts and other receivables	(1,182)	(1,352)	(2,271)
			(2,220)
Inventory	(1,915)	(5,699)	749
Prepaid expenses and other	(34)	(362)	135
Changes in current liabilities:			
Accounts payable and accrued liabilities	1,264	337	(3)
Current income tax liability	20	187	849
Deferred income	(185)	(855)	122
Other assets	(279)	348	(46)
NET CASH PROVIDED BY OPERATING ACTIVITIES	4,698	3,789	16,076
CASH FLOWS FROM INVESTING ACTIVITIES:			
Purchase of property and equipment	(11,596)	(17,708)	(27,684)
Purchase of short-term investments	—	—	(38,252)
Redemption of short-term investments	—	—	13,200
Assets acquired, net of cash	—	(7,584)	—
Proceeds from sale of property and equipment	50	264	73
Changes in restricted cash	(2,000)	2,000	—
NET CASH USED IN INVESTING ACTIVITIES	(13,546)	(23,028)	(52,663)
CASH FLOWS FROM FINANCING ACTIVITIES:			
Net proceeds from line of credit	550	300	1,375
Proceeds from long-term debt	6,592	21,517	68
Repayments of long-term debt	(2,589)	(13,077)	(9,581)
Repayment of line of credit	(300)	—	(1,675)
Dividends paid on preferred stock	(53)	—	—
Proceeds from exercise of stock options and warrants	5,157	13,085	357
Proceeds from sale of stock, net of transaction costs	—	—	47,163
NET CASH PROVIDED BY FINANCING ACTIVITIES	9,357	21,825	37,707
NET CHANGE IN CASH	509	2,586	1,120
CASH AT BEGINNING OF PERIOD	176	685	3,271
CASH AT END OF PERIOD	\$ 685	\$ 3,271	\$ 4,391
SUPPLEMENTAL DISCLOSURES OF CASH FLOW INFORMATION:			
Interest paid	\$ 775	\$ 1,877	\$ 1,692
Income taxes paid	\$ 31	\$ 24	\$ 894
SUPPLEMENTAL DISCLOSURE OF NON-CASH INVESTING AND FINANCING ACTIVITIES:			
Assets acquired for issuance of subordinated debt	—	3,000	—
Assets acquired for issuance of common stock	—	5,120	—

See accompanying notes to these consolidated financial statements.