2017

Annual Report

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Around the globe, ION delivers the power of data-driven decision-making. Decisions today are increasingly complex with huge amounts of data to comprehend. Leveraging innovative technologies, ION translates raw data into actionable insights to enhance companies' critical decision-making abilities and returns. ION is focused on improving E&P decision-making, enhancing reservoir management and optimizing offshore operations.

Learn more at iongeo.com

VISION

Our vision is to be the leading innovator in decision optimization, creating value for our customers, shareholders and employees.

STRATEGY

Our strategy is to develop and leverage innovative technologies, creating value through data capture, analysis and optimization to enhance critical decision-making, enabling superior returns.

VALUES

People

Collaboration

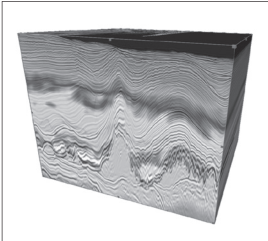
Innovation

QHSE

Results

About ION

Leveraging innovative technologies, ION creates value through data capture, analysis and optimization to enhance companies' critical decision-making abilities and returns. ION offerings are focused on improving E&P decision-making, enhancing reservoir management and optimizing offshore operations. The business is comprised of three reporting segments: E&P Technology & Services, Ocean Bottom Seismic Services and Operations Optimization.



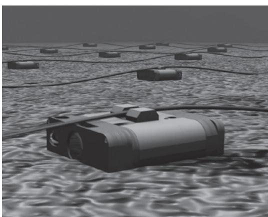
E&P TECHNOLOGY & SERVICES

The E&P Technology & Services segment creates digital data assets and delivers services that improve decision-making, mitigate risk and maximize portfolio value for E&P companies. The segment consists of three synergistic activities that are often integrated to deliver value to clients: Imaging Services, E&P Advisors and Ventures.

ION has one of the most technologically advanced imaging teams in the industry. Imaging Services combines leading technologies and experience to maximize image quality, delivering enhanced subsurface characterization. Raw data is transformed into subsurface images by applying a series of complex proprietary algorithms through ION's highly efficient imaging platform.

E&P Advisors help host governments, E&P companies and private equity firms make optimal decisions throughout the E&P lifecycle. The experienced staff provides technical, commercial and strategic advice to evaluate and market oil and gas opportunities and assets world-wide, sharing in the value we create.

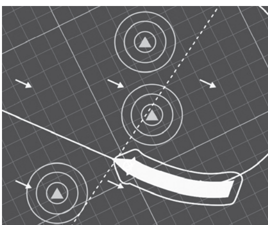
Ventures leverages the world-class geoscience skills of both the Imaging Services and E&P Advisors groups to create global digital data assets that are licensed to multiple E&P companies to optimize their investment decisions. The global data library consists of over 550,000 km of 2D and over 165,000 sq km of 3D multi-client seismic data in virtually all major offshore petroleum provinces.



OCEAN BOTTOM SEISMIC SERVICES

The use of ocean bottom seismic (OBS) continues to expand, driven by the need for higher quality data to make better reservoir development decisions. ION provides a full suite of OBS services, including survey design and planning, data acquisition, data processing, interpretation and reservoir services.

4Sea®, ION's next generation fully integrated ocean bottom nodal system, is designed to deliver a step change in economics, image quality, QHSE and final data delivery time, delivering superior OBS data faster for enhanced reservoir understanding and improved returns.



OPERATIONS OPTIMIZATION

Operations Optimization develops mission-critical subscription offerings and engineering services that enable operational control and optimization offshore. ION provides cutting-edge software, systems and services for both towed streamer and ocean bottom seismic surveys.

ION software offerings leverage a leading data integration platform to control and optimize operations in real time. ION is a leading provider of offshore seismic navigation systems, Orca® and Gator®, as well as survey design software, MESA®.

The newest software offering, Marlin™, supports a step change offshore as companies shift from traditional manual processes to digital solutions that enable better, safer decisions. Similar to air traffic control, Marlin is designed to maximize the safety and efficiency of offshore operations by integrating a variety of data sources (AIS, GIS, GPS, radar, satellite, MetOcean) with operational plans, creating an unparalleled picture of offshore operations to enhance decision-making.

Devices develops intelligent equipment controlled by our software to optimize operations such as our industry-leading positioning solution. Engineering Services experts help plan and optimize offshore projects and provide equipment maintenance and training to maximize value from our offerings.

Letter to Shareholders

R. Brian Hanson
President and Chief Executive Officer

Dear Fellow Shareholders,

We have been on a tough journey over the last three years, coming back strong from one of the worst downturns on record. We were one of the first to make deep, necessary cuts when the downturn hit and we have been leading the recovery, actively positioning our business to be more relevant to where capital was flowing and, as a result, far outperforming our peers.

I am pleased with our performance for every quarter throughout 2017. Although the market recovery has been slow for many, our efforts over the last two years to focus on select segments that attract capital spending, along with our asset light strategy, has paid off. As a niche business in the larger E&P market, we surgically targeted select geographic areas and production optimization opportunities less dependent on cycle recovery and where our differentiated technologies delivered significant value.

In 2017, ION made substantial year-on-year financial improvements, driven by continued strong sales of our 3D multi-client reimaging programs as well as new 2D programs we launched in 2017. 2017 revenues of $198 million were up 14% compared to last year. In 2017, we did not recognize any revenue from Ocean Bottom Seismic Services so a better year-over-year comparison would exclude Ocean Bottom revenues from 2016. Excluded, our revenues of $198 million are up 45% from last year.

Adjusted EBITDA* for the full year was $64 million, a six fold increase in what we generated the prior year. This is the first time since 2013 that we have reported six consecutive quarters of break-even or better Adjusted EBITDA. Net cash flow from operations was $28 million, compared to $2 million in 2016. Our net loss was $30 million, or $(2.55) per share, compared to a net loss of $65 million, or $(5.71) per share in 2016. The business generated break-even cash flows, demonstrating that we have rightsized our business to reflect market conditions. Our cash balance, excluding borrowings under our credit facility, was $42 million as of December 31, 2017.

We achieved the major strategic objectives we set for ourselves in 2017, which enabled our successful financial performance. First, we purposefully shifted our business away from exploration and closer to the reservoir. Our 3D reimaging programs offshore Mexico and Brazil have been extremely successful and we developed cutting-edge full waveform inversion imaging algorithms to produce sharper, more detailed images to identify new reservoirs and bypassed pay. We also launched our next generation ocean bottom nodal system, 4Sea, aimed at the production market. Instead of commercializing 4Sea in a commoditized, asset-heavy way as a crew, we are taking a smarter, asset light approach to offer it more broadly to all OBS service providers, sharing in the value we are enabling.

Our second goal was to broaden and diversify our offerings into adjacent markets. The E&P industry is extremely cyclical and we already have leading market share in the areas where we

*Adjusted EBITDA is a non-GAAP financial measure. See our 2017 Year-end Results press release issued on February 7, 2018 for reconciliation to its comparable GAAP measure.

participate in the seismic market, putting us at risk and limiting our growth potential. Over the last few years, we transformed our core command and control platform to more broadly optimize a wide variety of offshore operations. We have also already solved a lot of tough marine sensing, positioning and communications challenges with our Devices technology and have started exploring relevant adjacent markets for it. For example, we recently evolved our industry-leading compass from our positioning solution to help navigate underwater diver propulsion devices in GPS-deprived environments. There's a lot more potential to diversify as we strategically evaluate where to focus our efforts.

The third key objective was to meet our bond obligations and reduce our debt. The successful public equity offering in February 2018 enables us to begin de-levering our business. ION issued and sold 1,820,000 shares of common stock at a public offering price of $27.50 per share, and warrants to purchase an additional 1,820,000 shares of ION's common stock. The net proceeds from this offering were $47.5 million, excluding transaction expenses. A portion of the proceeds were used to retire ION's third lien indentures of $28.5 million on March 26, 2018, well before their May 15, 2018 maturity date. The warrants have an exercise price of $33.60 per share, are immediately exercisable and expire on March 21, 2019. If the warrants are exercised in full prior to their expiration, ION will receive additional proceeds of $61.2 million.

The successful public equity offering is not only an endorsement of our asset light strategy, but also a recognition of the velocity in our business and our underlying value. While we had sufficient liquidity to retire the third lien bond maturing this May, these additional funds will further strengthen our balance sheet and enable us to be opportunistic and support continued diversification into adjacent markets. I'm really pleased with the transaction. The combination of the capital we raised plus the potential exercise of the warrants in the next 12 months, along with our current liquidity and free cash flow throughout 2018, should position us with excess cash by early 2019 well in advance of the second lien indentures coming due in 2021.

In our E&P Technology and Services group, we continued to benefit from our investment in multi-client data, generating solid growth in new venture revenues throughout the year. We had tremendous success with our 3D reimaging programs, expanding our 3D data library from 8,000 sq km to over 165,000 sq km in just two years. In addition, after two years of very little new venture activity, we launched five new programs in 2017, and already secured underwriting for new programs in 2018. Our data library is exceptionally well positioned for upcoming license round activity and 2018 is looking even better with more diverse interest in programs across the globe.

In our Operations Optimization segment, we maintained our core seismic software and equipment businesses while pursuing additional opportunities for our technology in adjacent markets. For example, we made significant headway in both executing deployments and developing the shrink-wrapped version of Marlin, our operations optimization platform. In 2017, Marlin deployments more than doubled with 39 new deployments across 19 projects, vastly improving the situational awareness, safety and efficiency for a wide array of offshore operational challenges. In addition, we offset some of the decline in seismic equipment revenues by selling existing technology to new customers in scientific, military and academic industries.

In our Ocean Bottom Seismic Services segment, we introduced our new fully integrated nodal system, 4Sea, in 2017. 4Sea is differentiated in its ability to deliver a step change in economics,

QHSE performance and final image delivery time. The OBS market is growing, projected to be at pre-downturn levels of $1 billion in 2018 with significant growth anticipated in the following years, due to improved economics of next generation systems and growing adoption by E&P companies as the technology of choice to manage reservoirs. However, there is increased risk in the conventional supply side model of operating a crew, which is asset heavy with large amounts of capital required.

We evaluated numerous possible commercialization paths for 4Sea and settled on two asset light business models that we believe will deliver a higher, more sustainable return over the long-term for our shareholders. The first is making the individual components of 4Sea available more broadly to all OBS service providers on a value-based pricing model, allowing us to participate in the success we enable. The second approach is to license the right to manufacture and use the fully integrated system to a service provider on a value-based pricing model, such as a royalty stream.

Looking forward to 2018, we are seeing increasingly positive signs of growth and recovery in the oil and gas industry. There is a growing consensus that the E&P market is in balance due to healthy global demand and continued production cuts. Inventory levels are declining and Brent crude oil hit $70 in January for the first time in three years.

As a result, market analysts are projecting E&P spending to increase 8% in 2018, following 4% growth in 2017 and preceded by consecutive years of double-digit declines. This is the first time in three years that international spending is expected to increase, where our offerings are more relevant. However, we expect growth in seismic spending to lag behind some segments of the oil and gas sector, especially in new acquisition, where asset heavy players are still struggling and restructuring.

In my twelve years at ION, I have never been more optimistic about our future. We are confident about our niche, asset light approach and have significant runway to continue growing our business.

Thank you for your continued confidence in ION.

Regards,

Brian Hanson
President & Chief Executive Officer

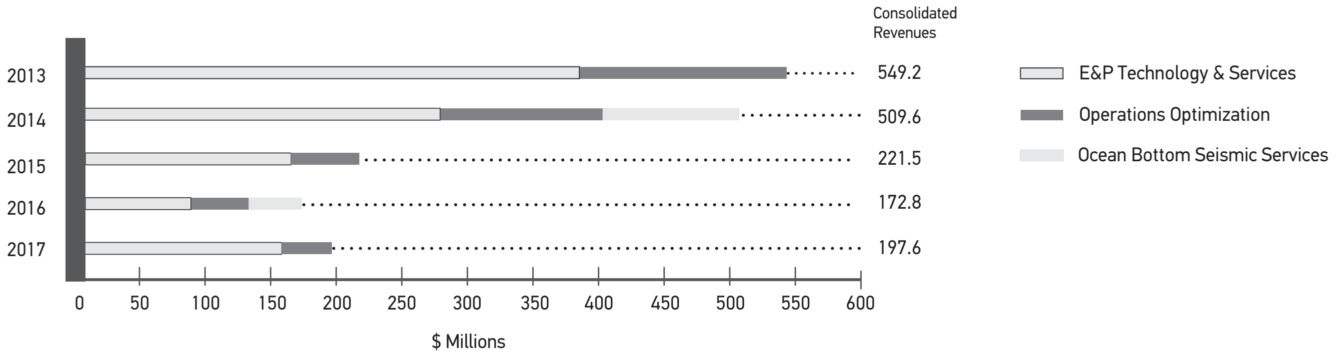
Financial Highlights

	years ended December 31		
	2017	2016	2015
	(in thousands, except per share data)		
STATEMENT OF OPERATIONS DATA			
Net revenues	$ 197,554	$ 172,808	$ 221,513
Gross profit	75,639	36,032	8,003
Loss from operations	(8,699)	(43,171)	(100,632)
Net loss per basic and diluted share	(30,242)	(65,148)	(25,122)
Net loss per diluted share	$ (2.55)	$ (5.71)	$ (2.29)
Weighted average number of common and diluted shares outstanding	11,876	11,400	10,957
Balance Sheet Data (end of year)			
Working capital	$ (8,628) (1)	$ 16,555	$ 93,160
Total assets	301,069	313,216	435,088
Long-term debt	156,744	158,790	182,992
Total equity	30,806	53,398	112,040
Other Data			
Investment in multi-client library	$ 23,710	$ 14,884	$ 45,558
Capital expenditures	1,063	1,488	19,241
Depreciation and amortization (other than multi-client library)	16,592	21,975	26,527
Amortization of multi-client library	47,102	33,335	35,784

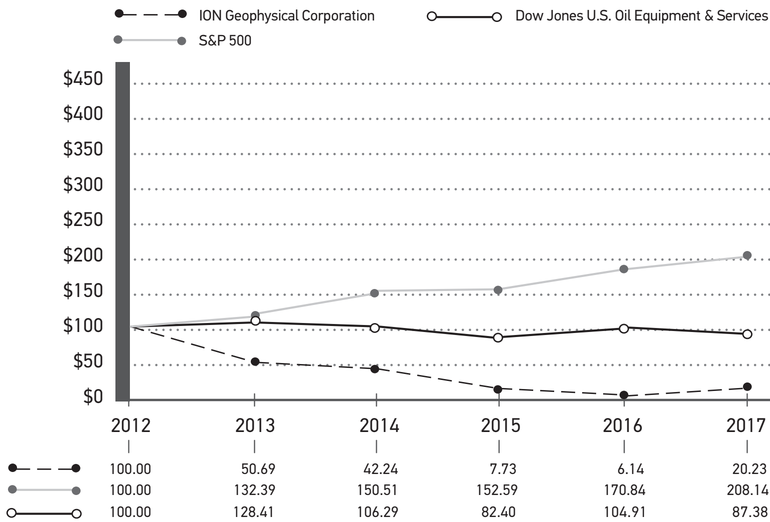
(1) Working Capital at December 31, 2017 is negative due to $28.5 million of Third Lien Notes (maturing May 15, 2018). In the first quarter of 2018, the Company issued and sold 1,820,000 shares of common stock, receiving proceeds of $47.5 million, excluding transaction expenses. A portion of these proceeds were used to retire the Third Lien Notes early in March 2018.

The selected consolidated financial data set forth above with respect to our consolidated statements of operations for 2017, 2016 and 2015 and with respect to our consolidated balance sheets at December 31, 2017, 2016 and 2015 have been derived from our audited consolidated financial statements. Our results of operations and financial condition have been affected by restructuring activities, legal contingencies, debt refinancing, and impairments and write-downs of assets during the periods presented, which affect the comparability of the financial information shown. For a detailed discussion of these items impacting the comparability of the financial information, please see Item 6, “Selected Financial Data,” in our Annual Report on Form 10-K, as amended, for the year ended December 31, 2017. Also, this information should not be considered as being indicative of future operations, and should be read in conjunction with Item 7, “Management’s Discussion and Analysis of Financial Condition and Results of Operations,” and the consolidated financial statements and the notes thereto included elsewhere in our Annual Report on Form 10-K, as amended, for the year ended December 31, 2017.

ANNUAL REVENUES



SHAREHOLDER RETURNS



	2012	2013	2014	2015	2016	2017
ION Geophysical Corporation	100.00	50.69	42.24	7.73	6.14	20.23
S&P 500	100.00	132.39	150.51	152.59	170.84	208.14
Dow Jones U.S. Oil Equipment & Services	100.00	128.41	106.29	82.40	104.91	87.38

This graph compares our cumulative total stockholder return on our common stock for the five years ending December 31, 2017, assuming reinvestment of dividends, with (i) the S&P 500 Index and (ii) the Dow Jones U.S. Oil Equipment and Services Index, an index of companies that we believe are comparable in terms of industry and their lines of business.

The graph assumes that $100 was invested in our common stock and the above indices on January 1, 2012. We have not paid any dividends on our common stock during the applicable period. Historic stock price performance is not necessarily indicative of future stock price performance.

ION GEOPHYSICAL CORPORATION

2105 CityWest Boulevard, Suite 100
Houston, Texas 77042-2855
(281) 933-3339

NOTICE OF ANNUAL MEETING OF SHAREHOLDERS
To Be Held May 16, 2018

To ION's Shareholders:

The 2018 Annual Meeting of Shareholders of ION Geophysical Corporation will be held in the offices of the Company located at 2105 CityWest Boulevard, Houston, Texas, on Wednesday, May 16, 2018, at 10:30 a.m., local time, for the following purposes:

1. Elect the three directors named in the attached Proxy Statement to our Board, each to serve for a three-year term;

2. Advisory (non-binding) vote to approve the compensation of our named executive officers;

3. Ratify the appointment of Grant Thornton LLP as our independent registered public accounting firm (independent auditors) for 2018; and

4. Consider any other business that may properly come before the annual meeting, or any postponement or adjournment of the meeting.

ION's Board of Directors has set March 29, 2018, as the record date for the meeting. This means that owners of ION Common Stock at the close of business on that date are entitled to receive this notice of meeting and vote at the meeting and any adjournments or postponements of the meeting.

Your vote is very important, and your prompt cooperation in voting your proxy is greatly appreciated. Whether or not you plan to attend the meeting, please sign, date and return your enclosed proxy card as soon as possible so that your shares can be voted at the meeting.

By Authorization of the Board of Directors

Matthew Powers
Executive Vice President, General Counsel and Corporate Secretary

April 13, 2018
Houston, Texas

ION GEOPHYSICAL CORPORATION

2105 CityWest Boulevard, Suite 100
Houston, Texas 77042-2855
(281) 933-3339

April 13, 2018

PROXY STATEMENT
FOR ANNUAL MEETING OF SHAREHOLDERS
To Be Held May 16, 2018

Our Board of Directors (the "Board") is furnishing you this proxy statement (this "Proxy Statement") to solicit proxies on its behalf to be voted at the 2018 Annual Meeting of Shareholders ("Annual Meeting") of ION Geophysical Corporation ("ION"). The Annual Meeting will be held at 2105 CityWest Boulevard, Houston, Texas, on May 16, 2018, at 10:30 a.m., local time. Directions to the annual meeting are also provided in this Proxy Statement under "*About the Meeting—Where will the Annual Meeting be held?*"

The matters intended to be acted upon are:

1. Elect the three directors named in the attached Proxy Statement to our Board, each to serve for a three-year term;
2. Advisory (non-binding) vote to approve the compensation of our named executive officers;
3. Ratify the appointment of Grant Thornton LLP as our independent registered public accounting firm (independent auditors) for 2018; and
4. Consider any other business that may properly come before the annual meeting, or any postponement or adjournment of the meeting.

The Board of Directors recommends voting in favor of the nominees listed in the Proxy Statement, the approval of the compensation of our named executive officers and the ratification of the appointment of Grant Thornton LLP.

The mailing address of our principal executive offices is 2105 CityWest Boulevard, Suite 100, Houston, Texas 77042-2855. We are mailing the proxy materials to our shareholders beginning on or about April 13, 2018. All properly completed and returned proxies for the annual meeting will be voted at the Annual Meeting in accordance with the directions given in the proxy, unless the proxy is revoked before the Annual Meeting. The proxies also may be voted at any adjournments or postponements of the Annual Meeting.

Only owners of record of our outstanding shares of our Common Stock, par value $0.01 ("Common Stock") on March 29, 2018 are entitled to vote at the Annual Meeting, or at adjournments or postponements of the Annual Meeting. Each owner of Common Stock on the record date is entitled to one vote for each share of Common Stock held. On March 29, 2018, there were 14,077,730 shares of Common Stock issued and outstanding.

When used in this Proxy Statement, "ION Geophysical," "ION," "Company," "we," "our," "ours" and "us" refer to ION Geophysical Corporation and its consolidated subsidiaries, except where the context otherwise requires or as otherwise indicated.

Important Notice Regarding the Availability of Proxy Materials
For the Annual Shareholders' Meeting to be held on May 16, 2018

The Proxy Statement and our 2017 annual report to shareholders are available at www.iongeo.com under "*Investor Relations—Investor Materials—Annual Report & Proxy Statement*."

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2018 PROXY STATEMENT HIGHLIGHTS

This summary highlights information contained elsewhere in our Proxy Statement. This summary does not contain all of the information that you should consider. You should read the entire Proxy Statement carefully before voting.

Board Nominees

					Committee Memberships			
Name	**Age**	**Director Since**	**Occupation**	**Independent**	**Audit**	**Comp**	**Gov**	**Fin**
R. Brian Hanson	53	2012	President, Chief Executive Officer and Director of ION					
Zheng HuaSheng	51	2018	Executive Vice President of BGP Inc., China National Petroleum Corporation	*				
James M. Lapeyre, Jr.	65	1998	Chairman of the Board of ION and President of Laitram L.L.C.	*	*	*	*	

Executive Compensation Highlights

ION is committed to paying for performance. We provide the majority of compensation to our executives through programs in which the amounts ultimately received vary to reflect our performance. Our executive compensation programs evolve and are adjusted over time to support our business goals and to promote both near-term and long-term profitable company growth.

The majority of cash compensation is paid through base salary and under our annual incentive cash plan. Payment under our annual incentive cash plan is based on company performance relative to financial goals and on individual performance. Under our annual incentive cash plan, cash compensation reflects near-term (annual) business performance of the Company.

Awards of stock appreciation rights ("SARs") and equity awards (consisting of stock options, restricted stock and restricted stock units) are used to align compensation with the long-term interests of our shareholders by focusing our executive officers on total shareholder return. Equity and SARs awards generally become fully vested in either three or four years after the grant date, so that compensation realized under the awards reflects the long-term performance of our Common Stock.

In setting executive officer compensation, the Compensation Committee evaluates individual performance reviews of the executive officers and compensation of a "peer" group consisting of companies participating in various relevant compensation surveys, including the 2017 Mercer Total Compensation Survey for the Energy Sector.

Total compensation for each executive officer varies with ION's performance in achieving strategic and financial objectives and with individual performance. Each executive officer's compensation is designed to reward his or her contribution to ION's results. Our executive officers' 2018 compensation also reflects adjustments arising from our normal annual process of assessing pay competitiveness. Year-over-year changes in salaries and equity award levels also reflect promotions, individual performance and competitive market adjustments. The following table shows the total direct

compensation granted by the Compensation Committee to our named executive officers in 2017, 2016 and 2015 (except for Mr. Powers, who did not become a named executive officer until 2017):

Name and Principal Position	Year	Salary ($)	Bonus ($)	Stock Awards ($)	Option Awards ($)	Non-Equity Incentive Plan Compensation ($)	Total Direct Compensation ($)
R. Brian Hanson	2017	558,689	—	—	—	1,200,000	1,758,689
President, Chief Executive Officer	2016	540,000	—	341,900	203,817	720,000	1,805,717
and Director	2015	560,769	—	294,633	215,164	750,000	1,820,566
Steven A. Bate	2017	350,484	—	—	—	450,000	800,484
Executive Vice President and	2016	337,500	—	170,950	101,909	337,500	947,859
Chief Financial Officer	2015	350,481	—	134,474	98,200	351,562	934,717
Matthew R. Powers	2017	220,664	—	168,600	291,540	165,000	845,804
Executive Vice President, General Counsel and Corporate Secretary							
Christopher T. Usher	2017	353,808	—	—	—	347,000	700,808
Executive Vice President and Chief	2016	340,704	—	59,686	50,954	272,500	723,844
Operating Officer, Operations Optimization	2015	353,808	—	64,501	47,119	227,136	692,564
Kenneth G. Williamson	2017	361,905	—	—	—	508,000	869,905
Executive Vice President and Chief	2016	348,492	—	70,875	71,336	260,000	750,703
Operating Officer, E&P Technology & Services	2015	361,895	—	159,611	116,565	261,368	899,439

ABOUT THE MEETING

What is a proxy, a proxy solicitation and a proxy statement?

A proxy is your legal designation of another person to vote the stock you own on your behalf. That other person is also referred to as a "proxy." A proxy solicitation is a request that a corporate shareholder authorize another person to cast the shareholder's vote at a corporate meeting. Our Board has designated R. Brian Hanson and James M. Lapeyre, Jr. as proxies for the Annual Meeting of Shareholders. By completing and submitting the enclosed proxy card, you are giving Mr. Hanson and Mr. Lapeyre the authority to vote your shares in the manner you indicate on your proxy card. A proxy statement is an informational document that the regulations of the Securities and Exchange Commission ("SEC") require us to give you when we ask you, in a proxy solicitation, to sign a proxy card designating individuals as proxies to vote on your behalf.

Who is soliciting my proxy?

Our Board is soliciting proxies on its behalf to be voted at the Annual Meeting. All costs of soliciting the proxies will be paid by ION. Copies of solicitation materials will be furnished to banks, brokers, nominees and other fiduciaries and custodians to forward to beneficial owners of Common Stock held by such persons. ION will reimburse such persons for their reasonable out-of-pocket expenses in forwarding solicitation materials. In addition to solicitations by mail, some of ION's directors, officers and other employees, without extra compensation, might supplement this solicitation by telephone, personal interview or other communication. ION has also retained Georgeson LLP to assist with the solicitation of proxies from banks, brokers, nominees and other holders, for a fee not to exceed $11,500 plus reimbursement for out-of-pocket expenses.

What are the voting rights of holders of Common Stock?

Each outstanding share of Common Stock is entitled to one vote on each matter considered at the Annual Meeting.

What is the difference between a "shareholder of record" and a shareholder who holds stock in "street name"?

If your shares are registered directly in your name, you are a shareholder of record. If your shares are registered in the name of your broker, bank or similar organization, then you are the beneficial owner of shares held in street name.

Where will the Annual Meeting be held?

ION's 2018 Annual Meeting of Shareholders will be held on the 1st Floor of 2105 CityWest Boulevard in Houston, Texas.

Directions: The site for the Annual Meeting is located on CityWest Boulevard off of West Sam Houston Parkway South ("Beltway 8"), near the intersection of Beltway 8 and Briar Forest Drive. Traveling south on the Beltway 8 feeder road after Briar Forest Drive, turn right on Del Monte Drive. Enter Garage Entrance 3 on your immediate left. Advise the guard that you are attending the ION Annual Meeting. You may be required to show your driver's license or other photo identification. The guard will then direct you where to park in the visitors section of the parking garage. The guard can also direct you to 2105 CityWest Boulevard, which is directly south of the garage. Once in the building, check in at the security desk where you will then be directed to the first floor receptionist.

What is the effect of not voting?

It depends on how ownership of your shares is registered. If you are a shareholder of record, your unvoted shares will not be represented at the Annual Meeting and will not count toward the quorum requirement. Assuming a quorum is obtained, your unvoted shares will not be treated as a vote for or against a proposal. Depending on the circumstances, if you own your shares in street name, your broker or bank may represent your shares at the Annual Meeting for purposes of obtaining a quorum. As described in the answer to the question immediately following, in the absence of your voting instruction, your broker may or may not vote your shares.

If I don't vote, will my broker vote for me?

If you own your shares in street name and you do not vote, your broker may vote your shares in its discretion on proposals determined to be "routine matters" under the rules of the New York Stock Exchange ("NYSE"). With respect to "non-routine matters," however, your broker may not vote your shares for you. Where a broker cannot vote your shares on non-routine matters because he has not received any instructions from you regarding how to vote, the number of unvoted shares on those matters is reported as "broker non-votes." These "broker non-vote" shares are counted toward the quorum requirement, but, generally speaking, they do not affect the determination of whether a matter is approved. See *"—How are abstentions and broker non-votes counted?"* below. The election of directors and the advisory vote on executive compensation are not considered to be routine matters under current NYSE rules, so your broker will not have discretionary authority to vote your shares held in street name on those matters. The proposal to ratify the appointment of Grant Thornton LLP ("Grant Thornton") as our independent registered public accounting firm is considered to be a routine matter on which brokers will be permitted to vote your shares without instructions from you.

What is the record date and what does it mean?

The record date for the Annual Meeting of Shareholders is March 29, 2018. The record date is established by the Board as required by Delaware law (the state in which we are incorporated). Holders of Common Stock at the close of business on the record date are entitled to receive notice of the Annual Meeting and vote at the Annual Meeting and any adjournments or postponements of the Annual Meeting.

How can I revoke a proxy?

A shareholder can revoke a proxy prior to the vote at the Annual Meeting by (a) giving written notice to the Corporate Secretary of ION, (b) delivering a later-dated proxy or (c) voting in person at the Annual Meeting. Written notice to the Corporate Secretary should be sent to Corporate Secretary, ION Geophysical Corporation, 2105 CityWest Boulevard, Suite 100, Houston, Texas 77042-2855. If you hold shares through a bank or broker, you must contact that bank or broker in order to revoke any prior voting instructions.

What constitutes a quorum?

The presence, in person or by proxy, of the holders of a majority of the outstanding shares of Common Stock constitutes a quorum. We need a quorum of shareholders to hold a validly convened Annual Meeting. If you have submitted your proxy, your shares will be counted toward the quorum. If a quorum is not present, the chairman may adjourn the Annual Meeting, without prior notice other than by announcement at the Annual Meeting, until the required quorum is present. As of the record date, 14,077,730 shares of Common Stock were outstanding. Thus, the presence of the holders of Common Stock representing at least 7,038,866 shares will be required to establish a quorum.

What are my voting choices when voting for director nominees, and what vote is needed to elect directors?

In voting on the election of the director nominees to serve until the 2021 Annual Meeting of Shareholders, shareholders may vote in one of the following ways:

(a) in favor of all nominees,

(b) withhold votes as to all nominees or

(c) withhold votes as to a specific nominee.

Directors will be elected by a plurality of the votes of the shares of Common Stock present or represented by proxy at the Annual Meeting. This means that director nominees receiving the highest number of "for" votes will be elected as directors. Votes "for" and "withheld" are counted in determining whether a plurality has been cast in favor of a director. Under ION's Corporate Governance Guidelines, any director nominee who receives a greater number of votes "withheld" from his election than votes "for" such election shall promptly tender to the Board his resignation following certification of the results of the shareholder vote. For a more complete explanation of this requirement and process, please see *"Item 1—Election of Directors—Board of Directors and Corporate Governance—Majority Voting Procedure for Directors"* below.

If you vote, you may not abstain from voting for purposes of the election of directors. Shareholders are not permitted to cumulate their votes in the election of directors.

The Board recommends a vote **"FOR"** all of the nominees.

What are my voting choices when casting an advisory vote to approve the compensation of our named executive officers?

In casting an advisory vote to approve the compensation of our named executive officers, shareholders may vote in one of the following ways:

(a) in favor of the advisory vote to approve our executive compensation,

(b) against the advisory vote to approve our executive compensation or

(c) abstain from voting.

The advisory vote to approve the compensation of our named executive officers will be approved if the number of votes cast in favor of the proposal exceeds the number of votes cast against it.

The Board recommends a vote **"FOR"** this proposal.

What are my voting choices when voting on the ratification of the appointment of Grant Thornton as our independent registered public accounting firm—or independent auditors—and what vote is needed to ratify their appointment?

In voting to ratify the appointment of Grant Thornton as independent auditors for 2018, shareholders may vote in one of the following ways:

(a) in favor of ratification,

(b) against ratification or

(c) abstain from voting on ratification.

The proposal to ratify the appointment of Grant Thornton will require the affirmative vote of a majority of the votes cast on the proposal by holders of Common Stock in person or represented by proxy at the Annual Meeting.

The Board recommends a vote **“FOR”** this proposal.

Will any other business be transacted at the Annual Meeting? If so, how will my proxy be voted?

We do not know of any business to be transacted at the Annual Meeting other than those matters described in this Proxy Statement. We believe that the periods specified in our Amended and Restated Bylaws (our “Bylaws”) for submitting proposals to be considered at the Annual Meeting have passed and no proposals were submitted. However, should any other matters properly come before the Annual Meeting, and should any adjournments or postponements of the Annual Meeting be proposed, shares with respect to which voting authority has been granted to the proxies will be voted by the proxies in accordance with the proxies’ respective judgment.

What if I do not specify a choice for a matter when submitting my proxy?

Shareholders should specify their choice for each matter on their proxy. If no instructions are given, in a proxy that is properly submitted, that proxy will be voted **“FOR”** the election of all director nominees, **“FOR”** the non-binding advisory vote to approve our Company’s executive compensation and **“FOR”** the proposal to ratify the appointment of Grant Thornton as independent auditors for 2018.

How are abstentions and broker non-votes counted?

Abstentions are counted for purposes of determining whether a quorum is present at the Annual Meeting. A properly submitted proxy marked “withhold” with respect to the election of one or more directors will not be voted with respect to the director or directors indicated, although it will be counted for purposes of determining whether there is a quorum.

With respect to (i) the proposal regarding the advisory vote on executive compensation and (ii) the proposal to ratify the appointment of the independent auditors, an abstention from voting on either such proposal will be counted as present in determining whether a quorum is present but will not be counted in determining the total votes cast on such proposal. Thus, abstentions will have no effect on the outcome of the vote on these proposals.

Broker non-votes will have no effect on the outcome of the vote on any of the proposals.

What is the deadline for submitting proposals to be considered for inclusion in the 2019 proxy statement and for submitting a nomination for director of ION for consideration at the Annual Meeting of Shareholders in 2019?

Shareholder proposals requested to be included in our 2019 proxy statement must be received by ION no later than December 14, 2018. A proper director nomination may be considered at ION’s 2019 Annual Meeting of Shareholders only if the proposal for nomination is received by ION not later than December 14, 2018. Proposals and nominations should be directed to Corporate Secretary, ION Geophysical Corporation, 2105 CityWest Boulevard, Suite 100, Houston, Texas 77042-2855.

Will I have electronic access to the proxy materials and Annual Report?

The notice of Annual Meeting, Proxy Statement and 2017 Annual Report to Shareholders are posted on ION’s Internet website at *www.iongeo.com* under “Investor Relations—Investor Materials—Annual Report & Proxy Statement”.

How can I obtain a copy of ION’s Annual Report on Form 10-K?

A copy of our 2017 Annual Report on Form 10-K, as amended (without schedules or exhibits) forms a part of our 2017 Annual Report to Shareholders, which is enclosed with this Proxy Statement. You may obtain an additional copy of our 2017 Form 10-K, as amended, at no charge by sending a

written request to Corporate Secretary, ION Geophysical Corporation, 2105 CityWest Boulevard, Suite 100, Houston, Texas 77042-2855. Our Forms 10-K and 10-K/A are also available (i) through the Investor Relations section of our website at *www.iongeo.com* and (ii) with exhibits on the SEC's website at *http://www.sec.gov*.

Please note that the contents of these and any other websites referenced in this Proxy Statement are not incorporated by reference herein. Further, our references to the URLs for these and other websites listed in this Proxy Statement are intended to be inactive textual references only.

ITEM 1—ELECTION OF DIRECTORS

Our Board consists of eight members. The Board is divided into three classes. Members of each class are elected for three-year terms and until their respective successors are duly elected and qualified, unless the director dies, resigns, retires, is disqualified or is removed. Our shareholders elect the directors in a designated class annually. Directors in Class I, which is the class of directors to be elected at the Annual Meeting, will serve on the Board until our annual meeting in 2021 (except in the case of any earlier death, resignation, retirement, disqualification or removal).

The current Class I directors are R. Brian Hanson, Zheng HuaSheng and James M. Lapeyre, Jr. and their current terms will expire when their successors are elected and qualified at the Annual Meeting. At its meeting on February 6, 2018, the Board approved the recommendation of the Governance Committee that Messrs. Hanson, Hao Huimin and Lapeyre be nominated to stand for reelection at the Annual Meeting to hold office until our 2021 Annual Meeting and until their successors are elected and qualified.

In April 2018, Mr. Hao stepped down from his role as director. BGP, pursuant to their rights under the Investor Rights Agreement (further described under "*—Certain Transactions and Relationships*" below), had nominated Mr. Zheng HuaSheng to replace Mr. Hao. In April 2018, the Board unanimously approved Mr. Zheng's appointment to the Board and resolved that Mr. Zheng be nominated to stand for reelection at the upcoming Annual Meeting, to hold office until our 2021 Annual Meeting and until his successor is elected and qualified.

We have no reason to believe that any of the nominees will be unable or unwilling to serve if elected. However, if any nominee should become unable or unwilling to serve for any reason, proxies may be voted for another person nominated as a substitute by our Board, or our Board may reduce the number of directors.

The Board of Directors recommends a vote "FOR" the election of R. Brian Hanson, Zheng HuaSheng and James M. Lapeyre, Jr.

The biographies of each of the nominees and continuing directors below contains information regarding the person's service as a director, business experience, education, director positions and the experiences, qualifications, attributes or skills that caused the Governance Committee and our Board to determine that the person should serve as a director for the Company:

Class I Director Nominees for Re-Election for Term Expiring In 2021

R. BRIAN HANSON — Director since 2012

Mr. Hanson, age 53, has been our President and Chief Executive Officer since January 1, 2012. He joined ION in May 2006 as our Executive Vice President and Chief Financial Officer and was appointed our President and Chief Operating Officer in August 2011. Prior to joining ION, Mr. Hanson served as the Executive Vice President and Chief Financial Officer of Alliance Imaging, Inc., a NYSE-listed provider of diagnostic imaging services to hospitals and other healthcare providers, from July 2004 until November 2005. From 1998 to 2003, Mr. Hanson held a variety of positions at Fisher Scientific International, Inc., a NYSE-listed manufacturer and supplier of scientific and healthcare products and services, including Vice President Finance of the Healthcare group from 1998 to 2002 and Chief Operating Officer from 2002 to 2003. From 1986 until 1998, Mr. Hanson served in various positions with Culligan Water Conditioning, an international manufacturer of water treatment products and producer and retailer of bottled water products, most recently as Vice President of Finance and Chief Financial Officer. Mr. Hanson received a Bachelor's degree in engineering from the University of New Brunswick and a Master of Business Administration degree from Concordia University in Montreal.

Mr. Hanson's day-to-day leadership and involvement with our Company provides him with personal knowledge regarding our operations. In addition, Mr. Hanson's financial experience and skills and technical background enable the Board to better understand and be informed with regard to our Company's operations, prospects and financial condition.

ZHENG HUASHENG — Director since 2018

Mr. Zheng, age 51, has been employed by China National Petroleum Corporation ("CNPC"), China's largest oil company, and its affiliates in various positions of increasing responsibility since 1994. Since 2018, he has been Executive Vice President of BGP Inc., China National Petroleum Corporation ("BGP"). BGP is a subsidiary of CNPC and is the world's largest land seismic contractor. From 1994 to 1997, Mr. Zheng was Legal Representative & Financial Supervisor, Ecuador Branch. From 1997 to 1998, he was Representative of the Sudan Office of BGP International. From 1998 to 1999, Mr. Zheng was Manager of Strategy & Planning Department, BGP International. From 1999 to 2003, Mr. Zheng was Vice President of BGP International. From 2005 to 2009, Mr. Zheng was President of BGP International and Assistant President of BGP. From 2010 to 2018, Mr. Zheng was Vice President of BGP. He holds a Masters of Business Administration degree from the University of Calgary, Haskayne School of Business.

Mr. Zheng has over 20 years of experience in geophysical program management, particularly in international business. Mr. Zheng's position with BGP and his extensive knowledge of the global seismic industry enables our Board to receive current input and advice reflecting the perspectives of our seismic contractor customers. In addition, our land equipment joint venture with BGP and the ever-increasing importance of China in the global economy and the worldwide oil and gas industry has elevated our commercial involvement with China and Chinese companies. Mr. Zheng's insights with regard to issues relating to China provide our Board with a valuable resource.

Mr. Zheng was appointed to our Board of Directors under the terms of the Company's Investor Rights Agreement with BGP. Under the agreement, BGP is entitled to designate one individual to serve as a member of our Board unless BGP's ownership of our Common Stock falls below 10%. In April of 2018, Mr. Zheng replaced Hao Huimin, BGP's most recent appointee to our Board.

JAMES M. LAPEYRE, JR. — Director since 1998

Mr. Lapeyre, age 65, served as Chairman of our Board from 1999 until January 1, 2012, and again from January 1, 2013 until present. During 2012, Mr. Robert P. Peebler held the role of Executive Chairman and Mr. Lapeyre served as Lead Independent Director. Mr. Lapeyre has been President of Laitram L.L.C., a privately-owned, New Orleans-based manufacturer of food processing equipment and modular conveyor belts, and its predecessors since 1989. Mr. Lapeyre joined our Board when we bought the DigiCOURSE marine positioning products business from Laitram in 1998. Mr. Lapeyre is Chairman of the Governance Committee and a member of the Audit and Compensation Committees of our Board. He holds a Bachelor of Art degree in history from the University of Texas and Master of Business Administration and Juris Doctorate degrees from Tulane University.

Mr. Lapeyre's status as a significant shareholder of our Company enables our Board to have direct access to the perspective of our shareholders and ensures that the Board will take into consideration the interests of our shareholders in all Board decisions. In addition, Mr. Lapeyre has extensive knowledge regarding the marine products and technology that we acquired from Laitram in 1998.

Class II Director—Term Expiring In 2019

DAVID H. BARR Director since 2010

From May 2011 until December 2012, Mr. Barr, age 68, served as the President and Chief Executive Officer of Logan International Inc., a Calgary-based Toronto Stock Exchange (TSX)-listed manufacturer and provider of oilfield tools and services. In 2009, Mr. Barr retired from Baker Hughes Incorporated, an oilfield services and equipment provider, after serving for 36 years in various manufacturing, marketing, engineering and product management functions. At the time of his retirement, Mr. Barr was Group President—Eastern Hemisphere, responsible for all Baker Hughes products and services for Europe, Russia/Caspian, Middle East, Africa and Asia Pacific. From 2007 to 2009, he served as Group President—Completion & Production, and from 2005 to 2007, as Group President—Drilling and Evaluation. Mr. Barr served as President of Baker Atlas, a division of Baker Hughes Inc., from 2000 to 2005, and served as Vice President, Supply Chain Management for the Cameron division of Cameron International Corporation from 1999 to 2000. Prior to 1999, he held positions of increasing responsibility within Baker Hughes Inc. and its affiliates, including Vice President—Business Process Development and various leadership positions with Hughes Tool Company and Hughes Christensen. Mr. Barr initially joined Hughes Tool Company in 1972 after graduating from Texas Tech University with a Bachelor of Science degree in mechanical engineering. Since 2011, he has also been serving on the Board of Directors, Compensation Committee, and as, Chairman of the Safety and Social Responsibility Committee of Enerplus Corporation (a NYSE- and TSX-listed independent oil and gas exploration and production ("E&P") company). He formerly served on the Board of Directors and Compensation Committee of Logan International Inc., and on the Board of Directors and Audit, Remuneration and Governance Committees of Hunting PLC, a London Stock Exchange-listed provider of energy services. Mr. Barr is a member of the Compensation and Governance Committees of our Board.

Mr. Barr's more than 36 years of experience in the oilfield equipment and services industry provides a uniquely valuable industry perspective for our Board. While at Baker Hughes, Mr. Barr obtained experience within a wide range of company functions, from engineering to group President. His breadth of experience enables him to better understand and inform the Board regarding a range of issues and decisions involved in the operation of our business, including development of business strategy.

FRANKLIN MYERS Director since 2001

Mr. Myers, age 65, has served as a Senior Advisor of Quantum Energy Partners, a private equity firm for the global energy industry, since February 2013. From 2009 to 2012, he was an Operating Advisor with Paine & Partners, LLC, a private equity firm focused on leveraged buyout transactions. Prior to joining Paine & Partners, Mr. Myers was employed by Cameron International Corporation, an international manufacturer of oil and gas flow control equipment, as Senior Vice President, General Counsel and Corporate Secretary (from 1995 to 1999), President of the Cooper Energy Services Division (from 1998 until 2001), Senior Vice President (from 2001 to 2003), Senior Vice President and Chief Financial Officer (from 2003 to 2008) and Senior Advisor (from 2008 to 2009). Prior to joining Cameron, he was Senior Vice President and General Counsel of Baker Hughes Incorporated, an oilfield services and equipment provider, and an attorney and partner with the law firm of Fulbright & Jaworski L.L.P. in Houston, Texas. Mr. Myers also currently serves on the Boards of Directors of Comfort Systems USA, Inc. (a NYSE-listed provider of heating, ventilation and air conditioning services), HollyFrontier Corporation (a NYSE-listed independent oil refining and marketing company), and NCS Multistage (a manufacturer of down-hole tubular equipment). From September 2010 until March 15, 2018, Mr. Myers served on the Board of Directors of Forum Energy Technology, Inc. (a NYSE-listed oilfield equipment manufacturing company). Mr. Myers is Chairman of the Compensation Committee, co-Chairman of the Finance Committee and a member of the Governance Committee of

our Board. He holds a Bachelor of Science degree in industrial engineering from Mississippi State University and a Juris Doctorate degree with Honors from the University of Mississippi.

Mr. Myers' extensive experience as both a financial and legal executive makes him uniquely qualified as a valuable member of our Board and the Chairman of our Compensation Committee. While at Cameron, Baker Hughes and Fulbright & Jaworski, Mr. Myers was responsible for numerous successful finance and acquisition transactions, and his expertise gained through those experiences have proved to be a significant resource for our Board. In addition, Mr. Myers' service on Boards of Directors of other NYSE-listed companies enables Mr. Myers to observe and advise on favorable governance practices pursued by other public companies.

S. JAMES NELSON, JR. Director since 2004

Mr. Nelson, age 76, joined our Board in 2004. In 2004, Mr. Nelson retired from Cal Dive International, Inc. (now named Helix Energy Solutions Group, Inc.), a marine contractor and operator of offshore oil and gas properties and production facilities, where he was a founding shareholder, Chief Financial Officer (prior to 2000), Vice Chairman (from 2000 to 2004) and a Director (from 1990 to 2004). From 1985 to 1988, Mr. Nelson was the Senior Vice President and Chief Financial Officer of Diversified Energies, Inc., a NYSE-traded company with $1 billion in annual revenues and the former parent company of Cal Dive. From 1980 to 1985, Mr. Nelson served as Chief Financial Officer of Apache Corporation, an oil and gas E&P company. From 1966 to 1980, Mr. Nelson was employed with Arthur Andersen & Co. where, from 1976 to 1980, he was a partner serving on the firm's worldwide oil and gas industry team. Mr. Nelson also currently serves on the Board of Directors and Audit Committees of Oil States International, Inc. (a NYSE-listed diversified oilfield services company) and W&T Offshore, Inc. (a NYSE-listed oil and natural gas E&P company), where he was appointed to the Governance Committee in late 2016. From 2010 until October 2012, Mr. Nelson also served on the Board of Directors and Audit and Compensation Committees of the general partner of Genesis Energy LP, an operator of oil and natural gas pipelines and provider of services to refineries and industrial gas users. From 2005 until the Company's sale in 2008, he served as a member of the Board of Directors, a member of the Compensation Committee and Chair of the Audit Committee of Quintana Maritime, Ltd., a provider of dry bulk cargo shipping services based in Athens, Greece. Mr. Nelson, who is also a Certified Public Accountant, is Chairman of the Audit Committee and co-Chairman of the Finance Committee of our Board. He holds a Bachelor of Science degree in accounting from Holy Cross College and a Master of Business Administration degree from Harvard University.

Mr. Nelson is an experienced financial leader with the skills necessary to lead our Audit Committee. His service as Chief Financial Officer of Cal Dive International, Inc., Diversified Energies, Inc. and Apache Corporation, as well as his years with Arthur Andersen & Co., make him a valuable asset to ION, both on our Board and as the Chairman of our Audit Committee, particularly with regard to financial and accounting matters. In addition, Mr. Nelson's service on audit committees of other companies enables Mr. Nelson to remain current on audit committee best practices and current financial reporting developments within the energy industry.

Class III Director—Term Expiring In 2020

MICHAEL C. JENNINGS Director since 2010

Mr. Jennings, age 52, is Chairman of the Board of Directors of HollyFrontier Corporation, a NYSE-listed independent oil refining and marketing company and served as the Company's President & Chief Executive Officer from 2011 to 2016. Prior to joining HollyFrontier, Mr. Jennings was the President, Chief Executive Officer and Chairman of the Board of Frontier Oil Corporation, an independent oil refining and marketing company. Mr. Jennings joined HollyFrontier in July 2011 when

Frontier Oil merged with Holly Corporation to form HollyFrontier. Prior to his appointment to President and Chief Executive Officer of Frontier in January 2009, Mr. Jennings served as Frontier's Executive Vice President and Chief Financial Officer. From 2000 until joining Frontier in 2005, Mr. Jennings was employed by Cameron International Corporation as Vice President and Treasurer. From 1998 until 2000, he was Vice President Finance & Corporate Development of Unimin Corporation, a producer of industrial minerals. From 1995 to 1998, Mr. Jennings was employed by Cameron International Corporation as Director, Acquisitions and Corporate Finance. Mr. Jennings also serves as Chairman of the Board of Directors of Holly Energy Partners, a NYSE-listed master limited partnership partially owned by HollyFrontier Corporation. Mr. Jennings is a member of the Audit and Finance Committees of our Board of Directors. He holds a Bachelor of Arts degree in economics and government from Dartmouth College and a Master of Business Administration degree in finance and accounting from the University of Chicago.

Mr. Jennings' experience in the global oil refining, marketing and oilfield services businesses enables him to advise the Board on customer and industry issues and perspectives. Given his extensive experience in executive, financial, treasury and corporate development matters, Mr. Jennings is able to provide the Board with expertise in corporate leadership, financial management, corporate planning and strategic development, thereby supporting the Board's efforts in overseeing and advising on strategic and financial matters.

JOHN N. SEITZ Director since 2003

Mr. Seitz, age 66, has been Chairman and Chief Executive Officer of GulfSlope Energy, Inc., an OTC-listed independent E&P company exploring for oil and gas using advanced seismic imaging, since 2013. From 1977 to 2003, Mr. Seitz held positions of increasing responsibility at Anadarko Petroleum Company, serving most recently as a Director and as President and Chief Executive Officer. Mr. Seitz is a Trustee of the American Geological Institute Foundation. Mr. Seitz currently serves on the Investment Committee for Sheridan Production Company, LLC, a privately held oil & gas company with interests in Texas, Oklahoma and Wyoming. He formerly serviced on the Board of Directors for Endeavor International, Inc., Constellation Energy Partners LLC, and Gulf United Energy, Inc. Mr. Seitz is a member of the Compensation and Governance Committees of our Board. Mr. Seitz holds a Bachelor of Science degree in geology from the University of Pittsburgh, a Master of Science degree in geology from Rensselaer Polytechnic Institute and is a Certified Professional Geoscientist in Texas. He also completed the Advanced Management Program at the Wharton School of Business.

Mr. Seitz' extensive experience as a leader of global E&P companies has proven to be an important resource for our Board when considering industry and customer issues. In addition, Mr. Seitz' geology background and expertise assists the Board in better understanding industry trends and issues.

Board of Directors and Corporate Governance

Governance Initiatives. ION is committed to excellence in corporate governance and maintains clear practices and policies that promote good corporate governance. We review our governance practices and update them, as appropriate, based upon Delaware law, rules and listing standards of the NYSE, SEC regulations and practices recommended by our outside advisors.

Examples of our corporate governance initiatives include the following:

- Seven of our eight Board members are independent of ION and its management. R. Brian Hanson, our President and Chief Executive Officer, is not independent because he is an employee of ION.

- All members of the principal standing committees of our Board—the Audit Committee, the Governance Committee and the Compensation Committee—are independent.
- The independent members of our Board and each of the principal committees of our Board meet regularly without the presence of management. The members of the Audit Committee meet regularly with representatives of our independent registered public accounting firm without the presence of management. The members of the Audit Committee also meet regularly with our Director of Internal Audit without the presence of other members of management.
- Our Audit Committee has at least one member who qualifies as a "financial expert" in accordance with Section 407 of the Sarbanes-Oxley Act of 2002.
- The Board has adopted written Corporate Governance Guidelines to assist its members in fulfilling their responsibilities.
- Under our Corporate Governance Guidelines, Board members are required to offer their resignation from the Board if they retire or materially change the position they held when they began serving as a director on the Board.
- We comply with and operate in a manner consistent with regulations prohibiting loans to our directors and executive officers.
- Members of our Disclosure Committee, consisting of management employees and senior finance and accounting employees, review all quarterly and annual reports before filing with the SEC.
- We have a dedicated hotline and website available to all employees to report ethics and compliance concerns, anonymously if preferred, including concerns related to accounting, accounting controls, financial reporting and auditing matters. The hotline and website are administered and monitored by an independent hotline monitoring company. The Board has adopted a policy and procedures for the receipt, retention and treatment of complaints and employee concerns received through the hotline or website. The policy is available on our website at *http://ir.iongeo.com/phoenix.zhtml?c=101545&p=irol-govhighlights*.
- On an annual basis, each director and each executive officer is obligated to complete a questionnaire that requires disclosure of any transactions with ION in which the director or executive officer, or any member of his or her immediate family, has a direct or indirect material interest.
- We have included as Exhibits 31.1 and 31.2 to our Annual Report on Form 10-K/A for the fiscal year ended December 31, 2017, filed with the SEC, certificates of our Chief Executive Officer and Chief Financial Officer, respectively, certifying as to the quality of our public disclosure. In addition, in 2017, we submitted to the NYSE a certificate of our Chief Executive Officer certifying that he is not aware of any violation by ION of the NYSE corporate governance listing standards.
- Our internal audit controls function maintains critical oversight over the key areas of our business and financial processes and controls, and provides reports directly to the Audit Committee.
- We have a compensation recoupment (clawback) policy that applies to our current and former executive officers. The policy is available on our website at *http://ir.iongeo.com/phoenix.zhtml?c=101545&p=irol-govhighlights*.
- We have stock ownership guidelines for our non-employee directors and senior management.

- Our employment contracts with our Chief Executive Officer, Chief Financial Officer and other employees do not contain a "single-trigger" change of control severance provision or entitle the employee to tax gross-up benefits.

Majority Voting Procedure for Directors. Our Corporate Governance Guidelines require a mandatory majority voting, director resignation procedure. Any director nominee in an uncontested election who receives a greater number of votes "withheld" from his election than votes "for" such election is required to promptly tender to the Board his resignation following certification of the shareholder vote. Upon receipt of the resignation, the Governance Committee will consider the resignation offer and recommend to the Board whether to accept it. The Board will act on the Governance Committee's recommendation within 120 days following certification of the shareholder vote. The Governance Committee and the Board may consider any factors they deem relevant in deciding whether to accept a director's resignation. Thereafter, the Board will promptly disclose its decision whether to accept the director's resignation offer (and the reasons for rejecting the resignation offer, if applicable) in a Current Report on Form 8-K furnished to the SEC.

Code of Ethics. We have adopted a Code of Ethics that applies to all members of our Board and all of our employees, including our principal executive officer, principal financial officer, principal accounting officer and all other senior members of our finance and accounting departments. An updated version of our Code of Ethics was approved by the Board on November 4, 2014. We require all employees to adhere to our Code of Ethics in addressing legal and ethical issues encountered in conducting their work. The Code of Ethics requires that our employees avoid conflicts of interest, comply with all laws and other legal requirements, conduct business in an honest and ethical manner, promote full and accurate financial reporting and otherwise act with integrity and in ION's best interest. Every year our management employees and senior finance and accounting employees affirm their compliance with our Code of Ethics and other principal compliance policies. New employees acknowledge receipt and compliance with Company policies through an online onboarding portal, after the employment offer has been accepted.

We have made our Code of Ethics, Corporate Governance Guidelines, charters for the principal standing committees of our Board and other information that may be of interest to investors available on the Investor Relations section of our website at *http://ir.iongeo.com/phoenix.zhtml?c=101545&p=irol-govhighlights.* Copies of this information may also be obtained by writing to us at ION Geophysical Corporation, Attention: Corporate Secretary, 2105 CityWest Boulevard, Suite 100, Houston, Texas 77042-2855. Amendments to, or waivers from, our Code of Ethics will also be available on our website and reported as may be required under SEC rules; however, any technical, administrative or other non-substantive amendments to our Code of Ethics may not be posted.

Please note that the preceding Internet address and all other Internet addresses referenced in this Proxy Statement are for information purposes only and are not intended to be a hyperlink. Accordingly, no information found or provided at such Internet addresses or at our website in general is intended or deemed to be incorporated by reference herein.

Lead Independent Director. James M. Lapeyre, Jr. serves as our Chairman of the Board. Under NYSE corporate governance listing standards, Mr. Lapeyre has also been designated as our Lead Independent Director and presiding non-management director to lead non-management directors meetings of the Board. Our non-management directors meet at regularly scheduled executive sessions

without management, over which Mr. Lapeyre presides. The powers and authority of the Lead Independent Director also include the following:

- Advise and consult with the Chief Executive Officer, senior management and the Chairperson of each Committee of the Board, as to the appropriate information, agendas and schedules of Board and Committee meetings;
- Advise and consult with the Chief Executive Officer and senior management as to the quality, quantity and timeliness of the information submitted by the Company's management to the independent directors;
- Recommend to the Chief Executive Officer and the Board the retention of advisers and consultants to report directly to the Board;
- Call meetings of the Board or executive sessions of the independent directors;
- Develop the agendas for and preside over executive sessions of the Board's independent directors;
- Serve as principal liaison between the independent directors, and the Chief Executive Officer and senior management, on sensitive issues, including the review and evaluation of the Chief Executive Officer; and
- Coordinate with the independent directors in respect of each of the foregoing.

Certain of the duties and powers described above are to be conducted in conjunction with our Chairman of the Board if the Lead Independent Director is not also the Chairman of the Board.

Communications to Board and Lead Independent Director. Shareholders and other interested parties may communicate with the Board and our Lead Independent Director or non-management independent directors as a group by writing to "Chairman of the Board" or "Lead Independent Director," c/o Corporate Secretary, ION Geophysical Corporation, 2105 CityWest Boulevard, Suite 100, Houston, Texas 77042-2855. Inquiries sent by mail will be reviewed by our Corporate Secretary and, if they pertain to the functions of the Board or committees of the Board or if the Corporate Secretary otherwise determines that they should be brought to the intended recipient's attention, they will be forwarded to the intended recipient. Concerns relating to accounting, internal controls, auditing or compliance matters will be brought to the attention of our Audit Committee and handled in accordance with procedures established by the Audit Committee.

Our Corporate Secretary's review of these communications will be performed with a view that the integrity of this process be preserved. For example, items that are unrelated to the duties and responsibilities of the Board, such as personal employee complaints, product inquiries, new product suggestions, resumes and other forms of job inquiries, surveys, service or product complaints, requests for donations, business solicitations or advertisements, will not be forwarded to the directors. In addition, material that is considered to be hostile, threatening, illegal or similarly unsuitable will not be forwarded. Except for these types of items, the Corporate Secretary will promptly forward written communications to the intended recipient. Within the above guidelines, the independent directors have granted the Corporate Secretary discretion to decide what correspondence should be shared with ION management and independent directors.

2017 Meetings of the Board and Shareholders. During 2017, the Board held six meetings and the four standing committees of the Board held a total of 12 meetings. The rate of attendance by our directors at such meetings was 100%. We do not require our Board members to attend our Annual Meeting of Shareholders; however, seven of our directors were present at our Annual Meeting held in May 2017.

Independence. In determining independence, each year the Board determines whether directors have any "material relationship" with ION. When assessing the "materiality" of a director's relationship with ION, the Board considers all relevant facts and circumstances, not merely from the director's standpoint, but from that of the persons or organizations with which the director has an affiliation, and the frequency or regularity of the services, whether the services are being carried out at arm's length in the ordinary course of business and whether the services are being provided substantially on the same terms to ION as those prevailing at the time from unrelated parties for comparable transactions. Material relationships can include commercial, banking, industrial, consulting, legal, accounting, charitable and familial relationships. Factors that the Board may consider when determining independence for purposes of this determination include (1) not being a current employee of ION or having been employed by ION within the last three years; (2) not having an immediate family member who is, or who has been within the last three years, an executive officer of ION; (3) not personally receiving or having an immediate family member who has received, during any 12-month period within the last three years, more than $120,000 per year in direct compensation from ION other than director and committee fees; (4) not being employed or having an immediate family member employed within the last three years as an executive officer of another company of which any current executive officer of ION serves or has served, at the same time, on that company's compensation committee; (5) not being an employee of or a current partner of, or having an immediate family member who is a current partner of, a firm that is ION's internal or external auditor; (6) not having an immediate family member who is a current employee of such an audit firm who personally works on ION's audit; (7) not being or having an immediate family member who was within the last three years a partner or employee of such an audit firm and who personally worked on ION's audit within that time; (8) not being a current employee, or having an immediate family member who is a current executive officer, of a company that has made payments to, or received payments from, ION for property or services in an amount that, in any of the last three fiscal years, exceeds the greater of $1 million or 2% of the other company's consolidated gross revenues; or (9) not being an executive officer of a charitable organization to which, within the preceding three years, ION has made charitable contributions in any single fiscal year that has exceeded the greater of $1 million or 2% of such organization's consolidated gross revenues.

Our Board has affirmatively determined that, with the exception of R. Brian Hanson, who is our President and Chief Executive Officer and an employee of ION, no director has a material relationship with ION within the meaning of the NYSE's listing standards, and that each of our directors (other than Mr. Hanson) is independent from management and from our independent registered public accounting firm, as required by NYSE listing standard rules regarding director independence.

Our Chairman and Lead Independent Director, Mr. Lapeyre, is an executive officer and significant shareholder of Laitram, L.L.C., a company with which ION has ongoing contractual relationships, and Mr. Lapeyre and Laitram together owned approximately 8.8% of our outstanding Common Stock as of February 28, 2018. Our Board has determined that these contractual relationships have not interfered with Mr. Lapeyre's demonstrated independence from our management, and that the services performed by Laitram for ION are being provided at arm's length in the ordinary course of business and substantially on the same terms to ION as those prevailing at the time from unrelated parties for comparable transactions. In addition, the services provided by Laitram to ION resulted in payments by ION to Laitram in an amount less than 1% of Laitram's 2017 consolidated gross revenues. As a result of these factors, our Board has determined that Mr. Lapeyre, along with each of our other non-management directors, is independent within the meaning of the NYSE's director independence standards. For an explanation of the contractual relationship between Laitram and ION, please see "*—Certain Transactions and Relationships*" below.

Our director, Mr. Zheng, is employed as Executive Vice President of BGP. For an explanation of the relationships between BGP and ION, please see "*—Certain Transactions and Relationships*" below.

Risk Oversight. Our Board oversees an enterprise-wide approach to risk management, designed to support the achievement of organizational objectives, including strategic objectives, to improve long-term organizational performance and enhance shareholder value. A fundamental part of risk management is not only understanding the risks a company faces and what steps management is taking to manage those risks, but also understanding what level of risk is appropriate for the Company. The involvement of the full Board in setting ION's business strategy is a key part of its assessment of the Company's appetite for risk and also a determination of what constitutes an appropriate level of risk for the Company. The Board also regularly reviews information regarding the Company's credit, liquidity and operations, as well as the risks associated with each. While the Board has the ultimate oversight responsibility for the risk management process, various committees of the Board also have responsibility for risk management. In particular, the Audit Committee focuses on financial risk, including internal controls, and receives an annual risk assessment report from ION's internal auditors. The Audit Committee is also responsible for overseeing cybersecurity-related risks. In addition, in setting compensation, the Compensation Committee strives to create incentives that encourage a level of risk-taking behavior consistent with ION's business strategies. While each committee is responsible for evaluating certain risks and overseeing the management of such risks, the entire Board is regularly informed through committee reports about such risks.

Board Leadership. Our current Board leadership structure consists of a Chairman of the Board (who is not our current CEO), a Lead Independent Director (who is also our Chairman of the Board) and strong independent committee chairs. The Board believes this structure provides independent Board leadership and engagement and strong independent oversight of management while providing the benefit of having our Chairman and Lead Independent Director lead regular Board meetings as we discuss key business and strategic issues. Mr. Lapeyre, a non-employee independent director, serves as our Chairman of the Board and Lead Independent Director. Mr. Hanson has served as our CEO since January 1, 2012. We separate the roles of CEO and Chairman of the Board in recognition of the differences between the two roles. The CEO is responsible for setting the strategic direction for the Company and the day-to-day leadership and performance of the Company, while the Chairman provides guidance to the CEO and sets the agenda for Board meetings and presides over the meetings of the full Board. Separating these positions allows our CEO to focus on our day-to-day business, while allowing the Chairman to lead the Board in its fundamental role of providing advice to, and independent oversight of, management. The Board recognizes the time, effort and energy that the CEO is required to devote to his position, as well as the commitment required to serve as our Chairman. The Board believes that having separate positions is the appropriate leadership structure for our Company at this time and demonstrates our commitment to good corporate governance.

Political Contributions and Lobbying. Our Code of Ethics prohibits company contributions to political candidates or parties. In addition, we do not advertise in or purchase political publications, allow company assets to be used by political parties or candidates, use corporate funds to purchase seats at political fund raising events, or allow company trademarks to be used in political or campaign literature. ION is a member of certain trade associations that may use a portion of their membership dues for lobbying and/or political expenditures.

Committees of the Board

The Board has established four standing committees to facilitate and assist the Board in the execution of its responsibilities. The four standing committees are the Audit Committee, the Compensation Committee, the Governance Committee and the Finance Committee. Each standing committee operates under a written charter, which sets forth the functions and responsibilities of the committee. A copy of the charter for each of the Audit Committee, the Compensation Committee and the Governance Committee can be viewed on our website at *http://ir.iongeo.com/phoenix.zhtml?c=101545&p=irol-govhighlights.* A copy of each charter can also be obtained by writing to

us at ION Geophysical Corporation, Attention: Corporate Secretary, 2105 CityWest Boulevard, Suite 100, Houston, Texas 77042-2855. The Audit Committee, Compensation Committee, Governance Committee and Finance Committee are composed entirely of non-employee directors. In addition, the Board establishes temporary special committees from time to time on an as-needed basis. During 2017, the Audit Committee met five times, the Compensation Committee met four times, and the Governance Committee met three times. The Finance Committee did not meet.

The current members of the four standing committees of the Board are identified below.

Director	Compensation Committee	Audit Committee	Governance Committee	Finance Committee
James M. Lapeyre, Jr.	*	*	Chair	
David H. Barr	*		*	
R. Brian Hanson				
Zheng HuaSheng				
Michael C. Jennings		*		*
Franklin Myers	Chair		*	Co-Chair
S. James Nelson, Jr.		Chair		Co-Chair
John N. Seitz	*		*	

* Member

Audit Committee

The Audit Committee is a separately-designated standing audit committee as defined in Section 3(a)(58)(A) of the Securities Exchange Act of 1934, as amended (the "Exchange Act"). The Audit Committee oversees matters relating to financial reporting, internal controls, risk management and compliance. These responsibilities include appointing, overseeing, evaluating and approving the fees of our independent auditors, reviewing financial information that is provided to our shareholders and others, reviewing with management our system of internal controls and financial reporting processes, and monitoring our compliance program and system.

The Board has determined that each member of the Audit Committee is financially literate and satisfies the definition of "independent" as established under the NYSE corporate governance listing standards and Rule 10A-3 under the Exchange Act. In addition, the Board has determined that Mr. Nelson, the Chairman of the Audit Committee, is qualified as an audit committee financial expert within the meaning of SEC regulations, and that he has accounting and related financial management expertise within the meaning of the listing standards of the NYSE and Rule 10A-3.

Compensation Committee

General. The Compensation Committee has responsibility for the compensation of our executive officers, including our Chief Executive Officer, and the administration of our executive compensation and benefit plans. The Compensation Committee also has authority to retain or replace outside counsel, compensation and benefits consultants or other experts to provide it with independent advice, including the authority to approve the fees payable and any other terms of retention. All actions regarding named executive officer compensation require Compensation Committee approval. The Compensation Committee completes a comprehensive review of all elements of compensation at least annually. If it is determined that any changes to any executive officer's total compensation are necessary or appropriate, the Compensation Committee obtains such input from management as it determines to be necessary or appropriate. All compensation decisions with respect to executives other than our Chief Executive Officer are determined in discussion with, and frequently based in part upon the recommendation of, our Chief Executive Officer. The Compensation Committee makes all

determinations with respect to the compensation of our Chief Executive Officer, including, but not limited to, establishing performance objectives and criteria related to the payment of his compensation, and determining the extent to which such objectives have been established, obtaining such input from the Compensation Committee's independent compensation advisors as it deems necessary or appropriate.

As part of its responsibility to administer our executive compensation plans and programs, the Compensation Committee, usually near the beginning of the calendar year, establishes the parameters of the annual incentive plan awards, including the performance goals relative to our performance that will be applicable to such awards and the similar awards for our other senior executives. It also reviews our performance against the objectives established for awards payable in respect of the prior calendar year, and confirms the extent, if any, to which such objectives have been obtained, and the amounts payable to each of our executive officers in respect of such achievement.

The Compensation Committee also determines the appropriate level and type of awards, if any, to be granted to each of our executive officers pursuant to our equity compensation plans, and approves the total annual grants to other key employees, to be granted in accordance with a delegation of authority to a corporate human resources officer or other Company officer.

The Compensation Committee reviews, and has the authority to recommend to the Board for adoption, any new executive compensation or benefit plans that are determined to be appropriate for adoption by ION, including those that are not otherwise subject to the approval of our shareholders. It reviews any contracts with current or former elected officers of the corporation. In connection with the review of any such contract, the Compensation Committee may seek from its independent advisors such advice, counsel and information as it determines to be appropriate in the conduct of such review. The Compensation Committee will direct such outside advisors as to the information it requires in connection with any such review, including data regarding competitive practices among the companies with which ION generally compares itself for compensation purposes.

Compensation Committee Interlocks and Insider Participation. The Board has determined that each member of the Compensation Committee satisfies the definition of "independent" as established under the NYSE corporate governance listing standards. No member of the Compensation Committee is, or was during 2017, an officer or employee of ION. Mr. Lapeyre is President and Chief Executive Officer and a significant equity owner of Laitram, L.L.C, which has had a business relationship with ION since 1999. During 2017, the Company paid Laitram and its affiliates $0.2 million, which consisted of manufacturing services and reimbursement of costs and less than $0.1 million for reimbursement for costs related to providing administrative and other back-office support services in connection with the Company's Louisiana marine operations. In addition, the Company is currently subleasing approximately 4,100 square feet of office space to Laitram. See *"—Certain Transactions and Relationships"* below.

During 2017:

- No executive officer of ION served as a member of the compensation committee of another entity, one of whose executive officers served as a director or on the Compensation Committee of ION; and
- No executive officer of ION served as a director of another entity, one of whose executive officers served on the Compensation Committee of ION.

Governance Committee

The Governance Committee functions as the Board's nominating and corporate governance committee and advises the Board with regard to matters relating to governance practices and policies, management succession, and composition and operation of the Board and its committees, including

reviewing potential candidates for membership on the Board and recommending to the Board nominees for election as directors of ION. In addition, the Governance Committee reviews annually with the full Board and our Chief Executive Officer the succession plans for senior executive officers and makes recommendations to the Board regarding the selection of individuals to occupy these positions. The Board has determined that each member of the Governance Committee satisfies the definition of "independent" as established under the NYSE corporate governance listing standards.

In identifying and selecting new director candidates, the Governance Committee considers the Board's current and anticipated strengths and needs and a candidate's experience, knowledge, skills, expertise, integrity, diversity, ability to make independent analytical inquiries, understanding of our Company's business environment, willingness to devote adequate time and effort to Board responsibilities, and other relevant factors. The Governance Committee has not established specific minimum age, education, years of business experience, or specific types of skills for potential director candidates, but, in general, expects that qualified candidates will have ample experience and a proven record of business success and leadership. The Governance Committee also seeks an appropriate balance of experience and expertise in accounting and finance, technology, management, international business, compensation, corporate governance, strategy, industry knowledge and general business matters. In addition, the Governance Committee seeks a diversity of experience, professions, skills, geographic representation and backgrounds. The committee may rely on various sources to identify potential director nominees, including input from directors, management and others the Governance Committee feels are reliable, and professional search firms. This year, our Governance Committee recommended, and the Board approved, that our Corporate Governance Guidelines be amended in an effort to put a greater emphasis on the diversity of our Board when identifying new potential candidates.

Our Bylaws permit shareholders to nominate individuals for director for consideration at an annual shareholders' meeting. A proper director nomination may be considered at our 2019 Annual Meeting only if the proposal for nomination is received by ION no later than December 14, 2018. All nominations should be directed to Corporate Secretary, ION Geophysical Corporation, 2105 CityWest Boulevard, Suite 100, Houston, Texas 77042-2855.

The Governance Committee will consider properly submitted recommendations for director nominations made by a shareholder or other sources (including self-nominees) on the same basis as other candidates. For consideration by the Governance Committee, a recommendation of a candidate must be submitted timely and in writing to the Governance Committee in care of our Corporate Secretary at our principal executive offices. The submission must include sufficient details regarding the qualifications of the potential candidate. In general, nominees for election should possess (1) the highest level of integrity and ethical character, (2) strong personal and professional reputation, (3) sound judgment, (4) financial literacy, (5) independence, (6) significant experience and proven superior performance in professional endeavors, (7) an appreciation for Board and team performance, (8) the commitment to devote the time necessary, (9) skills in areas that will benefit the Board and (10) the ability to make a long-term commitment to serve on the Board.

Finance Committee

The Finance Committee has responsibility for overseeing all areas of corporate finance for ION. The Finance Committee is responsible for reviewing with ION management, and has the power and authority to approve on behalf of the Board, ION's strategies, plans, policies and actions related to corporate finance, including, but not limited to, (a) capital structure plans and strategies and specific equity or debt financings, (b) capital expenditure plans and strategies and specific capital projects, (c) strategic and financial investment plans and strategies and specific investments, (d) cash management plans and strategies and activities relating to cash flow, cash accounts, working capital, cash investments and treasury activities, including the establishment and maintenance of bank, investment and brokerage accounts, (e) financial aspects of insurance and risk management, (f) tax planning and compliance, (g) dividend policy, (h) plans and strategies for managing foreign currency exchange exposure and other exposures to economic risks, including plans and strategies with respect to the use of derivatives, and (i) reviewing and making recommendations to the Board with respect to any proposal by ION to divest any asset, investment, real or personal property, or business interest if such divestiture is required to be approved by the Board. The Finance Committee does not have oversight responsibility with respect to ION's financial reporting, which is the responsibility of the Audit Committee. The Board has determined that a majority of the members of the Finance Committee (including its co-Chairmen) satisfies the definition of "independent" as established under the NYSE corporate governance listing standards.

Stock Ownership Requirements

The Board has adopted stock ownership requirements for ION's directors. The Board adopted these requirements in order to align the economic interests of the directors with those of our shareholders and further focus our emphasis on enhancing shareholder value. Under these requirements, each non-employee director is expected to own at least 2,400 shares of Common Stock, which, at the $19.75 closing price per share of our Common Stock on the NYSE on December 29, 2017, the last business day of 2017, equates to approximately 103% of the $46,000 annual retainer fee we pay to our non-employee directors. New and current directors will have three years to acquire and increase the director's ownership of ION Common Stock to satisfy the requirements. The stock ownership requirements are subject to modification by the Board in its discretion. The Board has also adopted stock ownership requirements for senior management of ION. See *"Executive Compensation—Compensation Discussion and Analysis—Elements of Compensation—Stock Ownership Requirements; Hedging Policy"* below.

The Governance Committee and the Board regularly review and evaluate ION's directors' compensation program on the basis of current and emerging compensation practices for directors, emerging legal, regulatory and corporate compliance developments and comparisons with director compensation programs of other similarly-situated public companies.

Certain Transactions and Relationships

The Board has adopted a written policy and procedures to be followed prior to any transaction, arrangement or relationship, or series of similar transactions, arrangements or relationships, including any indebtedness or guarantee of indebtedness, between ION and a "Related Party" where the aggregate amount involved is expected to exceed $120,000 in any calendar year. Under the policy, "Related Party" includes (a) any person who is or was an executive officer, director or nominee for election as a director (since the beginning of the last fiscal year); (b) any person or group who is a greater-than-5% beneficial owner of ION voting securities; or (c) any immediate family member of any of the foregoing, which means any child, stepchild, parent, stepparent, spouse, sibling, mother-in-law, father-in-law, son-in-law, daughter-in-law, brother-in-law, sister-in-law, and anyone residing in the home of an executive officer, director or nominee for election as a director (other than a tenant or

employee). Under the policy, the Governance Committee of the Board is responsible for reviewing the material facts of any Related Party transaction and approving or ratifying the transaction. In making its determination to approve or ratify, the Governance Committee is required to consider such factors as (i) the extent of the Related Party's interest in the transaction, (ii) if applicable, the availability of other sources of comparable products or services, (iii) whether the terms of the Related Party transaction are no less favorable than terms generally available in unaffiliated transactions under like circumstances, (iv) the benefit to ION and (v) the aggregate value of the Related Party transaction.

Mr. Lapeyre is the President and Chief Executive Officer and a significant equity owner of Laitram, L.L.C. ("Laitram") and has served as President of Laitram and its predecessors since 1989. Laitram is a privately-owned, New Orleans-based manufacturer of food processing equipment and modular conveyor belts. Mr. Lapeyre and Laitram together owned approximately 8.8% of our outstanding Common Stock as of February 28, 2018.

We acquired DigiCourse, Inc., our marine positioning products business, from Laitram in 1998. In connection with that acquisition, we entered into a Continued Services Agreement with Laitram under which Laitram agreed to provide us certain bookkeeping, software, manufacturing, and maintenance services. Manufacturing services consist primarily of machining of parts for our marine positioning systems. The term of this agreement expired in September 2001 but we continue to operate under its terms. In addition, from time to time, when we have requested, the legal staff of Laitram has advised us on certain intellectual property matters with regard to our marine positioning systems. The amended lease of commercial property dated February 1, 2006, between Lapeyre Properties, L.L.C. (an affiliate of Laitram) and ION was terminated in 2015. During 2017, the Company paid Laitram and its affiliates $0.2 million which consisted of manufacturing services and reimbursement of costs. During 2016 and 2015, the Company paid less than $0.1 million in each year for reimbursement for costs related to providing administrative and other back-office support services in connection with the Company's Louisiana marine operations. In addition, the Company is currently subleasing approximately 4,100 square feet of office space to Laitram. In the opinion of the Company's management, the terms of these services are fair and reasonable and as favorable to the Company as those that could have been obtained from unrelated third parties at the time of their performance.

Mr. Zheng is Executive Vice President of BGP, which has been a customer of our products and services for many years. For 2017 and 2016, the Company recorded revenues from BGP of $4.4 million and $3.6 million, respectively. Receivables due from BGP were $0.6 million and $0.4 million at December 31, 2017 and 2016, respectively.

In March 2010, prior to Mr. Zheng being appointed to the Board, we entered into certain transactions with BGP that resulted in the commercial relationships between our Company and BGP as described below:

- We issued and sold approximately 1,585,969 shares of our Common Stock to BGP for an effective purchase price of $42.00 per share pursuant to (i) a Stock Purchase Agreement we entered into with BGP and (ii) the conversion of the principal balance of indebtedness outstanding under a Convertible Promissory Note dated as of October 23, 2009. As of February 28, 2018, BGP held beneficial ownership of approximately 11.3% of our outstanding shares of Common Stock. The shares of our Common Stock acquired by BGP are subject to the terms and conditions of an Investor Rights Agreement that we entered into with BGP in connection with its purchase of our shares. Under the Investor Rights Agreement, for so long as BGP owns as least 10% of our outstanding shares of Common Stock, BGP will have the right to nominate one director to serve on our Board. The appointment of Mr. Zheng to our Board was made pursuant to this agreement. The Investor Rights Agreement also provides that whenever we may issue shares of our Common Stock or other securities convertible into, exercisable or exchangeable for our Common Stock, BGP will have certain pre-emptive rights to subscribe for

a number of such shares or other securities as may be necessary to retain its proportionate ownership of our Common Stock that would exist before such issuance. These pre-emptive rights are subject to usual and customary exceptions, such as issuances of securities as equity compensation to our directors, employees and consultants and under employee stock purchase plans.

- We formed a joint venture with BGP, owned 49% by us and 51% by BGP, to design, develop, manufacture and sell land-based seismic data acquisition equipment for the petroleum industry. The name of the joint venture company is INOVA Geophysical Equipment Limited. Under the terms of the joint venture transaction, INOVA Geophysical was initially formed as a wholly-owned direct subsidiary of ION, and BGP acquired its interest in the joint venture by paying us aggregate consideration of (i) $108.5 million in cash and (ii) contributing certain assets owned by BGP relating to the business of the joint venture.

Director Compensation

ION employees who are also directors do not receive any fee or remuneration for services as members of our Board. We currently have seven non-employee directors who qualify for compensation as directors. In addition to being reimbursed for all reasonable out-of-pocket expenses that the director incurs attending Board meetings and functions, our outside directors receive an annual retainer fee of $46,000. In addition, our Chairman of the Board receives an annual retainer fee of $25,000, our Chairman of the Audit Committee receives an annual retainer fee of $20,000, our Chairman of the Compensation Committee receives an annual retainer fee of $15,000, our Chairman of the Governance Committee receives an annual retainer fee of $10,000 and each co-Chairman of the Finance Committee receives an annual retainer fee of $5,000. Our non-employee directors also receive, in cash, $2,000 for each Board meeting attended and $2,000 for each committee meeting attended (unless the committee meeting is held in conjunction with a Board meeting, in which case the fee for committee meeting attendance is $1,000) and $1,000 for each Board or committee meeting attended via teleconference.

Each non-employee director also receives an initial grant of 533 vested shares of our Common Stock on the first quarterly grant date after joining the Board and follow-on grants each year of a number of shares of our Common Stock equal in market value to $110,000, up to an annual grant of 2,500 shares per director.

The following table summarizes the compensation earned by our non-employee directors in 2017:

Name(1)	Fees Earned or Paid in Cash ($)	Stock Awards ($)(2)	Non-Equity Incentive Plan Compensation ($)	Change in Pension Value and Nonqualified Deferred Compensation Earnings ($)	All Other Compensation ($)(3)	Total ($)
David H. Barr	63,000	12,250	—	—	98,875	174,125
Hao Huimin	54,000	12,250	—	—	98,875	165,125
Michael C. Jennings	62,000	12,250	—	—	98,875	173,125
James M. Lapeyre, Jr.	103,000	12,250	—	—	98,875	214,125
Franklin Myers	83,000	12,250	—	—	98,875	194,125
S. James Nelson, Jr.	87,000	12,250	—	—	98,875	198,125
John N. Seitz	63,000	12,250	—	—	98,875	174,125

(1) R. Brian Hanson, our President and Chief Executive Officer, is not included in this table because he was an employee of ION during 2017, and therefore received no compensation for his services as director. The compensation received by Mr. Hanson as an employee of ION during 2017 is shown in the Summary Compensation Table contained in "—*Executive Compensation*" below.

(2) All of the amounts shown represent the value of Common Stock granted under our Second Amended and Restated 2013 Long-Term Incentive Plan (the "2013 LTIP"). On March 1, 2017, each of our non-employee directors was granted an award of 2,500 shares of ION Common Stock. The values contained in the table are based on the grant-date fair value of awards of stock during the fiscal year.

(3) On March 1, 2017, the value of the 2,500 shares received by each of our non-employee directors was only $12,250 (using the closing price on the NYSE of $4.90 per share on the March 1, 2017 grant date) leaving a gap of $97,750 in the value of the equity awarded versus the $110,000 compensation target. As a result, the Governance Committee approved additional cash compensation to be provided to the Board in the amount of $97,750. The additional compensation is paid in quarterly increments.

As of December 31, 2017, our non-employee directors held the following unvested and unexercised ION equity awards:

Name	Unvested Stock Awards(#)	Unexercised Option Awards(#)
David H. Barr	2,500	—
Hao Huimin	2,500	—
Michael C. Jennings	2,500	—
James M. Lapeyre, Jr.	2,500	—
Franklin Myers	2,500	—
S. James Nelson, Jr.	2,500	—
John N. Seitz	2,500	—

OWNERSHIP OF EQUITY SECURITIES OF ION

Except as otherwise set forth below, the following table sets forth information as of February 28, 2018, with respect to the number of shares of Common Stock owned by (i) each person known by us to be a beneficial owner of more than 5% of our Common Stock, (ii) each of our directors, (iii) each of our executive officers named in the 2017 Summary Compensation Table included in this Proxy Statement and (iv) all of our directors and executive officers as a group. Except where information was otherwise known by us, we have relied solely upon filings of Schedules 13D and 13G to determine the number of shares of our Common Stock owned by each person known to us to be the beneficial owner of more than 5% of our Common Stock as of such date.

Name of Owner	Common Stock(1)	Rights to Acquire(2)	Restricted Stock(3)	Percent of Common Stock(4)
BGP Inc., China National Petroleum Corporation(5)	1,585,969			11.3%
James M. Lapeyre, Jr.(6)	1,237,690		2,500	8.8%
Laitram, L.L.C.(7)	979,816			7.0%
Invesco Ltd.(8)	924,292			6.6%
Empery Asset Management, LP(9)	727,250			5.2%
Footprints Asset Management & Research, Inc.(10)	722,398			5.1%
R. Brian Hanson(11)	105,455	95,857	49,536	1.8%
Steven A. Bate	97,287	46,422	16,308	1.1%
David H. Barr	20,433		2,500	*
Hao Huimin	7,256		2,500	*
Michael C. Jennings	10,433		2,500	*
Franklin Myers	25,633		2,500	*
S. James Nelson, Jr.	11,766		2,500	*
John N. Seitz	13,759		2,500	*
Matthew R. Powers	2,162	3,666	13,332	*
Christopher T. Usher	42,390	25,957	9,827	*
Kenneth G. Williamson	60,727	51,880	13,222	*
All directors and executive officers as a group (14 Persons)	1,695,807	256,866	133,936	14.6%

* Less than 1%

(1) Represents shares for which the named person (a) has sole voting and investment power or (b) has shared voting and investment power. Excluded are shares that (i) are unvested restricted stock holdings or (ii) may be acquired through stock option exercises.

(2) Represents shares of Common Stock that may be acquired upon the exercise of stock options held by our officers and directors that are currently exercisable or will be exercisable on or before April 29, 2018.

(3) Represents unvested shares subject to a vesting schedule, forfeiture risk and other restrictions. Although these shares are subject to risk of forfeiture, the holder has the right to vote the unvested shares unless and until they are forfeited.

(4) Assumes shares subject to outstanding stock options that such person has rights to acquire upon exercise, presently and on or before April 29, 2018, are outstanding.

(5) The address for BGP Inc., China National Petroleum Corporation is No. 189 Fanyang Middle Road, ZhuoZhou City, HeBei Province 072750 P.R. China.

(6) The shares of Common Stock held by Mr. Lapeyre include 99,402 shares that Mr. Lapeyre holds as a custodian or trustee for the benefit of his children, 979,816 shares owned by Laitram, and 699

shares that Mr. Lapeyre holds as a co-trustee with his wife for the benefit of his children, in all of which Mr. Lapeyre disclaims any beneficial interest. Please read note 7 below. Mr. Lapeyre has sole voting power over only 157,773 of these shares of Common Stock.

(7) The address for Laitram, L.L.C. is 220 Laitram Lane, Harahan, Louisiana 70123. Mr. Lapeyre is the President and Chief Executive Officer of Laitram. Please read note 6 above. Mr. Lapeyre disclaims beneficial ownership of any shares held by Laitram.

(8) The address for Invesco Ltd. is 1555 Peachtree Street NE, Atlanta, Georgia 30309.

(9) The address for Empery Asset Management, LP is 1 Rockefeller Plaza, Suite 1205, New York, New York 10020.

(10) The address for Footprints Asset Management & Research, Inc. is 11422 Miracle Hills Drive, Suite 208, Omaha, NE 68154.

(11) The shares of Common Stock held by Mr. Hanson include 666 shares owned by Mr. Hanson's wife, in which Mr. Hanson disclaims any beneficial interest.

Section 16(a) Beneficial Ownership Reporting Compliance

Section 16(a) of the Exchange Act requires directors and certain officers of ION, and persons who own more than 10% of ION's Common Stock, to file with the SEC and the NYSE initial statements of beneficial ownership on Form 3 and changes in such ownership on Forms 4 and 5. Based on our review of the copies of such reports, we believe that during 2017 our directors, executive officers and shareholders holding greater than 10% of our outstanding shares complied with all applicable filing requirements under Section 16(a) of the Exchange Act, and that all of their filings were timely made.

EXECUTIVE OFFICERS

Our executive officers are as follows:

Name	Age	Position with ION
R. Brian Hanson	53	President, Chief Executive Officer and Director
Steven A. Bate	55	Executive Vice President and Chief Financial Officer
Colin T. Hulme	66	Executive Vice President, Strategic Marketing and New Technologies and CEO OceanGeo
Matthew R. Powers	42	Executive Vice President, General Counsel and Corporate Secretary
Scott P. Schwausch	43	Vice President and Corporate Controller
Christopher T. Usher	57	Executive Vice President and Chief Operating Officer, Operations Optimization
Kenneth G. Williamson	53	Executive Vice President and Chief Operating Officer, E&P Technology & Services

For a description of the business background of Mr. Hanson, please see *"Item 1—Election of Directors—Class I Director Nominees for Re-Election for Term Expiring in 2018"* above.

Mr. Bate is currently our Executive Vice President and Chief Financial Officer. Mr. Bate rejoined ION in May 2013 as Senior Vice President, Systems Division, became the Executive Vice President and Chief Operating Officer, Systems Division in February 2014 and became the Executive Vice President and Chief Financial Officer in November 2014. Mr. Bate originally joined ION in 2005 as Chief Financial Officer of our GX Technology business unit. In 2007, he was appointed Senior Vice President, Sensor business unit and in 2009, his area of responsibility broadened to our Land Imaging Systems Division. Following our formation in March 2010 of INOVA Geophysical, a land seismic equipment joint venture with BGP, Mr. Bate was appointed as INOVA Geophysical's first President and Chief Executive Officer, and served in that role until October 2012. Prior to joining ION in 2005, Mr. Bate founded a consulting business and served as President of a residential construction company. Mr. Bate holds a Bachelor of Business Administration degree from the University of Houston.

Mr. Hulme is currently our Executive Vice President, Strategic Marketing and New Technologies and Chief Executive Officer of OceanGeo. Mr. Hulme joined ION in April 2012 as Senior Vice President, Strategic Marketing and in November 2013 was promoted to Senior Vice President, Ocean Bottom Services, and appointed to serve as the chief executive officer of OceanGeo B.V., a joint venture controlled by ION, became our Executive Vice President, Ocean Bottom Services in February 2015 and was named Executive Vice President, Strategic Marketing and New Technologies in February 2018. Prior to joining ION, Mr. Hulme held a variety of senior management positions at Schlumberger, Ltd., a global oilfield and information services company, from 1989 through 2011, including serving as Technical Director—Deep Reading for Schlumberger Wireline from 2006 to 2011, Vice President and General Manager of Seismic Data Processing for WesternGeco, a seismic solutions and technology subsidiary of Schlumberger, from 2002 to 2006, Vice President and General Manager for Reservoir Products, Schlumberger Information Services, from 2000 to 2002, Vice President and Business Manager for Asia Region, Schlumberger Information Services, from 1998 to 2000, and Corporate Marketing and Commercialization Manager for WesternGeco from 1994 to 1998. Prior to joining Schlumberger, Mr. Hulme began his career at Digicon Geophysical.

Mr. Powers joined ION in 2013 as Senior Legal Counsel and held that position until February 2016 when he was promoted to Deputy General Counsel. In September 2017, he was promoted to General Counsel and Corporate Secretary, and was further promoted to Executive Vice President in October 2017. Prior to joining ION, Mr. Powers held a variety of positions in the Houston offices of Mayer Brown LLP (beginning in 2005 and ending in 2012) and Sidley Austin LLP (beginning in 2012 and ending in 2013). Mr. Powers holds a Juris Doctor from the University of Chicago Law School and

a Bachelor's degree in Economics, summa cum laude, from the University of Colorado—Denver. He is licensed to practice in Texas.

Mr. Schwausch joined ION in 2006 as Assistant Controller and held that position until June 2010 when he became Director of Financial Reporting. In May 2012, he became Controller, Solutions Business Unit, and in May 2013 became Vice President and Corporate Controller. Mr. Schwausch held a variety of positions at Deloitte & Touche, LLP, a public accounting firm, from 2000 until he joined ION. Mr. Schwausch is a Certified Public Accountant and a Certified Management Accountant. He received a Bachelor of Science degree in accounting from Brigham Young University.

Mr. Usher is our Executive Vice President and Chief Operating Officer, Operations Optimization. Mr. Usher joined ION in November 2012 as the Executive Vice President and Chief Operating Officer, GeoScience Division. Prior to joining our Company, Mr. Usher served as the Senior Vice President, Data Processing, Analysis and Interpretation and Chief Technology Officer (including significant merger and acquisitions responsibility) of Global Geophysical Services, Inc., a NYSE-listed seismic products and services company, since January 2010. Prior to joining Global, Mr. Usher served from October 2005 to January 2010 as Senior Director at Landmark Software and Services (including significant merger and acquisition responsibility), a division of Halliburton Company, an oilfield services company. From 2004 to 2005, he was Senior Corporate Vice President, Integrated Services, at Paradigm Geotechnology, an E&P software company. From 2000 to 2003, Mr. Usher served as President of the global data processing division of Petroleum Geo-Services (PGS), a marine geophysical contracting company. He began his career at Western Geophysical where he served in a number of roles over his 17-year tenure before becoming the Worldwide VP Technology. Mr. Usher holds a Bachelor of Science degree in geology and geophysics from Yale University.

Mr. Williamson is our Executive Vice President and Chief Operating Officer, E&P Technology & Services. Mr. Williamson originally joined ION as Vice President of our GeoVentures business unit in September 2006, became a Senior Vice President in January 2007, and became Executive Vice President and Chief Operating Officer, GeoVentures Division, in November 2012 and Executive Vice President and Chief Operating Officer of E&P Technology & Services in February of 2015. Between 1987 and 2006, Mr. Williamson was employed by Western Geophysical, which in 2000 became part of WesternGeco, a seismic solutions and technology subsidiary of Schlumberger, Ltd., a global oilfield and information services company. While at WesternGeco, Mr. Williamson served as Vice President, Marketing from 2001 to 2003, Vice President, Russia and Caspian Region, from 2003 to 2005 and Vice President, Marketing, Sales & Commercialization of WesternGeco's electromagnetic services and technology division from 2005 to 2006. Mr. Williamson holds a Bachelor of Science degree in geophysics from Cardiff University in Wales.

EXECUTIVE COMPENSATION

Introductory note: *The following discussion of executive compensation contains descriptions of various employee benefit plans and employment-related agreements. These descriptions are qualified in their entirety by reference to the full text or detailed descriptions of the plans and agreements, which are filed or incorporated by reference as exhibits to our annual report on Form 10-K, as amended, for the year ended December 31, 2017. In this discussion, the terms "ION," "we," "our" and "us" refer to ION Geophysical Corporation and its consolidated subsidiaries, except where the context otherwise requires or as otherwise indicated.*

Compensation Discussion and Analysis

This Compensation Discussion and Analysis provides an overview of the Compensation Committee of the Company's Board of Directors, a discussion of the background and objectives of our compensation programs for our senior executives, and a discussion of all material elements of the compensation of each of the executive officers identified in the following table, whom we refer to as our named executive officers ("NEOs"):

Name	Title
R. Brian Hanson	President, Chief Executive Officer and Director
Steven A. Bate	Executive Vice President and Chief Financial Officer
Matthew R. Powers	Executive Vice President, General Counsel and Corporate Secretary
Christopher T. Usher	Executive Vice President and Chief Operating Officer, Operations Optimization
Kenneth G. Williamson	Executive Vice President and Chief Operating Officer, E&P Technology & Services

Executive Summary

General. Our executive compensation program provides our NEOs with total annual compensation that includes three principal elements: base salary, performance-based annual non-equity incentive plan compensation (annual cash bonuses), and long-term equity-based incentive awards. (For the purposes of this Compensation Discussion and Analysis, our stock appreciation rights awards ("SARs") are categorized as long-term equity-based incentive awards because, while they are cash-settled, their value is determined by the spread between the price of the Company's common stock on the date they are granted and the price of the Company's common stock on date they are exercised). A significant portion of each NEOs' total annual compensation is performance based and is at risk and dependent upon our Company's achievement of specific, measurable performance goals. Our performance-based pay closely aligns our NEOs' interests with those of our shareholders and promotes the creation of shareholder value, without encouraging excessive risk-taking. In addition, our equity programs, combined with our executive share ownership requirements are designed to reward long-term stock performance and encourage investment in the Company.

Restoration of Base Salaries. Due to the difficulties the Company, its customers, and the industry experienced in the recent downturn, base salaries for all of our NEOs were decreased by 10% on April 27, 2015. This decrease remained in effect throughout 2016 and most of 2017. In consultation with the Compensation Committee, the Company restored base salaries of our NEOs to their April 26, 2015 levels in August 2017. In total, base salary reductions remained in place for approximately 27 months.

Annual Bonus Incentive Plan. Payments under our annual cash bonus incentive plan for 2017 (which were made in February 2018) reflected the Company's performance and the level of achievement of our 2017 plan performance goals. NEOs' bonus targets range from 60% to 100% of their annual base salaries. In 2014, NEOs (other than the CEO) could earn up to 200% of their bonus targets in a given year, depending on their individual performance and the performance of the Company. Commencing in 2015, in view of the extremely challenging business climate that the Company faced, the Compensation Committee reduced the maximum amount earnable by these NEOs to 125% of their respective targets. This cap was continued through 2016 but lifted in 2017 in view of the improved performance of the Company and improved business climate. The total dollars that could have been achieved under the bonus plan pool were increased from $9.2 million in 2016 to a maximum of $14 million in 2017.

The Compensation Committee determined that the bonus available for awards paid to our NEOs under the 2017 plan should be based on a combination of long-term strategic initiatives and cash generation goals. In early 2018, the Compensation Committee reviewed the Company's progress towards the achievement of the strategic initiatives and cash generated from operations, and approved a bonus for each NEO based on each individual's achievement of key objectives and company performance. In approving the individual awards to our NEOs in February 2018, the Compensation Committee noted that our NEOs' efforts had helped to drive our cash generation objectives during the most challenging economic period for our industry in several decades, helped position us to take advantage of the next upturn in the energy cycle by pursuing the long-term strategic initiatives, and helped us to achieve substantial year-over-year improvements from 2016.

Equity Investment Program and Early Exercise of SARs. In 2016, the Compensation Committee awarded SARs to several of its key employees, including all of the NEOs, with the intent of keeping the management team highly focused on executing the Company's strategy to drive recovery in the Company's stock price. These SARs were scheduled to vest in three equal tranches—on March 1 of 2017, 2018 and 2019, respectively—and had a ceiling of $22.50 a share. Because of the significant upward movement in the Company's stock price in 2017, the Compensation Committee perceived a real possibility of the stock price hitting or exceeding $22.50 per share in the first quarter of 2018, which would have resulted in the automatic exercise of the SARs and a cash obligation to the Company of approximately $13 million. In order to minimize the potential cash flow impact of such an auto-exercise of the SARs in the first quarter of 2018, to mitigate the ongoing mark to market accounting requirements for cash-settled SARs, and to afford the SARs participants liquidity to invest in common stock of the Company in connection with an equity investment program (described below), the Compensation Committee accelerated the vesting of the second tranche of these SARs awards from March 1, 2018 to December 13, 2017. Additionally, in order to encourage the Company's executive officers and other key employees to purchase common stock of the Company and further align their interests with those of the Company's stockholders, the Board authorized and approved an equity investment program (the "EIP"), pursuant to which all of the NEOs, and certain other key employees of the Company, were permitted, but not obligated, to purchase unregistered shares of common stock of the Company directly from the Company at market prices. In connection with any such purchases, the Compensation Committee authorized and approved a grant, by the Company, to such purchasing NEOs and other key employees, of a certain number of shares of restricted stock. The Compensation Committee also authorized and approved to grant the EIP participants a certain number of shares of restricted stock in connection with certain purchases of shares of the Company's common stock in the open market. Specifically, for each five (5) shares directly purchased from the Company or in the open market between December 13, 2017 and December 31, 2017, the Company agreed to issue one (1) share of restricted stock, subject to certain limitations as to the total number of restricted shares to be issued by the Company. Grants of the restricted stock occurred on March 1, 2018, and will vest ninety days thereafter, subject to the other terms and conditions of the Company's form of restricted stock agreement and the Company's long-term incentive plan. All of the NEOs, and many additional key employees, elected to exercise their first two tranches of SARs on December 15, 2017, and elected to participate in the EIP. Based on the continued rise in our stock price, the early exercise of these SARs by our NEOs and several other employees saved the Company about $7 million of cash in 2018.

Except for the award of restricted stock in connection with the EIP, the Compensation Committee approved equity compensation for only one NEO in 2017: Mr. Powers, who was awarded restricted stock and stock options in connection with his promotion to General Counsel, Corporate Secretary and Executive Vice President in 2017.

Corporate Governance

Compensation Committee

The Compensation Committee of our Board reviews and approves, or recommends to the Board for approval, all salary and other remuneration for our NEOs and oversees matters relating to our employee compensation and benefit programs. No member of the Compensation Committee is an employee of ION. The Board has determined that each member of the Compensation Committee satisfies the definition of "independent" as established in the NYSE corporate governance listing standards. In determining the independence of each member of the Compensation Committee, the Board considered all factors specifically relevant to determining whether the director has a relationship to our Company that is material to the director's ability to be independent from management in the execution of his duties as a Compensation Committee member, including, but not limited to:

- the source of compensation of the director, including any consulting, advisory or other compensatory fee paid by us to the director; and
- whether the director is affiliated with our Company, a subsidiary or affiliate.

When considering the director's affiliation with us for purposes of independence, the Board considered whether the affiliate relationship places the director under the direct or indirect control of our Company or its senior management, or creates a direct relationship between the director and members of senior management, in each case, of a nature that would impair the director's ability to make independent judgments about our executive compensation.

The Compensation Committee operates pursuant to a written charter that sets forth its functions and responsibilities. A copy of the charter can be viewed on our website at *http://ir.iongeo.com/phoenix.zhtml?c=101545&p=irol-govhighlights*. For a description of the responsibilities of the Compensation Committee, see *"Item 1.—Election of Directors—Committees of the Board—Compensation Committee"* above.

During 2017, the Compensation Committee met four times.

Compensation Consultants

The Compensation Committee has the authority and necessary funding to engage, terminate and pay compensation consultants, independent legal counsel and other advisors in its discretion. Prior to retaining any such compensation consultant or other advisor, the Compensation Committee evaluates the independence of such advisor and evaluates whether such advisor has a conflict of interest. In 2015 and 2016, the Compensation Committee engaged Aon Hewitt to provide advisory services with regard to the preparation of the proxy statement. No advisory services were utilized for this year's proxy statement.

Role of Management in Establishing and Awarding Compensation

On an annual basis, our Chief Executive Officer, with the assistance of our Human Resources department, recommends to the Compensation Committee any proposed increases in base salary, bonus payments and equity awards for our NEOs other than himself. No NEO is involved in determining his own salary increase, bonus payment or equity award. When making officer compensation recommendations, our Chief Executive Officer takes into consideration compensation benchmarks, which include industry standards for similar sized organizations serving similar markets, as well as comparable positions, the level of inherent importance and risk associated with the position and function, and the executive's job performance over the previous year. See "*—Objectives of Our Executive Compensation Programs—Benchmarking*" and *"—Elements of Compensation—Base Salary"* below.

Our Chief Executive Officer, with the assistance of our Human Resources department and input from our senior management, also formulates and proposes to the Compensation Committee an employee bonus incentive plan for the ensuing year. For a description of our process for formulating the employee bonus incentive plan and the factors that we consider, see "*—Elements of Compensation—Bonus Incentive Plan*" below.

The Compensation Committee reviews and approves all compensation and awards to NEOs and all bonus incentive plans. With respect to equity compensation awarded to employees other than NEOs, the Compensation Committee reviews and approves all grants of restricted stock and stock options above 5,000 shares, generally based upon the recommendation of the Chief Executive Officer, and has delegated option and restricted stock granting authority to the Chief Executive Officer as permitted under Delaware law for grants to non-NEOs of up to 5,000 shares.

Of its own initiative, at least once a year, the Compensation Committee reviews the performance and compensation of our Chief Executive Officer and, following discussions with the Chief Executive Officer and other members of the Board, establishes his compensation level. Where it deems appropriate, the Compensation Committee will also consider market compensation information from independent sources. See "*—Objectives of Our Executive Compensation Programs—Benchmarking*" below.

Certain members of our senior management generally attend most meetings of the Compensation Committee, including our Chief Executive Officer and our Executive Vice President, General Counsel & Corporate Secretary. However, no member of management votes on items being considered by the Compensation Committee. The Compensation Committee and Board do solicit the views of our Chief Executive Officer on compensation matters, particularly as they relate to the compensation of the other NEOs and the other members of senior management reporting to the Chief Executive Officer. The Compensation Committee often conducts an executive session during meetings, during which members of management are not present.

Objectives of Our Executive Compensation Programs

General Compensation Philosophy and Policy

Through our compensation programs, we seek to:

- attract and retain qualified and productive executive officers and key employees by providing total compensation competitive with that of other executives and key employees employed by companies of similar size, complexity and industrial sector;
- encourage our executives and key employees to drive the Company's financial and operational performance;
- structure compensation to create meaningful links between corporate performance, individual performance and financial rewards;
- align the interests of our executives with those of our shareholders by providing a significant portion of total pay in the form of equity-based incentives;
- encourage long-term commitment to our Company; and
- limit corporate perquisites to seek to avoid perceptions both within and outside of our Company of "soft" compensation.

Our governing principles in establishing executive compensation have been:

Long-Term and At-Risk Focus. Compensation opportunities should be composed of long-term, at-risk pay to focus our management on the long-term interests of our Company.

Equity Orientation. Equity-based plans should comprise a major part of the at-risk portion of total compensation to instill ownership thinking and to link compensation to corporate performance and shareholder interests.

Competitive. We emphasize total compensation opportunities consistent on average with our peer group of companies. Competitiveness of annual base pay and annual bonuses is independent of stock performance. However, overall competitiveness of total compensation is generally contingent on long-term, equity-based compensation programs. Base salary, annual bonuses and employee benefits should be close to competitive levels when compared to similarly situated companies.

Focus on Total Compensation. In making decisions with respect to any element of an NEO's compensation, the Compensation Committee considers the total compensation that may be awarded to the NEO, including salary, annual cash bonus and long-term equity-based incentive compensation. The Compensation Committee analyzes all of these elements of compensation (including the compensation mix) as well as the aggregate total amount of actual and projected compensation. In its most recent review of total compensation, the Compensation Committee determined that annual compensation amounts for our Chief Executive Officer and our other NEOs remained generally consistent with the Compensation Committee's expectations. However, the Compensation Committee reserves the right to make changes that it believes are warranted.

Internal Pay Equity. Our core compensation philosophy is to pay our NEOs competitive levels of compensation that best reflect their individual responsibilities and contributions to our Company, while providing incentives to achieve our business and financial objectives. While comparisons to compensation levels at other companies are helpful in assessing the overall competitiveness of our compensation program, we believe that our executive compensation program also must be internally consistent and equitable in order for our Company to achieve our corporate objectives. Over time, there have been variations in the comparative levels of compensation of NEOs and changes in the overall composition of the management team and the overall accountabilities of the individual NEOs; however, we and the Compensation Committee are satisfied that total compensation received by NEOs reflects an appropriate differential for executive compensation.

These principles apply to compensation policies for all of our NEOs and key employees. We do not follow the principles in a mechanistic fashion; rather, we apply experience and judgment in determining the appropriate mix of compensation for each individual. This judgment also involves periodic review of discernible measures to determine the progress each individual is making toward agreed-upon goals and objectives.

Benchmarking

When making compensation decisions, we also look at the compensation of our Chief Executive Officer and other NEOs relative to the compensation paid to similarly situated executives at companies that we consider to be our industry and market peers—a practice often referred to as "benchmarking." We believe, however, that a benchmark should be just that—a point of reference for measurement—but not the determinative factor for our executives' compensation. The purpose of the comparison is not to supplant the analyses of internal pay equity, total wealth accumulation and the individual performance of the NEOs that we consider when making compensation decisions. Because the comparative compensation information is just one of the several analytic tools that are used in setting executive compensation, the Compensation Committee has discretion in determining the nature and extent of its use. Further, given the limitations associated with comparative pay information for setting individual executive compensation, including the difficulty of assessing and comparing wealth accumulation through equity gains, the Compensation Committee may elect not to use the comparative compensation information at all in the course of making compensation decisions.

In most years, at least once each year, our Human Resources department, under the oversight of the Compensation Committee, reviews data from market surveys, independent consultants and other sources to assess our competitive position with respect to base salary, annual bonuses and long-term incentive compensation. When reviewing compensation data in October 2017, we utilized data primarily from the 2017 Radford salary surveys, the 2017 Towers Watson surveys and the 2017 Mercer Total Compensation Survey for the Energy Sector ("2017 MTCS").

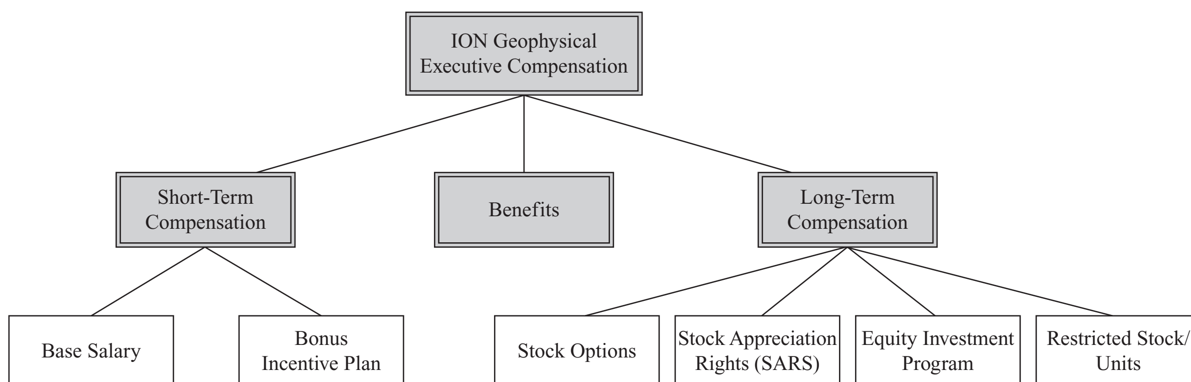
The overall results of the compensation surveys provide a starting point for our compensation analysis. We believe that the surveys contain relevant compensation information from companies that are representative of the sector in which we operate, have relative size as measured by market capitalization and experience relative complexity in the business and the executives' roles and responsibilities. Beyond the survey numbers, we look extensively at a number of other factors, including our estimates of the compensation at our most comparable competitors and other companies that were closest to our Company in size, profitability and complexity. We also consider an individual's current performance, the level of responsibility, and the employee's skills and experience, collectively, in making compensation decisions.

In the case of our Chief Executive Officer and some of our other NEOs, we also consider our Company's performance during the person's tenure and the anticipated level of compensation that would be required to replace the person with someone of comparable experience and skill.

In addition to our periodic review of compensation, we also regularly monitor market conditions and will adjust compensation levels from time to time as necessary to remain competitive and retain our most valuable employees. When we experience a significant level of competition for retaining current employees or hiring new employees, we will typically reevaluate our compensation levels within that employee group in order to ensure our competitiveness.

Elements of Compensation

The primary components of our executive compensation program are as follows:



Below is a summary of each component:

Base Salary

General. The general purpose of base salary for our NEOs is to create a base of cash compensation for the officer that is consistent on average with the range of base salaries for executives in similar positions and with similar responsibilities at comparable companies. In addition to salary norms for persons in comparable positions at comparable companies, base salary amounts may also reflect the nature and scope of responsibility of the position, the expertise and experience of the individual employee and the competitiveness of the market for the employee's services. Base salaries of

executives other than our Chief Executive Officer may also reflect our Chief Executive Officer's evaluation of the individual NEO's job performance. As a result, the base salary level for each individual may be above or below the target market value for the position. The Compensation Committee also recognizes that the Chief Executive Officer's compensation should reflect the greater policy-and decision-making authority that he holds and the higher level of responsibility he has with respect to our strategic direction and our financial and operating results. As of December 31, 2017, our Chief Executive Officer's annual base salary was 55% higher than the annual base salary for the next highest-paid NEO and 70% higher than the average annual base salary for all of our other NEOs. The Compensation Committee does not intend for base salaries to be the vehicle for long-term capital and value accumulation for our executives.

2017 Actions. In typical years, base salaries are reviewed at least annually and may also be adjusted from time to time to realign salaries with market levels after taking into account individual responsibilities and changes in responsibilities, performance and contribution to ION, experience, impact on total compensation, relationship of compensation to other ION officers and employees, and changes in external market levels.

Restoration of 2015 Level Base Salaries; No Annual Raises. Commencing in late 2014, our business experienced a significant decline due in large part to the historic decline in oil and gas prices, which negatively impacted demand for our products and services and thus adversely affected our financial results. We took a number of actions to reduce costs in our business and to improve our operating performance, including substantial reductions in our work force. In mid-2015, we also implemented a base salary reduction program in a further effort to reduce our operating costs. Under the salary reduction program, base salaries for all employees in the United States and United Kingdom who earned more than a certain designated annual threshold (which included all NEOs) were reduced by 10%. In consultation with the Compensation Committee, the Company discontinued the salary reduction program effective August 15, 2017. Aside from the restoring of base salaries to their

pre-reduction levels, no increases in base salary were approved for any NEO except for Mr. Powers, as described below:

Named Executive Officer	Action
R. Brian Hanson	Mr. Hanson's salary was reduced by 10% from $600,000 to $540,000 in 2015 and remained at that level through mid-August 2017. At that time, his base salary returned to $600,000. The 2017 MTCS Survey indicated that the mean CEO base salary for surveyed companies in the Services and Drilling sector was $603,000.
Steven A. Bate	Mr. Bate's salary was reduced by 10% from $375,000 to $337,500 in 2015 and remained at that level through mid-August 2017. At that time, his base salary returned to $375,000. The 2017 MTCS Survey indicated that the mean of CFO base salary for surveyed companies in the Services and Drilling sector was $445,700.
Matthew R. Powers	Mr. Powers was promoted from Deputy General Counsel to General Counsel and Corporate Secretary in September 2017. His salary was set at $250,000. In October 2017, Mr. Powers was further promoted to Executive Vice President and his salary was increased to $275,000. The 2017 MTCS Survey indicated that the mean Top Legal Executive base salary for surveyed companies in the Services and Drilling sector was $398,500.
Christopher T. Usher	Mr. Usher's salary was reduced by 10% from $378,560 to $340,704 in 2015 and remained at that level through mid-August 2017. At that time, his base salary was returned to $378,560. The 2017 MTCS Survey indicated that the mean Chief Operating Officer—Subsidiary/Group/Division base salary for surveyed companies in the Services and Drilling sectors was $426,600.
Kenneth G. Williamson	Mr. Williamson's salary was reduced by 10% from $387,213 to $348,492 in 2015 and remained at that level through mid-August 2017. At that time, his base salary was returned to $387,213. The 2017 MTCS Survey indicated that the mean Chief Operating Officer—Subsidiary/Group/Division base salary for surveyed companies in the Services and Drilling sectors was $426,600.

Bonus Incentive Plan

Our employee annual bonus incentive plan is intended to promote the achievement each year of the Company's performance objectives, the employee's particular business unit's performance objectives, and to recognize those employees who contributed to the Company's achievements. The plan provides cash compensation that is at-risk on an annual basis by establishing bonus pools for each business unit contingent on achievement of annual business and operating objectives. The plan also provides for individual awards designed to reward company and individual performance. This provides all participating employees the opportunity to share in the Company's performance through the achievement of established financial and individual objectives. The financial and individual objectives within the plan are intended to measure an increase in the value of our Company.

For several consecutive years, the Compensation Committee has approved an annual bonus incentive plan. Performance under the annual bonus incentive plan is measured with respect to the designated plan fiscal year. Payments under the plan are paid in cash in an amount reviewed and

approved by the Compensation Committee and are ordinarily made in the first quarter following the completion of a fiscal year, after the financial results for that year have been determined.

Our annual bonus incentive plan is usually consistent with our operating plan for the same year. In early 2017, we prepared a consolidated-company operating budget for 2017 and individual operating budgets for each operating unit. The budgets took into consideration our views on market opportunities, customer and sale opportunities, technology enhancements for new products, product manufacturing and delivery schedules and other operating factors known or foreseeable at the time. The Board analyzed the proposed budgets with management extensively and, after analysis and consideration, the Board approved the consolidated 2017 operating plan. During early 2017, our Chief Executive Officer worked with our Human Resources department and members of senior management to formulate our 2017 bonus incentive plan, consistent with the 2017 operating plans approved by the Board.

At the beginning of 2017, the Compensation Committee approved our 2017 bonus incentive plan for executives and certain designated non-executive employees. The computation of awards generated under the plan is required to be approved by the Compensation Committee. In February 2018, the Compensation Committee reviewed the Company's actual performance against each of the plan performance goals established at the beginning of 2017 and evaluated the individual performance of each NEO during 2017. The results of operations of our Company for 2017 and individual performance evaluations determined the appropriate payouts under the annual bonus incentive plan.

The Compensation Committee has discretion in circumstances it determines are appropriate to authorize discretionary bonus awards that might exceed amounts that would otherwise be payable under the terms of the bonus incentive plan. These discretionary awards can be payable in cash, stock options, restricted stock, restricted stock units, SARs, or a combination thereof. Any stock options, restricted stock, restricted stock units or SARs awarded would be granted under one of our existing long-term equity compensation plans or stock appreciation rights plans. The Compensation Committee also has the discretion, in appropriate circumstances, to grant a lesser bonus award, or no bonus award at all, under the bonus incentive plan.

Our bonus incentive plans are designed for payouts that generally track the financial performance of our Company. The general intent of the plans is to reward key employees based on the Company's and the employee's performance, in each case measured against internal targets and plans. In most years when our Company financial performance is strong, cash bonus payments are generally higher. Likewise, when our financial performance is low as compared to our internal targets and plans, cash bonus payments are generally lower. There are occasionally exceptions to this general trend. For example, in 2008 and 2011, we achieved improved financial performance over the previous year, but average cash bonus awards under our annual bonus incentive plans were relatively lower because we did not achieve our internal financial and growth objectives for the relevant years. In 2012, we achieved improved financial performance over the previous year, but our average bonus award paid to our NEOs remained at approximately the same level as 2011 because our internal financial objectives for 2012 were higher than in 2011. This history demonstrates a clear and consistent link between our NEO bonus incentive compensation and our performance.

Below are general descriptions of our 2017 bonus incentive plan and our Company performance criteria applicable to the plan.

2017 Bonus Incentive Plan. The purpose of the 2017 bonus incentive plan was to provide an incentive for our participating employees to achieve their highest level of individual and business unit performance and to align the employees to accomplish and share in the achievement of our Company's 2017 strategic and financial goals.

The bonus program includes a three-step process:

1. The total bonus pool is established in our annual operating plan based on approximate percentages of base salary and our expected headcount. As discussed below, the total bonus pool consists of two variable components (i) the achievement of certain long-term strategic initiatives, and (ii) the satisfaction of cash generation criteria.
2. The total bonus pool is allocated among our business units based on satisfaction of both the strategic initiatives and the cash generation objectives.
3. Once the bonus pool for each business unit is funded, individual bonuses are determined by business unit managers by evaluating each eligible employee's individual and team performance, and the computation of individual awards is approved by the Compensation Committee.

Achievement of our strategic initiatives and cash generation target establishes a guideline funding level of the bonus pool available to our NEOs. The final actual amount paid to our NEOs are at the discretion of the Compensation Committee based on its overall assessment of other qualitative and quantitative corporate and individual criteria in accordance with the compensation philosophy and policy described above.

Designated employees, including our NEOs, were eligible to participate in our 2017 bonus incentive plan. Under the 2017 plan, approximately 35% of the funds allocated for distribution were available for awards to eligible employees based on achievement of certain long-term strategic initiatives in 2017 and approximately 65% of the funds allocated for distribution were available for distribution to eligible employees only to the extent we satisfied the designated 2017 cash generation criteria. In addition, the 2017 plan was structured to be capped at 165% achievement, with the 65% upside being fundable based on over-achieving the cash generation target. This was in contrast to no upside for over performance in 2016 (that is, the maximum funding opportunity was 100%); 150% in 2015; and 200% in 2014. The amount of total dollars available for distribution under the bonus incentive plan was directly tied to the Company's achievement of financial objectives.

Our 2017 bonus incentive plan established the achievement of long-term strategic initiatives and cash generation as the performance goals. The strategic initiatives were selected to ensure that the Company's cash generation and expense reduction efforts did not result in long-term harm to the Company and appropriately balanced short-term savings against ensuring the long-term viability of our Company. For 2017, the Compensation Committee selected strategic initiatives focused on achieving break-even cash flow; developing a commercialization strategy for our next generation ocean bottom seismic acquisition system that would position us to launch it in 2018; protecting and expanding our software business; fostering the long-term integrity of our multi-client business by growing our data library; and implementing several cultural initiatives and objectives designed to foster a "customer first" culture of continuous improvement and technical innovation. The Company reported progress on all of the initiatives to the Board throughout the year. At the conclusion of 2017, the Compensation Committee determined that five out of the five strategic objectives had been met or exceeded and recommended funding 100% of the 35% target or $3.0 million dollars related to the strategic initiatives.

In addition to the strategic initiatives, the Compensation Committee also established a critical emphasis on metrics for cash generated from operations. Cash from operations was the cash ION recorded in its bank accounts globally, based on collection of customer payments, offset by the payment of vendors, employee payroll taxes, utilities, and similar matters, and excluding cash from external funding arrangements, interest payments and any other special items or modifications as approved by the Compensation Committee from time to time.

Cash generation was selected as the most appropriate performance goal for our 2017 plan because the Compensation Committee believed that cash from operations was the best indicator of our

Company's overall performance at that time and evidenced a direct correlation with the interests of our shareholders and the ability of our Company to persevere through the recent industry downturn. As a result, 65% of the bonus pool was tied to the achievement of these objectives. When determining whether financial targets had been achieved under the 2017 plan, the Compensation Committee had the discretion to modify or revise the targets as necessary to reflect any significant beneficial or adverse change that resulted in a substantial positive or negative effect on our performance as a whole, such as sales of assets, mergers, acquisitions, divestitures, spin-offs or unanticipated matters such as economic conditions, indicators of growth or recession in our business segments, nature of our operations or changes in or effect of applicable laws, regulations or accounting practices.

NEO's bonus targets range from 60% to 100% of their respective annual base salaries. In years prior to 2015, every participating NEO other than our Chief Executive Officer could earn up to 200% of their bonus targets in a given year, depending on their individual performance and the performance of the Company. Commencing in 2015, in view of the extremely challenging business climate that the Company faced, the Compensation Committee reduced the maximum amount earnable by these NEO's to 125% of their respective targets. This cap was continued through 2016 but lifted in 2017 in view of the improved performance of the Company and improved business climate. In 2017, each NEO, including our Chief Executive Officer, was eligible to receive up to 200% of his bonus target. The Compensation Committee has the discretion to determine the amounts of individual bonus awards.

Performance Criteria. In 2017, the Compensation Committee approved a plan that emphasized the critical importance placed on cash generation as the criteria for consideration of bonus awards to the NEOs and other covered employees under our 2017 bonus incentive plan:

Threshold Adjusted Cash from Operations	Target Adjusted Cash from Operations	Maximum Adjusted Cash from Operations
$0.0 million	$15.0 million	$37.0 million

Where an employee is primarily involved in a particular business unit, the financial performance criteria under the bonus incentive plan are weighted toward the operational performance of the employee's business unit rather than consolidated company performance. The "*Non-Equity Incentive Plan Compensation*" column of the 2017 Summary Compensation Table below reflects the payments that our NEOs earned and received under our 2017 bonus incentive plan, and the "*Bonus*" column of the same table reflects any discretionary cash bonus payments received by our NEOs during 2017. Our 2017 cash from operations exceeded the threshold target performance criteria under our 2017 bonus incentive plan by $6.1 million. However, given the difficult business climate of the past several years, the Compensation Committee authorized only $4.2 million for the portion of the bonus pool determined by cash generation. This amount was 60% of what was authorized under the plan as adopted in early 2017. When combined with the amounts approved in connection with the achievement of long-term strategic initiatives ($3.0 million) the total bonus pool available for distribution in 2017 was approximately $7.2 million.

In addition to overall company performance, when considering the 2017 bonus incentive plan awards paid to our NEOs, the Compensation Committee also considered the individual performances and accomplishments of each officer. In considering the bonus award paid to Mr. Hanson, the Compensation Committee considered Mr. Hanson's achievement of each of the five key strategic objectives for the Company as well as the Company's achievement of its cash target. As previously stated, the five strategic objectives were (i) achieving break-even cash flow; (ii) developing a commercialization strategy for our next generation ocean bottom seismic acquisition system that would position us to launch it in 2018; (iii) protecting and expanding our software business; (iv) to foster the long-term integrity of our multi-client business by growing our data library; and (v) implementing several cultural initiatives and objectives designed to foster a "customer first" culture of continuous improvement and technical innovation. The Compensation Committee also evaluated Mr. Hanson

against the Company's achievement of the cash targets established for 2017. Finally, the Compensation Committee took into consideration Mr. Hanson's effective leadership in our achievement of several important strategic objectives during the year and substantial year-over-year improvements from 2016. Like the pool established for the Company, the bonus awarded by the Compensation Committee to Mr. Hanson reflects the substantial achievement of his five objectives and the Company exceeding its cash target.

When considering the bonus award paid to Mr. Bate, the Compensation Committee took into consideration his performance against the objectives set for Mr. Bate. Mr. Bate's objectives included (i) achieving break-even cash flow; (ii) establishing a project funding mechanism for significant strategic initiatives; (iii) addressing and finalizing a plan to deal with the 2018 bond maturity through capital structure management; and (iv) increasing marketing efforts for the Company's shares to position the Company for increased analyst coverage in 2018. In addition to his objectives, the Compensation Committee also considered his leadership in reducing the Company's operating costs and his leadership and engagement with shareholders that helped to drive the Company's improved performance when coming out of a difficult and critical time for the Company and the industry. In the bonus awarded to Mr. Bate, the Compensation Committee determined that Mr. Bate achieved four of the four objectives. In addition, Mr. Bate successfully oversaw the execution of the EIP and the related early retirement of the first two tranches of the 2016 SARs noted in the Executive Summary of this Compensation Discussion and Analysis.

The annual performance objectives for NEOs that report to our Chief Executive Officer are typically determined by our Chief Executive Officer, in collaboration with the NEO, in January or February. Because Mr. Powers was promoted to the role of General Counsel in September of 2017, he and Mr. Hanson did not set performance objectives for Mr. Powers in that role for 2017. When considering the bonus award paid to Mr. Powers, the Compensation Committee took into consideration his performance in 2017 against the objectives set for the Company.

When considering the bonus award paid to Mr. Usher, the Compensation Committee took into consideration his performance against the objectives set for Mr. Usher. Mr. Usher's objectives included (i) protecting and expanding the Company's command and control software business; (ii) expanding the Company's software business into new markets: (iii) driving the commercial launch of the Company's Devices segment's incremental offerings; and (iv) crafting and implementing a medium-term strategy for the Company's Devices segment. In the bonus awarded to Mr. Usher, the Compensation Committee determined that Mr. Usher achieved four of the four objectives. In addition, the Compensation Committee determined that Mr. Usher successfully led strategic efforts to expand Company offerings to alternative markets.

When considering the bonus award paid to Mr. Williamson, the Compensation Committee took into consideration his performance against the objectives set for Mr. Williamson. Mr. Williamson's objectives included (i) commencing two new multiclient programs in 2017 that involved large scale 3D reprocessing or new acquisitions, with prefunding or financing vehicles in place to maintain the Company's exposure to program cost at predetermined levels; (ii) establishing a master services partnership agreement with a 3D seismic services provider to provide an integrated proprietary services offering and engage in a qualification process with two E&P companies that the provider was not previously qualified to operate with; developing and entering into at least one large scale E&P Advisory services agreement with a combination of fee for service and a material upside potential with a host government or other E&P focused entity; and (iv) obtaining more than $4 million of commitments to new data processing proprietary business models using the Company's accelerated workflow or Galaxy portal. In the bonus awarded to Mr. Williamson, the Compensation Committee determined that Mr. Williamson achieved four of the four objectives. In addition, the Compensation Committee determined that Mr. Williamson successfully integrated several vertical subgroups within his segment to drive integrated offerings and oversaw one of our most successful multiclient offerings.

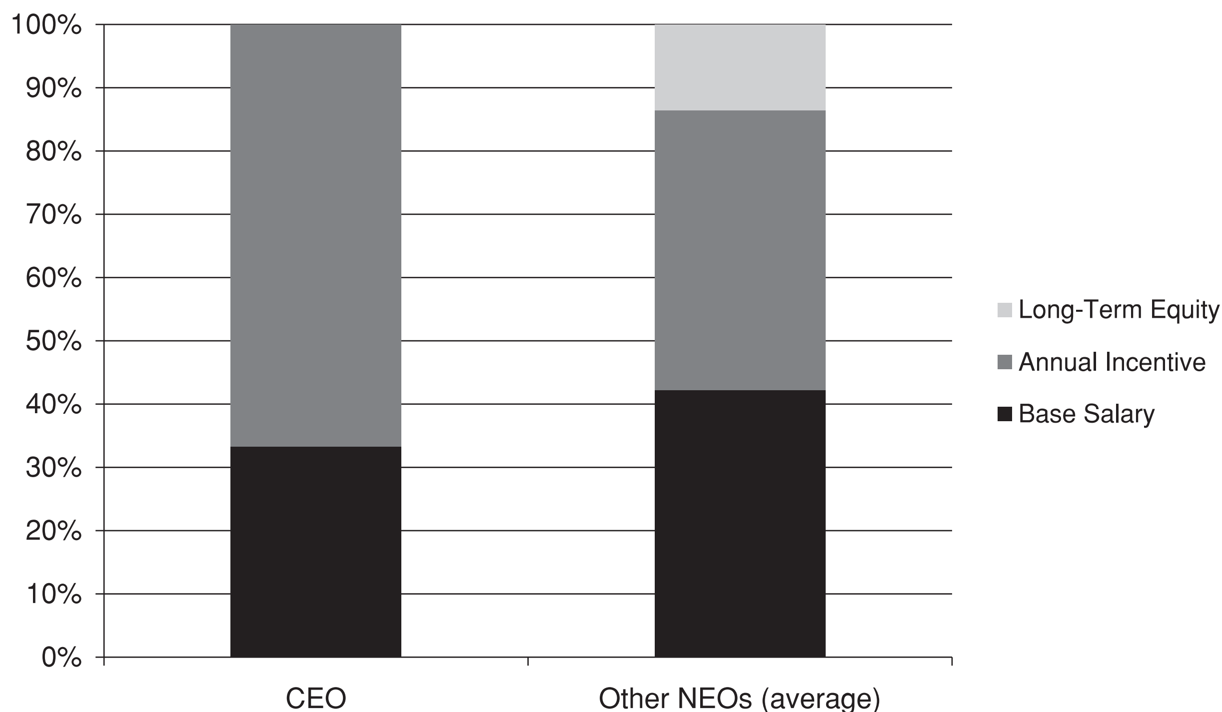
The total compensation paid to each NEO is set forth in the graph titled "*Summary Compensation Table*".

The Compensation Committee reviews the annual bonus incentive plan each year to ensure that the key elements of the plan continue to meet the objectives described above.

Long-Term Stock-Based Incentive Compensation

We have structured our long-term incentive compensation to provide for an appropriate balance between rewarding performance and encouraging employee retention and stock ownership. There is no pre-established policy or target for the allocation between either cash or non-cash or short-term and long-term incentive compensation; however, at executive management levels, the Compensation Committee strives for compensation to focus increasingly on longer-term incentives. In conjunction with the Board, executive management is responsible for setting and achieving long-term strategic goals. In support of this responsibility, compensation for executive management, and most particularly our Chief Executive Officer, tends to be weighted towards rewarding long-term value creation for shareholders.

The below table illustrates the mix of total compensation received by Mr. Hanson, our CEO, and our other current NEOs during 2017:



The Compensation Committee noted in last year's proxy that they would not approve any equity compensation in 2017. However, circumstances evolved in 2017 that led the Compensation Committee to revise this decision.

First, our former General Counsel, Executive Vice President and Corporate Secretary, Ms. Jamey Seely, left the Company in September of 2017. Mr. Powers was promoted to General Counsel and Corporate Secretary in September 2017, and promoted to Executive Vice President in October 2017. In connection with his promotion to Executive Vice President, Mr. Powers was granted stock options and restricted stock. He was the only NEO who was granted any such awards in 2017.

Second, seven high-performing employees were promoted or transitioned to new roles in 2017. In connection with their promotion and retention, the Compensation Committee approved a grant of 120,000 stock options and 30,000 shares of restricted stock or restricted stock units amongst these seven employees. Of the total stock options and restricted stock employee awards made by ION during 2017, 79% were in the form of stock options and 21% were in the form of restricted stock or restricted stock units.

Lastly, the Compensation Committee approved the granting of restricted stock to the NEOs and other key employees who elected to participate in the EIP described above. Those grants, however, were made effective March 1, 2018.

Our long-term incentive plans, and, in 2017, the EIP, have provided the principal method for our NEOs to acquire equity or equity-linked interests in our Company.

Stock Options. Under our equity plans, stock options may be granted having exercise prices equal to the closing price of our stock on the date before the date of grant. In any event, all awards of stock options are made at or above the market price at the time of the award. The Compensation Committee will not grant stock options having exercise prices below the market price of our stock on the date of grant, and will not reduce the exercise price of stock options (except in connection with adjustments to reflect recapitalizations, stock or extraordinary dividends, stock splits, mergers, spin-offs and similar events, as required by the relevant plan) without the consent of our shareholders. Our stock options generally vest ratably over four years, based on continued employment, and the terms of our 2013 LTIP require stock options granted under that plan to follow that vesting schedule unless the Compensation Committee approves a different schedule when approving the grant. Prior to the exercise of an option, the holder has no rights as a shareholder with respect to the shares subject to such option, including voting rights and the right to receive dividends or dividend equivalents. New option grants normally have a term of ten years.

The purpose of stock options is to provide equity compensation with value that has been traditionally treated as entirely at-risk, based on the increase in our stock price and the creation of shareholder value. Stock options also allow our NEOs and key employees to have equity ownership and to share in the appreciation of the value of our stock, thereby aligning their compensation directly with increases in shareholder value. Stock options only have value to their holder if the stock price appreciates in value from the date options are granted.

Stock option award decisions are generally based on past business and individual performance. In determining the number of options to be awarded, we also consider the grant recipient's qualitative and quantitative performance, the size of stock option and other stock based awards in the past, and expectations of the grant recipient's future performance. In 2017, eight employees received option awards, covering 156,000 shares of Common Stock. In 2017, only one NEO received an option award of 36,000 shares of Common Stock, which was approximately 23% of the total options awarded. The total number of options awarded in 2017 represent a 62% reduction when compared to 2016.

Restricted Stock and Restricted Stock Units. We use restricted stock and restricted stock units to focus executives on our long-term performance and to help align their compensation more directly with shareholder value. Vesting of restricted stock and restricted stock units typically occurs ratably over three years, based solely on continued employment of the recipient-employee, and the terms of our 2013 LTIP require restricted stock and restricted stock units granted under that plan to follow that vesting schedule unless the Compensation Committee approves a different schedule when approving the grant. In 2017, eight employees received awards of restricted stock and shares underlying restricted stock units for a total of 42,000 shares. Only one NEO received an award of 12,000 shares of restricted stock, which was approximately 29% of the total shares of restricted stock awarded.

Awards of restricted stock units have been made to certain of our foreign employees in lieu of awards of restricted stock. Restricted stock units provide certain tax benefits to our foreign employees as the result of foreign law considerations, so we expect to continue to award restricted stock units to designated foreign employees for the foreseeable future.

The total number of shared of restricted stock and shares underlying restricted stock units awarded in 2017 represent a 78% reduction when compared to 2016.

Stock Appreciation Rights. To enhance the performance-based focus of ION's compensation programs, the Compensation Committee elected to have a substantial portion of the equity-based compensation paid in SARs instead of restricted stock or stock options in 2016. The SARs grants approved by the Compensation Committee are 100% cash-settled and were granted pursuant to our 2008 Stock Appreciation Rights Plan. The vesting of the SARs is achieved through both a market condition and a service condition. The market condition is achieved, in part or in full, in the event that during the four-year period beginning on the date of grant the 20-day trailing volume-weighted average price per share of Common Stock is (i) greater than 120% of the exercise price for the first 1/3 of the awards, (ii) greater than 125% of the exercise price for the second 1/3 of the awards and (iii) greater than 130% of the exercise price for the final 1/3 of the awards. The exercise condition restricts the ability of the holders to exercise awards until certain service milestones have been reached such that (i) no more than 1/3 of the awards may be exercised, if vested, on and after the first anniversary of the date of grant, (ii) no more than 2/3 of the awards may be exercised, if vested, on and after the second anniversary of the date of grant and (iii) all of the awards may be exercised, if vested, on and after the third anniversary of the date of grant. In 2015, the Company granted 3,108,107 SARs (on a pre-split basis). In 2016, the Company granted 1,210,100 SARs, or 61% less than similar compensation issued in 2015. No SARs were granted in 2017.

Approval and Granting Process. As described above, the Compensation Committee reviews and approves all stock appreciation rights, stock option, restricted stock and restricted stock unit awards made to NEOs, regardless of amount. With respect to equity compensation awarded to employees other than NEOs, the Compensation Committee reviews and approves all grants of stock appreciation rights, restricted stock, stock options and restricted stock units above 5,000 shares, generally based upon the recommendation of our Chief Executive Officer. The Compensation Committee has granted to our Chief Executive Officer the authority to approve grants to any employee other than an NEO of (i) up to 5,000 shares of restricted stock and (ii) stock options for not more than 5,000 shares. Our Chief Executive Officer is also required to provide a report to the Compensation Committee of all awards of options and restricted stock made by him under this authority. We believe that this policy is beneficial because it enables smaller grants to be made more efficiently. This flexibility is particularly important with respect to attracting and hiring new employees, given the increasingly competitive market for talented and experienced technical and other personnel in locales in which our employees work.

All grants of stock appreciation rights, restricted stock, restricted stock units and stock options to employees or directors are granted on one of four designated quarterly grant dates during the year: March 1, June 1, September 1 or December 1. The Compensation Committee approved these four dates because they are not close to any dates on which earnings announcements or other announcements of material events would normally be made by us. For an award to a current employee, the grant date for the award is the first designated quarterly grant date that occurs after approval of the award. For an award to a newly hired employee who is not yet employed by us at the time the award is approved, the grant date for the award is the first designated quarterly grant date that occurs after the new employee commences work. We believe that this process of fixed quarterly grant dates is beneficial because it serves to remove any perception that the grant date for an award could be capable of manipulation or change for the benefit of the recipient. In addition, having all grants occur on a maximum of four days during the year simplifies certain fair value accounting calculations related to the grants, thereby minimizing the administrative burden associated with tracking and calculating the fair values, vesting schedules and tax-related events upon vesting of restricted stock and also lessening the opportunity for inadvertent calculation errors.

Beginning March 1, 2015, the Compensation Committee decided that all awards of restricted stock, stock options and SARs would be made in annual grants occurring on March 1 of each year. In 2016, the Company also awarded annual equity grants on March 1. This date was selected because (i) it enables the Board and Compensation Committee to consider individual performance after the full year

has been completed, (ii) it simplifies the annual budgeting process by having the expense resulting from the equity award incurred at the same time as incentive compensation and (iii) the date aligns with the time the Company normally pays annual bonuses. Awards made in connection with significant promotions, new hires, new directors joining the Board or unusual circumstances, including but not limited to its employees and directors, will be granted on one of four designated dates during the year: March 1, June 1, September 1 or December 1.

Clawback Policy

We have a Compensation Recoupment Policy (commonly referred to as a "clawback" policy), which provides that, in the event of a restatement of our financial results due to material noncompliance with applicable financial reporting requirements, the Board will, if it determines appropriate and subject to applicable laws and the terms and conditions of our applicable stock plans, programs or arrangements, seek reimbursement of the incremental portion of performance-based compensation, including performance-based bonuses and long-term equity-based incentive awards, paid to current or former NEOs within three years of the restatement date, in excess of the compensation that would have been paid had the compensation amount been based on the restated financial results.

Personal Benefits, Perquisites and Employee Benefits

Our Board and executives have concluded that we will not offer most perquisites traditionally offered to executives of similarly sized companies. As a result, perquisites and any other similar personal benefits offered to our NEOs are substantially the same as those offered to our general salaried employee population. These offered benefits include medical and dental insurance, life insurance, disability insurance, a vision plan, charitable gift matching (up to designated limits), a 401(k) plan with a company match of certain levels of contributions, flexible spending accounts for healthcare and dependent care and other customary employee benefits. Business-related relocation benefits may be reimbursed on a case-by-case basis. We intend to continue applying our general policy of not providing specific personal benefits and perquisites to our executives; however, we may, in our discretion, revise or add to any executive's personal benefits and perquisites if we deem it advisable.

Risk Management Considerations

The Compensation Committee believes that our Company's bonus and equity programs create incentives for employees to create long-term shareholder value. The Compensation Committee has considered the concept of risk as it relates to our compensation programs and has concluded that our compensation programs do not encourage excessive or inappropriate risk-taking. Several elements of the compensation programs are designed to promote the creation of long-term value and thereby discourage behavior that leads to excessive risk:

- The compensation programs consist of both fixed and variable compensation. The fixed (or salary) portion is designed to provide a steady income regardless of the Company's stock price performance so that executives do not focus exclusively on stock price performance to the detriment of other important business metrics. The variable (cash bonus and equity) portions of compensation are designed to reward both short- and long-term corporate performance. The Compensation Committee believes that the variable elements of compensation are a sufficient percentage of overall compensation to motivate executives to produce positive short- and long-term corporate results, while the fixed element is also sufficiently high such that the executives are not encouraged to take unnecessary or excessive risks in doing so.
- The financial metrics used to determine the amount of an executive's bonus are measures the Compensation Committee believes contribute to long-term shareholder value and ensure the continued viability of the Company. Moreover, the Compensation Committee attempts to set

ranges for these measures that encourage success without encouraging excessive risk taking to achieve short-term results. In addition, the overall maximum bonus for each participating NEO other than our Chief Executive Officer is not expected to exceed 150% of the executive's base salary under the bonus plan, and the overall bonus for our Chief Executive Officer under his employment agreement will not exceed 200% of his base salary under the bonus plan, in each case no matter how much the Company's financial performance exceeds the ranges established at the beginning of the year.

- We have strict internal controls over the measurement and calculation of the financial metrics that determine the amount of an executive's bonus, designed to keep it from being susceptible to manipulation by an employee, including our executives.
- Stock options become exercisable over a four-year period and remain exercisable for up to ten years from the date of grant, encouraging executives to look to long-term appreciation in equity values.
- Restricted stock becomes exercisable over a three-year period, again encouraging executives to look to long-term appreciation in equity values.
- Senior executives, including our NEOs, are required to acquire over time and hold shares of our Company's stock having a value of between one and four times the executive's annual base salary, depending on the level of the executive. The Compensation Committee believes that the stock ownership guidelines provide a considerable incentive for management to consider the Company's long-term interests, since a portion of their personal investment portfolio consists of our Common Stock.
- In addition, we do not permit any of our NEOs or directors to enter into any derivative or hedging transactions involving our stock, including short sales, market options, equity swaps and similar instruments, thereby preventing executives from insulating themselves from the effects of poor company stock price performance. Please refer to "*—Stock Ownership Requirements; Hedging Policy*" below.
- We have a compensation recoupment (clawback) policy that provides, in the event of a restatement of our financial results due to material noncompliance with financial reporting requirements, for reimbursement of the incremental portion of performance-based compensation, including performance-based cash bonuses and long-term equity-based incentive awards, paid to current or former NEOs within three years of the restatement date, in excess of the compensation that would have been paid had such compensation amount been based on the restated financial results. Please refer to "*—Clawback Policy*" above.

Consideration of Say-On-Pay Result. At our 2017 Annual Meeting of Shareholders held on May 17, 2016, our shareholders approved all of our director nominees and proposals, including a non-binding advisory vote to approve the compensation of our NEOs ("say-on-pay"). In the advisory executive compensation vote, over 70% of the votes cast on the proposal voted in favor of our executive compensation. Our general goal since our 2016 Annual Meeting has been to continue to act consistently with the established practices that were approved by our shareholders. We believe that we have accomplished that goal. At our 2017 Annual Meeting, our shareholders also voted on a non-binding advisory vote on the frequency of advisory votes on executive compensation ("say-on-frequency") and approved "every year". The Board intends to hold advisory votes on executive compensation within the time frame approved by the shareholders. When and if our Board determines that it is in the best interest of our Company to hold our say-on-pay vote with a different frequency, we will propose such a change to our shareholders at the next annual meeting of shareholders to be held following the Board's determination. Presently, under SEC rules, we are not required to hold another say-on-frequency vote again until our 2023 Annual Meeting of Shareholders.

Indemnification of Directors and Executive Officers

Our Bylaws provide certain rights of indemnification to our directors and employees (including our NEOs) in connection with any legal action brought against them by reason of the fact that they are or were a director, officer, employee or agent of our Company, to the full extent permitted by law. Our Bylaws also provide, however, that no such obligation to indemnify exists as to proceedings initiated by an employee or director against us or our directors unless (a) it is a proceeding (or part thereof) initiated to enforce a right to indemnification or (b) was authorized or consented to by our Board.

As discussed below, we have also entered into employment agreements with certain of our NEOs that provide for us to indemnify the executive to the fullest extent permitted by our Restated Certificate of Incorporation, as amended, and our Bylaws. The agreements also provide that we will provide the executive with coverage under our directors' and officers' liability insurance policies to the same extent as provided to our other executives.

Stock Ownership Requirements; Hedging Policy

We believe that broad-based stock ownership by our employees (including our NEOs) enhances our ability to deliver superior shareholder returns by increasing the alignment between the interests of our employees and our shareholders. Accordingly, the Board has adopted stock ownership guidelines applicable to each of our senior executives, including our NEOs. The policy requires each executive to retain direct ownership of at least 50% of all shares of our Company's stock received upon exercise of stock options and vesting of awards of restricted stock or restricted stock units until the executive owns shares having an aggregate value equal to the following multiples of the executive's annual base salary:

President and Chief Executive Officer—4x

Executive Vice President—2x

Senior Vice President—1x

The Compensation Committee and our Chief Executive Officer may, in their discretion, grant temporary exemptions from the guidelines to prevent severe hardships to senior executives. As of the date of this Proxy Statement, all of our senior executives were in compliance with the stock ownership requirements. In addition, we do not permit any of our NEOs or directors to enter into any derivative or hedging transactions with respect to our stock, including short sales, market options, equity swaps and similar instruments.

Impact of Regulatory Requirements and Accounting Principles on Compensation

The financial reporting and income tax consequences to our Company of individual compensation elements are important considerations for the Compensation Committee when it is analyzing the overall level of compensation and the mix of compensation among individual elements. Under Section 162(m) of the Internal Revenue Code and the related federal treasury regulations, we may not deduct annual compensation in excess of $1 million paid to certain employees—generally our Chief Executive Officer and our three other most highly compensated NEOs, other than our Chief Financial Officer—unless that compensation qualifies as "performance-based" compensation. Pursuant to the 2017 Tax Cuts and Jobs Act, signed into law on December 22, 2017 (the "Tax Act"), for fiscal years beginning after December 31, 2017, the compensation of our Chief Financial Officer is also subject to the deduction limitation. Overall, the Compensation Committee seeks to balance its objective of ensuring an effective compensation package for the NEOs with the need to maximize the immediate deductibility of compensation—while ensuring an appropriate (and transparent) impact on reported earnings and other closely followed financial measures.

In making its compensation decisions, the Compensation Committee has considered the limitations on deductibility within the requirements of Internal Revenue Code Section 162(m) and its related Treasury regulations. As a result, for periods prior to January 1, 2018, the Compensation Committee has designed much of the total compensation packages for the NEOs to qualify for the exemption of "performance-based" compensation from the deductibility limit. However, the Compensation Committee does have the discretion to design and use compensation elements that may not be deductible within the limitations under Section 162(m), if the Compensation Committee considers the tax consequences and determines that those elements are in our best interests.

As a result, certain payments to our NEOs under our 2017 annual bonus plan may not qualify as performance-based compensation under Section 162(m) because the awards were calculated and paid in a manner that may not meet the requirements under Section 162(m) and the related Treasury regulations.

Pursuant to the Tax Act, subject to certain transition rules, for fiscal years beginning after December 31, 2017, the performance-based compensation exception to the deduction limitations under Section 162(m) will no longer be available. As a result, for fiscal years beginning after December 31, 2017, any compensation in excess of $1 million paid to our executive officers may not be deductible. The Compensation Committee believes that the potential deductibility of the compensation payable under the annual bonus plan and the Company's other incentive compensation plans and arrangements should be only one of a number of relevant factors taken into consideration in establishing those plans and arrangements for our executive officers and not the sole governing factor. For that reason, for the 2018 fiscal year, the Compensation Committee intends to structure our annual bonus plan and the Company's other incentive compensation plans and arrangements in a manner similar to the 2017 fiscal year, acknowledging that a portion of those compensation payments may not be deductible under Section 162(m), in order to assure appropriate levels of total compensation for our executive officers based on the Company's performance.

Likewise, the impact of Section 409A of the Internal Revenue Code is taken into account, and our executive compensation plans and programs are, in general, designed to comply with the requirements of that section so as to avoid possible adverse tax consequences that may result from non-compliance.

For accounting purposes, we apply the guidance in ASC Topic 718 to record compensation expense for our equity-based compensation grants. ASC Topic 718 is used to develop the assumptions necessary and the model appropriate to value the awards as well as the timing of the expense recognition over the requisite service period, generally the vesting period, of the award.

Executive officers will generally recognize ordinary taxable income from stock option awards when a vested option is exercised. We generally receive a corresponding tax deduction for compensation expense in the year of exercise. The amount included in the NEO's wages and the amount we may deduct is equal to the Common Stock price when the stock options are exercised less the exercise price, multiplied by the number of shares under the stock options exercised. We do not pay or reimburse any NEO for any taxes due upon exercise of a stock option. We have not historically issued any tax-qualified incentive stock options under Section 422 of the Internal Revenue Code.

Executives will generally recognize taxable ordinary income with respect to their shares of restricted stock at the time the restrictions lapse (unless the recipient elects to accelerate recognition as of the date of grant). Restricted stock unit awards are generally subject to ordinary income tax at the time of payment or issuance of unrestricted shares of stock. We are generally entitled to a corresponding federal income tax deduction at the same time the executive recognizes ordinary income.

COMPENSATION COMMITTEE REPORT

The Compensation Committee has reviewed and discussed the Compensation Discussion and Analysis included in this Proxy Statement and required by Item 402(b) of Regulation S-K with the management of ION. Based on such review and discussions, the Compensation Committee has recommended to the Board that the Compensation Discussion and Analysis be included in this Proxy Statement and incorporated into ION's Annual Report on Form 10-K, as amended, for the year ended December 31, 2017.

Franklin Myers, *Chairman*
David H. Barr
James M. Lapeyre, Jr.
John N. Seitz

SUMMARY COMPENSATION TABLE

The following table summarizes the compensation paid to or earned by our named executive officers at December 31, 2017.

Name and Principal Position	Year	Salary ($)	Bonus ($)	Stock Awards ($)	Option Awards ($)	Non-Equity Incentive Plan Compensation ($)	All Other Compensation ($)	Total ($)
R. Brian Hanson	2017	558,689	—	—	—	1,200,000	7,950	1,766,639
President, Chief Executive	2016	540,000	—	341,900	203,817	720,000	7,950	1,813,667
Officer and Director	2015	560,769	—	294,633	215,164	750,000	11,861	1,832,427
Steven A. Bate	2017	350,484	—	—	—	450,000	7,950	808,434
Executive Vice President	2016	337,500	—	170,950	101,909	337,500	7,950	955,809
and Chief Financial Officer	2015	350,481	—	134,474	98,200	351,562	10,471	945,188
Matthew R. Powers Executive Vice President, General Counsel and Corporate Secretary	2017	220,664	—	168,600	291,540	165,000	5,423	851,227
Christopher T. Usher	2017	353,808	—	—	—	347,000	5,504	706,312
Executive Vice President	2016	340,704	—	59,686	50,954	272,500	5,504	729,348
and Chief Operating Officer, Operations Optimization	2015	353,808	—	64,501	47,119	227,136	10,614	703,178
Kenneth G. Williamson	2017	361,905	—	—	—	508,000	7,950	877,855
Executive Vice President	2016	348,492	—	70,875	71,336	260,000	7,950	758,653
and Chief Operating Officer, E&P Technology & Services	2015	361,895	—	159,611	116,565	261,368	10,857	910,296

Discussion of Summary Compensation Table

Stock Awards Column. All of the amounts in the "Stock Awards" column reflect the grant-date fair value of awards of restricted stock made during the applicable fiscal year (excluding any impact of assumed forfeiture rates) under our 2013 LTIP. While unvested, a holder of restricted stock is entitled to the same voting rights as all other holders of Common Stock. In each case, unless stated otherwise below, the awards of shares of restricted stock vest in one-third increments each year, over a three-year period. The values contained in the Summary Compensation Table under the Stock Awards column are based on the grant date fair value of all stock awards (excluding any impact of assumed forfeiture rates). In addition to the grants and awards in 2017 described in the *"—2017 Grants of Plan-Based Awards"* table below:

- On March 1, 2015, Mr. Hanson received an award of 8,615 shares of restricted stock.
- On March 1, 2016, Mr. Hanson received an award of 50,000 shares of restricted stock.
- On June 1, 2016, Mr. Hanson received an award of 20,000 shares of restricted stock.
- On March 1, 2015, Mr. Bate received an award of 3,932 shares of restricted stock.
- On March 1, 2016, Mr. Bate received an award of 25,000 shares of restricted stock.
- On June 1, 2016, Mr. Bate received an award of 10,000 shares of restricted stock
- On March 1, 2015, Mr. Usher received an award of 1,886 shares of restricted stock.

- On March 1, 2016, Mr. Usher received an award of 12,500 shares of restricted stock.
- On June 1, 2016, Mr. Usher received an award of 1,300 shares of restricted stock.
- On March 1, 2015, Mr. Williamson received an award of 4,667 of restricted stock.
- On March 1, 2016, Mr. Williamson received an award of 17,500 shares of restricted stock.

Option Awards Column. All of the amounts shown in the "Option Awards" column reflect stock options granted under our 2013 LTIP. In each case, unless stated otherwise below, the options vest 25% each year over a four-year period. The values contained in the Summary Compensation Table under the Stock Options column are based on the grant date fair value of all option awards (excluding any impact of assumed forfeiture rates). For a discussion of the valuation assumptions for the awards, see Note 10, *Shareholders' Equity and Stock-Based Compensation—Valuation Assumptions*, in our Notes to Consolidated Financial Statements included in our Annual Report on Form 10-K, as amended, for the year ended December 31, 2017. All of the exercise prices for the options equal or exceed the fair market value per share of ION Common Stock on the date of grant. In addition to the grants and awards in 2017 described in the *"2017 Grants of Plan-Based Awards"* table below:

- On March 1, 2015, Mr. Hanson received an award of options to purchase 12,923 shares of our Common Stock for an exercise price of $34.20 per share.
- On March 1, 2016, Mr. Hanson received an award of options to purchase 100,000 shares of our Common Stock for an exercise price of $3.10 per share.
- On March 1, 2015, Mr. Bate received an award of options to purchase 5,898 shares of our Common Stock for an exercise price of $34.20 per share.
- On March 1, 2016, Mr. Bate received an award of options to purchase 50,000 shares of our Common Stock for an exercise price of $3.10 per share.
- On March 1, 2015, Mr. Usher received an award of options to purchase 2,830 shares of our Common Stock for an exercise price of $34.20 per share.
- On March 1, 2016, Mr. Usher received an award of options to purchase 25,000 shares of our Common Stock for an exercise price of $3.10 per share.
- On March 1, 2015, Mr. Williamson received an award of options to purchase 7,001 shares of our Common Stock for an exercise price of $34.20 per share.
- On March 1, 2016, Mr. Williamson received an award of options to purchase 35,000 shares of our Common Stock for an exercise price of $3.10 per share.

Other Columns.

All payments of non-equity incentive plan compensation reported for 2017 were made in February 2018 with regard to the 2017 fiscal year and were earned and paid pursuant to our 2017 incentive plan.

We do not sponsor for our employees (i) any defined benefit or actuarial pension plans (including supplemental plans), (ii) any non-tax-qualified deferred compensation plans or arrangements or (iii) any nonqualified defined contribution plans.

Our general policy is that our executive officers do not receive any executive "perquisites," or any other similar personal benefits that are different from what our salaried employees are entitled to receive. We provide the named executive officers with certain group life, health, medical and other non-cash benefits generally available to all salaried employees, which are not included in the "All Other Compensation" column in the Summary Compensation Table pursuant to SEC rules. The amounts shown in the "All Other Compensation" column solely consist of employer matching contributions to ION's 401(k) plan.

2017 GRANTS OF PLAN-BASED AWARDS

Name	Grant Date	Estimated Future Payouts Under Non-Equity Incentive Plan Awards(1) Threshold ($)	Target ($)	Maximum ($)	All Other Stock Awards: Number of Shares of Stock or Units (#)(2)	All Other Option Awards: Number of Securities Underlying Options (#)(3)	Exercise or Base Price of Option Awards ($/Sh)	Grant Date Fair Value of Stock and Option Awards ($)(4)
R. Brian Hanson	—	—	600,000	1,200,000	—	—	—	—
Steven A. Bate	—	93,750	281,250	562,500	—	—	—	—
Matthew R. Powers . .	—	68,750	165,000	330,000	—	—	—	—
	12/1/2017	—	—	—	12,000	36,000	13.15	449,340
Christopher T. Usher . .	—	94,640	227,136	454,272	—	—	—	—
Kenneth G. Williamson	—	96,803	290,410	580,820	—	—	—	—

(1) Reflects the estimated threshold, target and maximum award amounts for payouts under our 2017 incentive plan to our NEOs. Under the plan, every participating NEO had the opportunity to earn a maximum of 200% of his target depending on performance of the Company against the designated performance goal, and performance of the executive against personal performance criteria. Mr. Hanson's employment agreement does not specify that he will earn a bonus upon achievement of a threshold consolidated performance goal. Because award determinations under the plan were based in part on outcomes of personal evaluations of employee performance by our Chief Executive Officer and the Compensation Committee, the computation of actual awards generated under the plan upon achievement of threshold and target company performance criteria differed from the above estimates. See "*—Compensation Discussion and Analysis—Elements of Compensation—Bonus Incentive Plan*" above. For actual payout amounts to our named executive officers under our 2017 bonus incentive plan, see the "*Non-Equity Incentive Plan Compensation*" column in the "*Summary Compensation Table*" above.

(2) All stock awards granted reflect the number of shares of restricted stock granted under our 2013 LTIP. While unvested, a holder of restricted stock is entitled to the same voting rights as all other holders of Common Stock. The shares vest ratably over a three-year period.

(3) All stock option awards granted reflect the number of shares issuable under options granted under our 2013 LTIP. In each case, the options vest 25% each year over a four-year period. All of the exercise prices for the options reflected in the above chart equal or exceed the fair market value per share of our Common Stock on the date of grant.

(4) The values contained in the table are based on the grant date fair value of the award computed in accordance with ASC Topic 718 for financial statement reporting purposes, but exclude any impact of assumed forfeiture rates. For a discussion of valuation assumptions, see Note 10, "*Shareholders' Equity and Stock-Based Compensation—Valuation Assumptions*", in our Notes to Consolidated Financial Statements included in our Annual Report on Form 10-K, as amended, for the year ended December 31, 2017.

Employment Agreements

In recent years, we have not entered into employment agreements with employees other than our Chief Executive Officer and Chief Financial Officer. We have generally entered into employment agreements with employees only when the employee holds an executive officer position and we believe that an employment agreement is desirable for us to obtain a measure of assurance as to the executive's continued employment in light of prevailing market competition for the particular position held by the executive officer, or where we determine that an employment agreement is necessary and appropriate to attract an executive in light of market conditions, the prior experience of the executive or practices at ION with respect to other similarly situated employees.

The following discussion describes the material terms of our existing executive employment agreements with our executive officers:

R. Brian Hanson

In connection with his appointment as our President and Chief Executive Officer on January 1, 2012, Mr. Hanson entered into a new employment agreement. The agreement provides for Mr. Hanson to serve as our President and Chief Executive Officer for an initial term of three years, with automatic two-year renewals thereafter. Any change of control of our Company after January 1, 2013 will cause the remaining term of Mr. Hanson's employment agreement to adjust automatically to a term of three years, which will commence on the effective date of the change of control.

The agreement provides for Mr. Hanson to receive an initial base salary of $450,000 per year and be eligible to receive an annual performance bonus under our incentive compensation plan, with a target incentive plan bonus amount equal to 75% of his base salary and with a maximum incentive plan bonus amount equal to 150% of his base salary.

Under the agreement, and as approved by the Compensation Committee, Mr. Hanson will be entitled to receive grants of (i) options to purchase shares of our Common Stock and (ii) shares of our restricted stock. Mr. Hanson will also be eligible to participate in other equity compensation plans that are established for our key executives, as approved by the Compensation Committee. In the agreement, we also agreed to indemnify Mr. Hanson to the fullest extent permitted by our Restated Certificate of Incorporation, as amended, and Bylaws, and to provide him coverage under our directors' and officers' liability insurance policies to the same extent as other company executives.

We may at any time terminate our employment agreement with Mr. Hanson for "Cause" if Mr. Hanson (i) willfully and continuously fails to substantially perform his obligations, (ii) willfully engages in conduct materially and demonstrably injurious to our property or business (including fraud, misappropriation of funds or other property, other willful misconduct, gross negligence or conviction of a felony or any crime involving moral turpitude) or (iii) commits a material breach of the agreement. In addition, we may at any time terminate the agreement if Mr. Hanson suffers permanent and total disability for a period of at least 180 consecutive days, or if Mr. Hanson dies. Mr. Hanson may terminate his employment agreement for "Good Reason" if we breach any material provision of the agreement, we assign to Mr. Hanson any duties materially inconsistent with his position, we materially reduce his duties, functions, responsibilities, budgetary or other authority, or take other action that results in a diminution in his office, position, duties, functions, responsibilities or authority, we relocate his workplace by more than 50 miles, or we elect not to extend the term of his agreement.

In his agreement, Mr. Hanson agrees not to compete against us, assist any competitor, attempt to solicit any of our suppliers or customers, or solicit any of our employees, in any case during his employment and for a period of two years after his employment ends. The employment agreement also contains provisions relating to protection of our confidential information and intellectual property. The agreement does not contain any tax gross-up benefits.

For a discussion of the provisions of Mr. Hanson's employment agreement regarding compensation to Mr. Hanson in the event of a change of control affecting our Company or his termination by us without cause or by him for good reason, see "*—Potential Payments Upon Termination or Change of Control—R. Brian Hanson*" below.

Steven A. Bate

In connection with his appointment as our Executive Vice President and Chief Financial Officer on November 13, 2014, Mr. Bate entered into an employment agreement. The agreement provides for Mr. Bate to serve as our Executive Vice President and Chief Financial Officer for an initial term of three years, with automatic one-year renewals thereafter. Any change of control of our Company after November 13, 2015 will cause the remaining term of Mr. Bate's employment agreement to adjust automatically to a term of two years, which will commence on the effective date of the change of control.

The agreement provides for Mr. Bate to receive an initial base salary of $375,000 per year and be eligible to receive an annual performance bonus under our incentive compensation plan, with a target incentive plan bonus amount equal to 50% of his base salary beginning in 2015.

Under the agreement, Mr. Bate will be entitled to receive grants of (i) options to purchase shares of our Common Stock and (ii) shares of our restricted stock. Mr. Bate will also be eligible to participate in other equity compensation plans that are established for our key executives, as approved

by the Compensation Committee. In the agreement, we also agreed to indemnify Mr. Bate to the fullest extent permitted by our Restated Certificate of Incorporation, as amended, and Bylaws, and to provide him coverage under our directors' and officers' liability insurance policies to the same extent as other company executives.

We may at any time terminate our employment agreement with Mr. Bate for "Cause" if Mr. Bate (i) willfully and continuously fails to substantially perform his obligations, (ii) willfully engages in conduct materially and demonstrably injurious to our property or business (including fraud, misappropriation of funds or other property, other willful misconduct, gross negligence or conviction of a felony or any crime involving moral turpitude) or (iii) commits a material breach of the agreement. In addition, we may at any time terminate the agreement if Mr. Bate suffers permanent and total disability for a period of at least 180 consecutive days, or if Mr. Bate dies. Mr. Bate may terminate his employment agreement for "Good Reason" if we breach any material provision of the agreement, we assign to Mr. Bate any duties materially inconsistent with his position, we materially reduce his duties, functions, responsibilities, budgetary or other authority, or take other action that results in a diminution in his office, position, duties, functions, responsibilities or authority, or we relocate his workplace by more than 50 miles.

In his agreement, Mr. Bate agrees not to compete against us, assist any competitor, attempt to solicit any of our suppliers or customers, or solicit any of our employees, in any case during his employment and for a period of twelve months after his employment ends. The employment agreement also contains provisions relating to protection of our confidential information and intellectual property.

For a discussion of the provisions of Mr. Bate's employment agreement regarding compensation to Mr. Bate in the event of a change of control affecting our Company or his termination by us without cause or by him for good reason, see "*—Potential Payments Upon Termination or Change of Control—Steven A. Bate*" below.

OUTSTANDING EQUITY AWARDS AT FISCAL YEAR-END

The following table sets forth information concerning unexercised stock options (including outstanding stock appreciation rights, or SARs) and shares of restricted stock held by our named executive officers at December 31, 2017:

	Option Awards(1)				Stock Awards(2)	
Name	Number of Securities Underlying Unexercised Options (#) Exercisable	Number of Securities Underlying Unexercised Options (#) Unexercisable	Option Exercise Price ($)	Option Expiration Date	Number of Shares or Units of Stock That Have Not Vested (#)	Market Value of Shares or Units of Stock That Have Not Vested ($)(3)
R. Brian Hanson	1,166	—	45.00	12/1/2018	49,536	978,336
	9,333(4)	—	45.00	12/1/2018		
	16,666	—	106.05	9/1/2021		
	5,000	—	89.40	12/1/2022		
	6,666	—	57.90	12/1/2023		
	5,000	1,666	61.05	3/1/2024		
	6,461	6,462	34.20	3/1/2025		
	—	53,557(5)	34.20	3/1/2025		
	25,000	75,000	3.10	3/1/2026		
	—	100,000(5)	3.10	3/1/2026		
Steven A. Bate	5,000	—	95.85	6/1/2023	24,643	486,699
	3,333	—	95.85	6/1/2023		
	2,333	—	57.90	12/1/2023		
	2,499	834	61.05	3/1/2024		
	3,000	1,000	37.05	12/1/2024		
	2,949	2,949	34.20	3/1/2025		
	—	24,444(5)	34.20	3/1/2025		
	12,500	37,500	3.10	3/1/2026		
	—	50,000(5)	3.10	3/1/2026		
Matthew R. Powers	333	—	71.85	9/1/2023	13,332	263,307
	333	—	57.90	12/1/2023		
	375	125	61.05	3/1/2024		
	1,250	3,750	3.10	3/1/2026		
	—	3,334(5)	3.10	3/1/2026		
	—	36,000	13.15	12/1/2027		
Christopher T. Usher	3,333	—	89.40	12/1/2022	9,827	194,083
	4,000	—	57.90	12/1/2023		
	3,000	1,000	61.05	3/1/2024		
	1,415	1,415	34.20	3/1/2025		
	—	11,728(5)	34.20	3/1/2025		
	6,250	18,750	3.10	3/1/2026		
	—	50,000(5)	3.10	3/1/2026		
Kenneth G. Williamson	2,333	—	45.00	12/1/2018	13,222	261,135
	3,333	—	42.45	6/1/2019		
	1,466	—	81.60	12/1/2019		
	5,000	—	68.70	3/1/2020		
	2,333	—	107.85	12/1/2020		
	3,333	—	87.15	12/1/2021		
	3,333	—	89.40	12/1/2022		
	4,000	—	57.90	12/1/2023		
	3,000	1,000	61.05	3/1/2024		
	3,500	3,501	34.20	3/1/2025		
	—	29,013(5)	34.20	3/1/2025		
	8,750	26,250	3.10	3/1/2026		
	—	50,000(5)	3.10	3/1/2026		

(1) All stock option information in this table relates to nonqualified stock options granted under either our 2004 LTIP or 2013 LTIP. All of the unvested options in this table vest 25% each year over a four-year period.

(2) The amounts shown represent shares of restricted stock granted under our 2013 LTIP. While unvested, the holder is entitled to the same voting rights as all other holders of Common Stock. All of the restricted stock awards vest in one-third increments each year, over a three-year period.

(3) Pursuant to SEC rules, the market value of each executive's shares of unvested restricted stock was calculated by multiplying the number of shares by $19.75 (the closing price per share of our Common Stock on the NYSE on December 29, 2017, the last business day of 2017).

(4) The amounts shown reflect awards of cash-settled SARs granted to Mr. Hanson on December 1, 2008 under our Stock Appreciation Rights Plan. Mr. Hanson's SARs vested in full on December 1, 2011.

(5) The amounts shown reflect awards of cash-settled SARs granted on March 1, 2015 and March 1, 2016 under our Stock Appreciation Rights Plan. The vesting of the SARs is achieved through both a market condition and a service condition. The market condition is achieved, in part or in full, in the event that during the four-year period beginning on the date of grant the 20-day trailing volume-weighted average price of a share of Common Stock is (i) greater than 120% of the exercise price for the first ⅓ of the awards, (ii) greater than 125% of the exercise price for the second ⅓ of the awards and (iii) greater than 130% of the exercise price for the final ⅓ of the awards. The exercise condition restricts the ability of the holders to exercise awards until certain service milestones have been reached such that (i) no more than ⅓ of the awards may be exercised, if vested, on and after the first anniversary of the date of grant, (ii) no more than ⅔ of the awards may be exercised, if vested, on and after the second anniversary of the date of grant (except with respect to the March 1, 2016 SARs, the vesting dates of which were accelerated as set forth in the "*—Compensation Discussion and Analysis*" above) and (iii) all of the awards may be exercised, if vested, on and after the third anniversary of the date of grant.

(6) We do not have outstanding any Equity Incentive Plan Awards as defined by the SEC rules. As a result, the above table omits the following columns:

- Equity Incentive Plan Awards: Number of Securities Underlying Unexercised Unearned Options
- Equity Incentive Plan Awards: Number of Unearned Shares, Units or Other Rights That Have Not Vested
- Equity Incentive Plan Awards: Market or Payout Value of Unearned Shares, Units or Other Rights That Have Not Vested

2017 OPTION EXERCISES AND STOCK VESTED

The following table sets forth certain information with respect to option and stock exercises by the named executive officers during the year ended December 31, 2017:

	Option Awards		Stock Awards	
Name	Number of Shares Acquired on Exercise (#)	Value Realized on Exercise ($)(1)	Number of Shares Acquired on Vesting (#)	Value Realized on Vesting ($)(2)
R. Brian Hanson(3)	200,000	2,060,000	27,763	132,705
Steven A. Bate(4)	100,000	1,030,000	13,756	69,801
Matthew R. Powers(5)	6,666	68,660	723	3,543
Christopher T. Usher(6)	100,000	1,030,000	5,675	27,591
Ken Williamson(7)	100,000	1,030,000	7,834	38,387

(1) The value realized upon the exercise of the cash-settled stock appreciation rights is calculated by (a) subtracting $3.10 (the cash-settled stock appreciation rights exercise price) from $13.40 (the closing price per share of our Common Stock on the NYSE on December 15, 2017 exercise date) to get the realized value per share, and (b) multiplying the realized value per share by the number of shares underlying cash-settled stock appreciation rights exercised.

(2) The values realized upon vesting of stock awards contained in the table are based on the market value of our Common Stock on the date of vesting.

(3) The value realized by Mr. Hanson on the vesting of his restricted stock awards was calculated by multiplying (a) 21,095 shares by $4.90 (the closing price per share of our Common Stock on the NYSE on March 1, 2017) and (b) 6,668 shares by $4.40 (the closing price per share of our Common Stock on the NYSE on the June 1, 2017 vesting date).

(4) The value realized by Mr. Bate on the vesting of his restricted stock awards was calculated by multiplying (a) 9,978 shares by $4.90 (the closing price per share of our Common Stock on the NYSE on March 1, 2017); (b) 3,334 shares by $4.40 (the closing price per share of our Common Stock on the NYSE on June 1, 2017) and (c) 444 shares by $14.05 (the closing price per share of our Common Stock on the NYSE on the December 1, 2017 vesting date).

(5) The value realized by Mr. Powers on the vesting of his restricted stock awards was calculated by multiplying 723 shares by $4.90 (the closing price per share of our Common Stock on the NYSE on March 1, 2017).

(6) The value realized by Mr. Usher on the vesting of his restricted stock awards was calculated by multiplying (a) 5,241 shares by $4.90 (the closing price per share of our Common Stock on the NYSE on March 1, 2017) and (b) 434 shares by $4.40 (the closing price per share of our Common Stock on the NYSE on the June 1, 2017 vesting date).

(7) The value realized by Mr. Williamson on the vesting of his restricted stock awards was calculated by multiplying 7,834 shares by $4.90 (the closing price per share of our Common Stock on the NYSE on March 1, 2017).

Potential Payments Upon Termination or Change of Control

Under the terms of our equity-based compensation plans and our employment agreements, our Chief Executive Officer and certain of our other named executive officers are entitled to payments and benefits upon the occurrence of specified events including termination of employment (with and without cause) and upon a change in control of our Company. The specific terms of these arrangements, as well as an estimate of the compensation that would have been payable had they been

triggered as of December 31, 2017, are described in detail below. In the case of each employment agreement, the terms of these arrangements were established through the course of arms-length negotiations with each executive officer, both at the time of hire and at the times of any later amendment. As part of these negotiations, the Compensation Committee analyzed the terms of the same or similar arrangements for comparable executives employed by companies in our industry group. This approach was used by the committee in setting the amounts payable and the triggering events under the arrangements. The termination of employment provisions of the employment agreements were entered into in order to address competitive concerns by providing those individuals with a fixed amount of compensation that would offset the potential risk of leaving their prior employer or foregoing other opportunities in order to join our Company. At the time of entering into these arrangements, the Compensation Committee considered the aggregate potential obligations of our Company in the context of the desirability of hiring the individual and the expected compensation upon joining us. However, these contractual severance and post-termination arrangements have not affected the decisions the Compensation Committee has made regarding other compensation elements and the rationale for compensation decisions made in connection with these arrangements.

The following summaries set forth estimated potential payments payable to each of our named executive officers upon termination of employment or a change of control of our Company under their current employment agreements and our stock plans and other compensation programs as if his employment had so terminated for these reasons, or the change of control had so occurred, on December 31, 2017. The Compensation Committee may, in its discretion, agree to revise, amend or add to the benefits if it deems advisable. For purposes of the following summaries, dollar amounts are estimates based on annual base salary as of December 31, 2017, benefits paid to the named executive officer in fiscal 2017 and stock and option holdings of the named executive officer as of December 31, 2017. The summaries assume a price per share of ION Common Stock of $19.75 per share, which was the closing price per share on December 29, 2017, the last business day of 2017, as reported on the NYSE. The actual amounts to be paid to the named executive officers can only be determined at the time of each executive's separation from the Company.

The amounts of potential future payments and benefits as set forth in the tables below, and the descriptions of the assumptions upon which such future payments and benefits are based and derived, may constitute "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995. These statements are estimates of payments and benefits to certain of our executives upon their termination of employment or a change in control, and actual payments and benefits may vary materially from these estimates. Actual amounts can only be determined at the time of such executive's actual separation from our Company or the time of such change in control event. Factors that could affect these amounts and assumptions include the timing during the year of any such event, the price of our Common Stock, unforeseen future changes in our Company's benefits and compensation methodology and the age of the executive.

R. Brian Hanson

Termination and Change of Control. Mr. Hanson is entitled to certain benefits under his employment agreement upon the occurrence of any of the following events:

- we terminate his employment other than for cause, death or disability;
- Mr. Hanson resigns for "good reason"; or
- a "change in control" involving our Company occurs and, within 12 months following the change in control, (a) we or our successor terminate Mr. Hanson's employment or (b) Mr. Hanson terminates his employment after we or our successor (i) elect not to extend the term of his employment agreement, (ii) assign to Mr. Hanson duties inconsistent with his CEO position, duties, functions, responsibilities, authority or reporting relationship to the Board under his

employment agreement, (iii) become a privately-owned company as a result of a transaction in which Mr. Hanson does not participate within the acquiring group, (iv) are rendered a subsidiary or division or other unit of another company; or (v) take any action that would constitute "good reason" under his employment agreement.

Under Mr. Hanson's employment agreement, a "change in control" occurs upon any of the following (which we refer to in this section as an "Employment Agreement Change of Control"):

(1) the acquisition by a person or group of beneficial ownership of 40% or more of our outstanding shares of Common Stock other than any acquisitions directly from ION, acquisitions by ION or an employee benefit plan maintained by ION, or certain permitted acquisitions in connection with a "Merger" (as defined in sub-paragraph (3) below);

(2) changes in directors on our board of directors such that the individuals that constitute the entire board cease to constitute at least a majority of directors of the board, other than new directors whose appointment or nomination for election was approved by a vote of at least a majority of the directors then constituting the entire board of directors (except in the case of election contests);

(3) consummation of a "Merger"—that is, a reorganization, merger, consolidation or similar business combination involving ION—unless (i) owners of ION Common Stock immediately following such business combination together own more than 50% of the total outstanding stock or voting power of the entity resulting from the business combination in substantially the same proportion as their ownership of ION voting securities immediately prior to such Merger and (ii) at least a majority of the members of the board of directors of the corporation resulting from such Merger (or its parent corporation) were members of our board of directors at the time of the execution of the initial agreement providing for the Merger; or

(4) the sale or other disposition of all or substantially all of our assets.

Upon the occurrence of any of the above events and conditions, Mr. Hanson would be entitled to receive the following (less applicable withholding taxes and subject to compliance with non-compete, non-solicit and no-hire obligations):

- over a two-year period, a cash amount equal to two times his annual base salary and two times his target bonus amount in effect for the year of termination;
- a prorated portion of any unpaid target incentive plan bonus for the year of termination; and
- continuation of insurance coverage for Mr. Hanson as of the date of his termination for a period of two years at the same cost to him as prior to the termination.

In addition, upon the occurrence of any of the above events or conditions, the vesting period for all of Mr. Hanson's unvested equity awards granted on or after January 1, 2012 having a remaining vesting period of two years or less as of the date of termination will immediately accelerate to vest in full. In such event, all restrictions on the awards will thereupon be immediately lifted and the exercise period of all outstanding vested stock options (including the option awards that have been so accelerated) granted on or after January 1, 2012 will continue in effect until the earlier of (a) two years after the date of termination or (b) the expiration of the full original term, as specified in each applicable stock option agreement.

Change of Control Under Equity Compensation Plans. Mr. Hanson and our other named executive officers currently hold outstanding awards under one or more of the following three equity compensation plans: our 2004 LTIP, 2013 LTIP and our Stock Appreciation Rights Plan. Under these

plans, a "change of control" will be deemed to have occurred upon any of the following (which we refer to in this section as a "*Plan Change of Control*"):

(1) the acquisition by a person or group of beneficial ownership of 40% or more of the outstanding shares of Common Stock other than acquisitions directly from ION, acquisitions by ION or an employee benefit plan maintained by ION, or certain permitted acquisitions in connection with a business combination described in sub-paragraph (3) below;

(2) changes in directors such that the individuals that constitute the entire board of directors cease to constitute at least a majority of directors of the board, other than new directors whose appointment or nomination for election was approved by a vote of at least a majority of the directors then constituting the entire board of directors (except in the case of election contests);

(3) consummation of a reorganization, merger, consolidation or similar business combination involving ION, unless (i) owners of our Common Stock immediately following such transaction together own more than 50% of the total outstanding stock or voting power of the entity resulting from the transaction and (ii) at least a majority of the members of the board of directors of the entity resulting from the transaction were members of our board of directors at the time the agreement for the transaction is signed; or

(4) the sale of all or substantially all of our assets.

Upon any such "Plan Change of Control," all of Mr. Hanson's stock options granted to him under the 2004 LTIP or the 2013 LTIP will become fully exercisable, all unvested restricted stock awards granted to him under the 2013 LTIP will automatically accelerate and become fully vested, and all unvested stock appreciation rights granted to him under the 2008 Stock Appreciations Rights Plan will become fully exercisable. In addition, any change of control of our Company will cause the remaining term of Mr. Hanson's employment agreement to adjust automatically to two years, commencing on the effective date of the change of control.

We believe the double-trigger change-of-control benefit referenced above maximizes shareholder value because it motivates Mr. Hanson to remain in his position for a sufficient period of time following a change of control to ensure a smoother integration and transition for the new owners. Given his experience with our Company and within the seismic industry as our CFO and CEO, we believe Mr. Hanson's severance structure is in our best interest because it ensures that for a two-year period after leaving our employment, Mr. Hanson will not be in a position to compete against us or otherwise adversely affect our business.

Death, Disability or Retirement. Upon his death or disability, all unvested options, restricted stock and stock appreciation rights that Mr. Hanson holds would automatically accelerate and become fully vested. Upon his retirement, all unvested options and stock appreciation rights that Mr. Hanson holds would automatically accelerate and become fully vested. No unvested shares of restricted stock held by Mr. Hanson would automatically accelerate and become fully vested upon his retirement.

Termination by Us for Cause or by Mr. Hanson Other Than for Good Reason. Upon any termination by us for cause or any resignation by Mr. Hanson for any reason other than for "good reason" (as defined in his employment agreement), Mr. Hanson is not entitled to any payment or benefit other than the payment of unpaid salary and possibly accrued and unused vacation pay.

Mr. Hanson's currently-held vested stock options and stock appreciation rights will remain exercisable after his termination of employment, death, disability or retirement for periods of between three months and one year following such event, depending on the event and the terms of the applicable plan and grant agreement. If Mr. Hanson is terminated for cause, all of his vested and unvested stock options, unvested restricted stock, and vested and unvested stock appreciation rights will

be immediately forfeited. We have not agreed to provide Mr. Hanson any additional payments in the event any payment or benefit under his employment agreement is determined to be subject to the excise tax for "excess parachute payments" under U.S. federal income tax rules, or any other "tax gross-ups" under this employment agreement.

Assuming Mr. Hanson's employment was terminated under each of these circumstances or a change of control occurred on December 31, 2017, his payments and benefits would have an estimated value as follows (less applicable withholding taxes):

Scenario	Cash Severance ($)(1)	Bonus ($)(2)	Insurance Continuation ($)(3)	Tax Gross-Ups ($)	Value of Accelerated Equity Awards ($)(4)
Without Cause or For Good Reason	1,200,000	1,200,000	38,665	—	—
Termination after change in control	1,200,000	1,200,000	38,665	—	3,892,086
Change of Control (if not terminated), Death or Disability	—	—	—	—	3,892,086
Retirement	—	—	—	—	2,913,750
Voluntary Termination	—	—	—	—	—

(1) Payable over a two-year period. In addition to the listed amounts, if Mr. Hanson resigns or his employment is terminated for any reason, he may be paid for his unused vacation days. Mr. Hanson is currently entitled to 20 vacation days per year. The above table assumes that there is no earned but unpaid base salary as of the time of termination.

(2) Represents two times the estimate of the target bonus payment Mr. Hanson would be entitled to receive pursuant to our 2017 bonus incentive plan. The actual bonus payment he would be entitled to receive upon his termination may be different from the estimated amount, depending on the achievement of payment criteria under the bonus plan.

(3) The value of insurance continuation contained in the above table is the total cost of COBRA continuation coverage for Mr. Hanson, maintaining his same levels of medical, dental and other insurance as in effect on December 31, 2017, less the amount of premiums to be paid by Mr. Hanson for such coverage.

(4) As of December 31, 2017, Mr. Hanson held 49,536 unvested shares of restricted stock, unvested stock options to purchase 83,128 shares of Common Stock and 153,557 unvested cash-settled stock appreciation rights. The value of accelerated unvested options was calculated by multiplying 75,000 shares underlying Mr. Hanson's unvested options by $19.75 (the closing price per share on December 29, 2017, the last business day of 2017) and then deducting the aggregate exercise price for those shares (equal to $3.10 per share for those 75,000 options). The options having an exercise price greater than $19.75 per share were calculated as having a zero value. The value of the restricted stock that would accelerate and fully vest in the event of a Change in Control, death or disability was calculated by multiplying 49,536 shares by $19.75. The value of accelerated unvested stock appreciation rights was calculated by multiplying 100,000 shares by $19.75 and then deducting the settlement price of $3.10. Stock appreciation rights having an exercise price greater than $19.75 were calculated as having a zero value.

Steven A. Bate

Termination and Change of Control. Mr. Bate is entitled to certain benefits under his employment agreement upon the occurrence of any of the following events:

- we terminate his employment other than for cause, death or disability;

- Mr. Bate resigns for "good reason"; or
- an "Employment Agreement Change of Control" (see "—*R. Brian Hanson—Termination and Change of Control*" above) involving our Company occurs and, within 12 months following the change in control, (a) we or our successor terminate Mr. Bate's employment or (b) Mr. Bate terminates his employment after we or our successor (i) elect not to extend the term of his employment agreement, (ii) assign to Mr. Bate duties inconsistent with his CFO position, duties, functions, responsibilities, authority or reporting relationship to the Board under his employment agreement, (iii) become a privately-owned company as a result of a transaction in which Mr. Bate does not participate within the acquiring group, (iv) are rendered a subsidiary or division or other unit of another company; or (v) take any action that would constitute "good reason" under his employment agreement.

Upon the occurrence of any of the above events and conditions, Mr. Bate would be entitled to receive the following (less applicable withholding taxes and subject to compliance with non-compete, non-solicit and no-hire obligations):

- over a two-year period, a cash amount equal to two times his annual base salary in effect for the year of termination;
- a prorated portion of any unpaid target incentive plan bonus for the year of termination; and
- continuation of insurance coverage for Mr. Bate as of the date of his termination for a period of eighteen months at the same cost to him as prior to the termination.

Change of Control Under Equity Compensation Plans. Upon a "Plan Change of Control", (see "—*R. Brian Hanson—Change of Control Under Equity Compensation Plans*" above), all of Mr. Bate's stock options granted to him under the 2004 LTIP or the 2013 LTIP will become fully exercisable, all restricted stock awards granted to him under the 2013 LTIP will automatically accelerate and become fully vested, and all unvested stock appreciation rights granted to him under the 2008 Stock Appreciations Rights Plan will become fully exercisable. In addition, any change of control of our Company will cause the remaining term of Mr. Bate's employment agreement to adjust automatically to two years, commencing on the effective date of the change of control.

Upon his death or disability, all unvested options, restricted stock and stock appreciation rights that Mr. Bate holds would automatically accelerate and become fully vested. Upon his retirement, all unvested options and stock appreciation rights that Mr. Bate holds would automatically accelerate and become fully vested. No unvested shares of restricted stock held by Mr. Bate would automatically accelerate and become fully vested upon his retirement.

Upon any termination by us for cause or any resignation by Mr. Bate for any reason other than for "good reason" (as defined in his employment agreement), Mr. Bate is not entitled to any payment or benefit other than the payment of unpaid salary and possibly accrued and unused vacation pay.

Mr. Bate's currently-held vested stock options and stock appreciation rights will remain exercisable after his termination of employment, death, disability or retirement for periods of between three months and one year following such event, depending on the event and the terms of the applicable plan and grant agreement. If Mr. Bate is terminated for cause, all of his vested and unvested stock options, unvested restricted stock, and vested and unvested stock appreciation rights will be immediately forfeited.

Assuming Mr. Bate employment was terminated under each of these circumstances or a change of control occurred on December 31, 2017, his payments and benefits would have an estimated value as follows (less applicable withholding taxes):

Scenario	Cash Severance ($)(1)	Bonus ($)(2)	Insurance Continuation ($)(3)	Value of Accelerated Equity Awards ($)(4)
Without Cause or For Good Reason	750,000	—	20,208	—
Termination after change in control	750,000	—	20,208	1,943,574
Change of Control (if not terminated), Death or Disability	—	—	—	1,943,574
Retirement	—	—	—	1,456,875
Voluntary Termination	—	—	—	—

(1) Payable over a two-year period. In addition to the listed amounts, if Mr. Bate resigns or his employment is terminated for any reason, he may be paid for his unused vacation days. Mr. Bate is currently entitled to 20 vacation days per year. The above table assumes that there is no earned but unpaid base salary as of the time of termination.

(2) The actual bonus payment he would be entitled to receive upon his termination may be different from the estimated amount, depending on the achievement of payment criteria under the bonus plan.

(3) The value of insurance continuation contained in the above table is the total cost of COBRA continuation coverage for Mr. Bate, maintaining his same levels of medical, dental and other insurance as in effect on December 31, 2017, less the amount of premiums to be paid by Mr. Bate for such coverage.

(4) As of December 31, 2017, Mr. Bate held 24,643 unvested shares of restricted stock, unvested stock options to purchase 42,283 shares of Common Stock and 74,444 unvested cash-settled stock appreciation rights. The value of accelerated unvested options was calculated by multiplying 37,500 shares underlying Mr. Bate's unvested options by $19.75 (the closing price per share on December 29, 2017, the last business day of 2017) and then deducting the aggregate exercise price for those shares (equal to $3.10 per share for those 37,500 options). The options having an exercise price greater than $19.75 per share were calculated as having a zero value. The value of the restricted stock that would accelerate and fully vest in the event of a Change in Control, death or disability was calculated by multiplying 24,643 shares by $19.75. The value of accelerated unvested stock appreciation rights was calculated by multiplying 50,000 shares by $19.75 and then deducting the settlement price of $3.10. Stock appreciation rights having an exercise price greater than $19.75 per share were calculated as having a zero value.

Matthew R. Powers

Mr. Powers is not entitled to receive any contractual severance pay if we terminate his employment without cause. Upon a "Plan Change of Control" (see "*—R. Brian Hanson—Change of Control Under Equity Compensation Plans*" above), all of his unvested stock options granted to him under the 2013 LTIP will become fully exercisable, all unvested restricted stock awards granted to him under the 2013 LTIP will automatically accelerate and become fully vested, and all unvested stock appreciation rights granted to him under the 2008 Stock Appreciations Rights Plan will become fully exercisable. Upon his death or disability, all unvested options, restricted stock and stock appreciation rights that Mr. Powers holds would automatically accelerate and become fully vested. Upon his retirement, all unvested options and stock appreciation rights that Mr. Powers holds would automatically accelerate and become

fully vested. No shares of unvested restricted stock held by Mr. Powers would automatically accelerate and become fully vested upon his retirement.

The vested stock options and stock appreciation rights held by Mr. Powers will remain exercisable after his termination of employment, death, disability or retirement for periods of between three months and one year following such event, depending on the event and the terms of the applicable stock plan and grant agreement. If Mr. Powers is terminated for cause, all of his vested and unvested stock options, unvested restricted stock, and vested and unvested stock appreciation rights will be immediately forfeited.

Assuming his employment was terminated under each of these circumstances or a change of control occurred on December 31, 2017, his payments and benefits would have an estimated value as follows (less applicable withholding taxes):

Scenario	Cash Severance ($)(1)	Value of Accelerated Equity Awards ($)(2)
Without Cause	—	—
Change of Control (regardless of termination), Death or Disability	—	618,856
Retirement	—	355,549
Voluntary Termination	—	—

(1) If Mr. Powers resigns or his employment is terminated for any reason, he may be paid for his unused vacation days. Mr. Powers is currently entitled to 20 vacation days per year. The above table assumes that there is no earned but unpaid base salary as of the time of termination.

(2) As of December 31, 2017, Mr. Powers held 13,332 unvested shares of restricted stock, unvested stock options to purchase 39,875 shares of Common Stock and 3,334 unvested cash-settled stock appreciation rights. The value of accelerated unvested options was calculated by multiplying 39,750 shares underlying Mr. Powers' unvested options by $19.75 (the closing price per share on December 29, 2017, the last business day of 2017) and then deducting the aggregate exercise price for those shares (equal to $3.10 per share for 3,750 options and $13.15 per share for 36,000 options). The options having an exercise price greater than $19.75 per share were calculated as having a zero value. The value of the restricted stock that would accelerate and fully vest in the event of a Change in Control, death or disability was calculated by multiplying 13,332 shares by $19.75. The value of accelerated unvested stock appreciation rights was calculated by multiplying 3,334 shares by $19.75 and then deducting the settlement price of $3.10.

Christopher T. Usher

Mr. Usher is not entitled to receive any contractual severance pay if we terminate his employment without cause. Upon a "Plan Change of Control" (see "*—R. Brian Hanson—Change of Control Under Equity Compensation Plans*" above), all of his unvested stock options granted to him under the 2004 LTIP or the 2013 LTIP will become fully exercisable, all restricted stock awards granted to him under the 2013 LTIP will automatically accelerate and become fully vested, and all unvested stock appreciation rights granted to him under the 2008 Stock Appreciations Rights Plan will become fully exercisable. Upon his death or disability, all unvested options, restricted stock and stock appreciation rights that Mr. Usher holds would automatically accelerate and become fully vested. Upon his retirement, all unvested options and stock appreciation rights that Mr. Usher holds would automatically accelerate and become fully vested. No unvested shares of restricted stock held by Mr. Usher would automatically accelerate and become fully vested upon his retirement.

The vested stock options and stock appreciation rights held by Mr. Usher will remain exercisable after his termination of employment, death, disability or retirement for periods of between three months and one year following such event, depending on the event and the terms of the applicable stock plan and grant agreement. If Mr. Usher is terminated for cause, all of his vested and unvested stock options, unvested restricted stock, and vested and unvested stock appreciation rights will be immediately forfeited.

Assuming his employment was terminated under each of these circumstances or a change of control occurred on December 31, 2017, his payments and benefits would have an estimated value as follows (less applicable withholding taxes):

Scenario	Cash Severance ($)(1)	Value of Accelerated Equity Awards ($)(2)
Without Cause	—	—
Change of Control (regardless of termination), Death or Disability	—	1,338,771
Retirement	—	1,144,688
Voluntary Termination	—	—

(1) If Mr. Usher resigns or his employment is terminated for any reason, he may be paid for his unused vacation days. Mr. Usher is currently entitled to 20 vacation days per year. The above table assumes that there is no earned but unpaid base salary as of the time of termination.

(2) As of December 31, 2017, Mr. Usher held 9,827 unvested shares of restricted stock, unvested stock options to purchase 21,165 shares of Common Stock and 61,728 unvested cash-settled stock appreciation rights. The value of accelerated unvested options was calculated by multiplying 18,750 shares underlying Mr. Usher's unvested options by $19.75 (the closing price per share on December 29, 2017, the last business day of 2017) and then deducting the aggregate exercise price for those shares (equal to $3.10 per share for those 18,750 options). The options having an exercise price greater than $19.75 per share were calculated as having a zero value. The value of the restricted stock that would accelerate and fully vest in the event of a Change in Control, death or disability was calculated by multiplying 9,827 shares by $19.75. The value of accelerated unvested stock appreciation rights was calculated by multiplying 50,000 shares by $19.75 and then deducting the settlement price of $3.10. Stock appreciation rights having an exercise price greater than $19.75 per share were calculated as having a zero value.

Kenneth G. Williamson

Mr. Williamson is not entitled to receive any contractual severance pay if we terminate his employment without cause. Upon a "Plan Change of Control" (see "*—R. Brian Hanson—Change of Control Under Equity Compensation Plans*" above), all of his unvested stock options granted to him under the 2004 LTIP or the 2013 LTIP will become fully exercisable, all unvested restricted stock awards granted to him under the 2013 LTIP will automatically accelerate and become fully vested, and all unvested stock appreciation rights granted to him under the 2008 Stock Appreciations Rights Plan will become fully exercisable. Upon his death or disability, all unvested options, restricted stock and stock appreciation rights that Mr. Williamson holds would automatically accelerate and become fully vested. Upon his retirement, all unvested options and stock appreciation rights that Mr. Williamson holds would automatically accelerate and become fully vested. No unvested shares of restricted stock held by Mr. Williamson would automatically accelerate and become fully vested upon his retirement.

The vested stock options and stock appreciation rights held by Mr. Williamson will remain exercisable after his termination of employment, death, disability or retirement for periods of between three months and one year following such event, depending on the event and the terms of the

applicable stock plan and grant agreement. If Mr. Williamson is terminated for cause, all of his vested and unvested stock options, unvested restricted stock, and vested and unvested stock appreciation rights will be immediately forfeited.

Assuming his employment was terminated under each of these circumstances or a change of control occurred on December 31, 2017, his payments and benefits would have an estimated value as follows (less applicable withholding taxes):

Scenario	Cash Severance ($)(1)	Value of Accelerated Equity Awards ($)(2)
Without Cause	—	—
Change of Control (regardless of termination), Death or Disability	—	1,530,698
Retirement	—	1,269,563
Voluntary Termination	—	—

(1) If Mr. Williamson resigns or his employment is terminated for any reason, he may be paid for his unused vacation days. Mr. Williamson is currently entitled to 20 vacation days per year. The above table assumes that there is no earned but unpaid base salary as of the time of termination.

(2) As of December 31, 2017, Mr. Williamson held 13,222 unvested shares of restricted stock, unvested stock options to purchase 30,751 shares of Common Stock and 79,013 unvested cash-settled stock appreciation rights. The value of accelerated unvested options was calculated by multiplying 26,250 shares underlying Mr. Williamson's unvested options by $19.75 (the closing price per share on December 29, 2017, the last business day of 2017) and then deducting the aggregate exercise price for those shares (equal to $3.10 per share for those 26,250 options). The options having an exercise price greater than $19.75 per share were calculated as having a zero value. The value of the restricted stock that would accelerate and fully vest in the event of a Change in Control, death or disability was calculated by multiplying 13,222 shares by $19.75. The value of accelerated unvested stock appreciation rights was calculated by multiplying 50,000 shares by $19.75 and then deducting the settlement price of $3.10. Stock appreciation rights having an exercise price greater than $19.75 per share were calculated as having a zero value.

2017 Pension Benefits and Nonqualified Deferred Compensation

None of our named executive officers participates or has account balances in (i) any qualified or non-qualified defined benefit plans or (ii) any non-qualified defined contribution plans or other deferred compensation plans maintained by us.

Equity Compensation Plan Information
(as of December 31, 2017)

The following table provides certain information regarding our equity compensation plans under which equity securities are authorized for issuance, categorized by (i) the equity compensation plans previously approved by our shareholders and (ii) the equity compensation plans not previously approved by our shareholders:

Plan Category	Number of Securities to be Issued Upon Exercise of Outstanding Options, Warrants and Rights (a)	Weighted-Average Exercise Price of Outstanding Options, Warrants and Rights (b)	Number of Securities Remaining Available for Future Issuance Under Equity Compensation Plans (Excluding Securities Reflected in Column(a)) (c)
Equity Compensation Plans Approved by Shareholders			
2003 Stock Option Plan	333	$243.90	—
2004 Long-Term Incentive Plan (“2004 LTIP”)	297,614	$ 79.44	—
Second Amended and Restated 2013 Long-Term Incentive Plan (“2013 LTIP”)	584,870	$ 11.78	488,403
2010 Employee Stock Purchase Plan	—	—	47,241
Subtotal	882,817		535,644
Equity Compensation Plans Not Approved by Shareholders			
ARAM Systems Employee Inducement Stock Option Program	7,524	$211.50	—
Subtotal	7,524		—
Total	890,341		535,644

Following is a brief description of the material terms of the equity compensation plan that was not approved by our shareholders:

ION Geophysical Corporation—ARAM Systems Employee Inducement Stock Option Program. In connection with our acquisition of all of the capital stock of ARAM Systems, Ltd and its affiliates in September 2008, we entered into employment inducement stock option agreements with 48 key employees of ARAM as material inducements to their joining ION. The terms of these stock options are for 10 years, and the options become exercisable in four equal installments each year with respect to 25% of the shares each on the first, second, third and fourth consecutive anniversary dates of the date of grant. The options may be sooner exercised upon the occurrence of a “change of control” of ION. The number of shares of Common Stock covered by each option is subject to adjustment to prevent dilution resulting from stock dividends, stock splits, recapitalizations or similar transactions.

A description of our Stock Appreciation Rights Plan has not been provided in this sub-section because awards of SARs made under that plan may be settled only in cash.

CEO PAY RATIO DISCLOSURE

As required by Item 402(u) of Regulation S-K, we are providing the following information about the relationship of the median of the annual total compensation of our employees and the annual total compensation of Mr. R. Brian Hanson, our Chief Executive Officer (our "CEO"):

For 2017, our last completed fiscal year:

- the median of the annual total compensation of all employees of our company (other than our CEO), was $95,487; and
- the annual total compensation of our CEO was $1,766,639.

Based on this information, for 2017, the ratio of the annual total compensation of Mr. R. Brian Hanson, our Chief Executive Officer, to the median of the annual total compensation of all employees was 19 to 1.

We selected December 29, 2017 as the date upon which we would identify the "median employee". As of December 29, 2017, we had 469 employees worldwide. Relying upon the "de minimis exemption" in Item 402(u) of Regulation S-K (and using the total number of employees referenced in the preceding sentence for our de minimis calculation), we excluded 22 employees from eight countries (in each case, excluding all employees in the jurisdiction) as follows:

Jurisdiction	No. of Employees	Jurisdiction	No. of Employees
Australia	1	Netherlands	1
Brazil	3	People's Republic of China	4
Egypt	5	Russia	4
Malaysia	1	United Arab Emirates	3

Our employee population, after taking into consideration the de minimis exemption, consisted of 447 individuals. We used total compensation as calculated in accordance with Item 402(c)(2)(x) as our compensation measure and calculated it for each of the 447 employees. We annualized for any full-time employee that was not employed for all of calendar year 2017. We applied a British Pound Sterling ("GBP") to U.S. dollar and Canadian Dollar ("CAD") to U.S. dollar exchange rates as of December 29, 2017 to the compensation elements paid in the respective currencies.

ITEM 2—ADVISORY (NON-BINDING) VOTE TO APPROVE EXECUTIVE COMPENSATION

As required by Section 14A of the Exchange Act, we are asking our shareholders to approve, on an advisory basis, the compensation of our named executive officers as we have described it in the "Executive Compensation" section of this Proxy Statement. This advisory vote is sometimes referred to as "Say on Pay." While this vote is not binding on our Company, management and the Compensation Committee will review the voting results for purposes of obtaining information regarding investor sentiment about our executive compensation philosophy, policies and practices. If there are a significant number of negative votes, we will seek to understand the concerns that influenced the negative votes, and consider them in making decisions about our executive compensation programs in the future. At our 2017 Annual Meeting, our shareholders approved our non-binding advisory vote to approve the compensation of our named executive officers, with approximately 71% of the votes cast on the proposal voting in favor of its approval.

We believe that the information we have provided within the Executive Compensation section of this Proxy Statement demonstrates that our executive compensation program is designed appropriately and is working to ensure management's interests are aligned with our shareholders' interests to support long-term value creation. As described above in detail under "—*Compensation Discussion and Analysis*," our compensation program reflects a balance of short-term incentives (including performance-based cash bonus awards), long-term incentives (including equity awards that vest over up to four years), and protective measures, such as clawback and anti-hedging policies and stock ownership guidelines, that are designed to support our long-term business strategies and drive creation of shareholder value. We believe that our program is (i) aligned with the competitive market for talent, (ii) sensitive to our financial performance and (iii) oriented to long-term incentives, in order to maintain and improve our long-term profitability. We believe our program delivers reasonable pay that is strongly linked to our performance over time relative to peer companies and rewards sustained performance that is aligned with long-term shareholder interests. Our executive compensation program is also designed to attract and to retain highly-talented executive officers who are critical to the successful implementation of our Company's strategic business plan.

We routinely evaluate the individual elements of our compensation program in light of market conditions and governance requirements and make changes as appropriate for our business. For example, in 2009 and in 2015 we reduced base salaries for most company employees, with the largest reductions borne by our executives, including our named executive officers. In addition, our employment contract with our Chief Executive Officer does not contain tax gross-ups or single trigger change of control provisions. We are continuously seeking to improve our executive compensation programs and align our programs with shareholder interests. We believe that our executive compensation program continues to drive and promote superior financial performance for our Company and our shareholders over the long term through a variety of business conditions.

We have regularly sought approval from our shareholders regarding portions of our compensation program that we have used to motivate, retain and reward our executives. Since 2000, our shareholders have voted on and approved our equity compensation plans (and amendments to those plans) thirteen times, in addition to approving our overall executive compensation program for each of the last seven years. Those incentive plans make up a significant portion of the overall compensation that we provide to our executives. Over the years, we have made numerous changes to our executive compensation program in response to shareholder input. Because the vote is advisory, however, it will not be binding upon our Board or the Compensation Committee, and neither our Board nor the Compensation Committee will be required to take any action as a result of the outcome of the vote on this proposal. The Compensation Committee will carefully evaluate the outcome of the vote when considering future executive compensation arrangements. After our Annual Meeting in May 2018, our next say-on-pay vote will occur at our next Annual Meeting scheduled to be held in May 2019.

Accordingly, our Board strongly endorses the Company's executive compensation program and recommends that shareholders vote in favor of the following advisory resolution:

RESOLVED, that the shareholders approve the compensation paid to the named executive officers of the Company, pursuant to the compensation disclosure rules of the Securities and Exchange Commission, including the compensation discussion and analysis, the compensation tables and any related material disclosed in the Company's Proxy Statement for the 2018 Annual Meeting of Shareholders.

We encourage our shareholders to review closely the Compensation Discussion and Analysis, the accompanying compensation tables and the related narrative disclosure before voting on this proposal. The Compensation Discussion and Analysis describes and explains our executive compensation policies and practices and the process that was used by the Compensation Committee of our Board to reach its decisions on the compensation of our named executive officers for 2017. It also contains a discussion and analysis of each of the primary components of our executive compensation program—base salary, annual cash incentive awards and long-term incentive awards—and the various post-employment arrangements that we have entered into with certain of our named executive officers.

The Board recommends that shareholders vote "FOR" the advisory (non-binding) vote to approve the compensation of our named executive officers, as described in this Proxy Statement.

ITEM 3—RATIFICATION OF APPOINTMENT OF INDEPENDENT AUDITORS

We have appointed Grant Thornton LLP ("Grant Thornton") as our independent registered public accounting firm (independent auditors) for the fiscal year ending December 31, 2017. Grant Thornton served as our independent auditors for 2017.

The Board recommends that shareholders vote "FOR" ratification of the appointment of Grant Thornton as our independent auditors for 2018.

In the event shareholders do not ratify the appointment, the appointment will be reconsidered by the Audit Committee. Regardless of the outcome of the vote, however, the Audit Committee at all times has the authority within its discretion to recommend and approve any appointment, retention or dismissal of our independent auditors.

REPORT OF THE AUDIT COMMITTEE

The following Report of the Audit Committee does not constitute soliciting material and shall not be deemed filed or incorporated by reference into any other filings under the Securities Act or the Exchange Act, except to the extent ION specifically incorporates this Report by reference therein.

ION's management is responsible for ION's internal controls, financial reporting process, compliance with laws, regulations and ethical business standards and the preparation of consolidated financial statements in accordance with accounting principles generally accepted in the United States. ION's independent registered public accounting firm is responsible for performing an independent audit of ION's financial statements in accordance with generally accepted auditing standards and the effectiveness of ION's internal control over financial reporting, and issuing an opinion thereon. The Board of ION appointed the undersigned directors as members of the Audit Committee and adopted a written charter setting forth the procedures and responsibilities of the Audit Committee. Each year the Audit Committee reviews its Charter and reports to the Board on its adequacy in light of applicable rules of the NYSE. In addition, each year ION furnishes a written affirmation to the NYSE relating to Audit Committee membership, the independence and financial management expertise of the Audit Committee and the adequacy of the Charter of the Audit Committee.

The Charter of the Audit Committee specifies that the primary purpose of the Audit Committee is to assist the Board in its oversight of: (1) the integrity of the financial statements of ION; (2) compliance by ION with legal and regulatory requirements; (3) the independence, qualifications and performance of ION's independent registered public accountants; and (4) the performance of ION's internal auditors and internal audit function. In carrying out these responsibilities during 2017, and early in 2018 in preparation for the filing with the SEC of ION's Annual Report on Form 10-K, as amended, for the year ended December 31, 2017, the Audit Committee, among other things:

- reviewed and discussed the audited financial statements with management and ION's independent registered public accounting firm;
- reviewed the overall scope and plans for the audit and the results of the examinations of ION's independent registered public accounting firm;
- met with ION management periodically to consider the adequacy of ION's internal control over financial reporting and the quality of its financial reporting and discussed these matters with its independent registered public accounting firm and with appropriate ION financial personnel and internal auditors;
- discussed with ION's senior management, independent registered public accounting firm and internal auditors the process used for ION's Chief Executive Officer and Chief Financial Officer to make the certifications required by the SEC and the Sarbanes-Oxley Act of 2002 in connection with the Form 10-K and other periodic filings with the SEC;
- reviewed and discussed with ION's independent registered public accounting firm (1) their judgments as to the quality (and not just the acceptability) of ION's accounting policies, (2) the written disclosures and the letter from the independent registered public accounting firm required by applicable requirements of the Public Company Accounting Oversight Board regarding such firm's communication with the Audit Committee concerning independence, and the independence of the independent registered public accounting firm, and (3) the matters required to be discussed with the Audit Committee under auditing standards generally accepted in the United States, including the matters required by Statement of Public Company Accounting Oversight Board ("PCAOB") AS No. 1301, "Communications with Audit Committees";

- based on these reviews and discussions, as well as private discussions with ION's independent registered public accounting firm and internal auditors, recommended to the Board the inclusion of the audited financial statements of ION and its subsidiaries in the 2017 Form 10-K, as amended, for filing with the SEC;
- recommended the selection of Grant Thornton LLP as ION's independent registered public accounting firm for the fiscal year ending December 31, 2018; and
- determined that the non-audit services provided to ION by its independent registered public accounting firm (discussed below under "*—Principal Auditor Fees and Services*") are compatible with maintaining the independence of the independent auditors.

The Audit Committee met five times during 2017. The Audit Committee schedules its meetings with a view to ensuring that it devotes appropriate attention to all of its tasks. The Audit Committee's meetings include, whenever appropriate, executive sessions with ION's independent registered public accountants and with ION's internal auditors, in each case without the presence of ION's management. The Audit Committee has also established procedures for (a) the receipt, retention and treatment of complaints received by ION regarding accounting, internal accounting controls or auditing matters and (b) the confidential, anonymous submission by ION's employees of concerns regarding questionable accounting or auditing matters. However, this oversight does not provide the Audit Committee with an independent basis to determine that management has maintained appropriate accounting and financial reporting principles or policies, or appropriate internal controls and procedures designed to assure compliance with accounting standards and applicable laws and regulations. Furthermore, the Audit Committee's consideration and discussions with management and the independent registered public accounting firm do not assure that ION's financial statements are presented in accordance with generally accepted accounting principles or that the audit of ION's financial statements has been carried out in accordance with generally accepted auditing standards.

S. James Nelson, Jr., *Chairman*
Michael C. Jennings
James M. Lapeyre, Jr.

PRINCIPAL AUDITOR FEES AND SERVICES

In connection with the audit of the 2017 financial statements, we entered into an engagement agreement with Grant Thornton that sets forth the terms by which Grant Thornton would perform audit services for our Company. The following table shows the fees billed to us or accrued by us for the audit and other services provided by Grant Thornton for 2017 and 2016:

Fees	2017	2016
Audit Fees(a)	$1,110,900	$1,279,600
All Other Fees	—	—
Total	$1,110,900	$1,279,600

(a) Audit fees consist primarily of the audit and quarterly reviews of the consolidated financial statements, the audit of the effectiveness of internal control over financial reporting, audits of subsidiaries, statutory audits of subsidiaries required by governmental or regulatory bodies, attestation services required by statute or regulation, comfort letters, consents, assistance with and review of documents filed with the SEC, work performed by tax professionals in connection with the audit and quarterly reviews, and accounting and financial reporting consultations and research work necessary to comply with generally accepted auditing standards.

Our Audit Committee Charter provides that all audit services and non- audit services must be approved by the Audit Committee or a member of the Audit Committee. The Audit Committee has delegated to the Chairman of the committee the authority to pre-approve audit, audit-related and non-audit services not prohibited by law to be performed by our independent auditors and associated fees, so long as (i) the estimate of such fees does not exceed $50,000, (ii) the Chairman reports any decisions to pre-approve those services and fees to the full Audit Committee at a future meeting and (iii) the term of any specific pre-approval given by the Chairman does not exceed 12 months from the date of pre-approval.

All non-audit services were reviewed with the Audit Committee or the Chairman, which concluded that the provision of such services by Grant Thornton, was compatible with the maintenance of such firm's independence in the conduct of its auditing functions.

Other Matters

A representative of Grant Thornton will be available at the Annual Meeting, will be afforded an opportunity to make a statement if he/she desires to do so and will be available to respond to appropriate questions.

This Proxy Statement has been approved by the Board of Directors and is being made available to shareholders by its authority.

Matthew Powers
Executive Vice President, General Counsel and Corporate Secretary

Houston, Texas
April 13, 2018

The 2017 Annual Report to Shareholders includes our financial statements for the fiscal year ended December 31, 2017. We have mailed a notice of the 2017 Annual Report to Shareholders and this Proxy Statement to all of our shareholders of record. The 2017 Annual Report to Shareholders does not form any part of the material for the solicitation of proxies.

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, DC 20549

Form 10-K

(Mark One)

☒ **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the Fiscal Year Ended December 31, 2017

or

☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

Commission file number 1-12691

ION Geophysical Corporation
(Exact Name of Registrant as Specified in Its Charter)

Delaware	**22-2286646**
(State or Other Jurisdiction of Incorporation or Organization)	(I.R.S. Employer Identification No.)

2105 CityWest Blvd
Suite 100
Houston, Texas 77042-2839
(Address of Principal Executive Offices, Including Zip Code)

(281) 933-3339
(Registrant's Telephone Number, Including Area Code)

Securities registered pursuant to Section 12(b) of the Act:

Title of Each Class	Name of Each Exchange on Which Registered
Common Stock, $0.01 par value	New York Stock Exchange

Securities registered pursuant to Section 12(g) of the Act: **None**

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ☐ No ☒

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Exchange Act Yes ☐ No ☒

Indicate by check mark whether the registrant: (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☒ No ☐

Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). Yes ☒ No ☐

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer", "smaller reporting company" and "emerging growth company" in Rule 12b-2 of the Exchange Act. (Check one):

Large accelerated filer ☐	Accelerated filer ☐	Non-accelerated filer ☐ (Do not check if a smaller reporting company)	Smaller reporting company ☒ Emerging growth company ☐

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Act). Yes ☐ No ☒

As of June 30, 2017 (the last business day of the registrant's second quarter of fiscal 2017), the aggregate market value of the registrant's common stock held by non-affiliates of the registrant was $45.3 million based on the closing sale price per share ($4.35) on such date as reported on the New York Stock Exchange.

As of February 6, 2018, the number of shares of common stock, $0.01 par value, outstanding was 12,022,201 shares.

DOCUMENTS INCORPORATED BY REFERENCE

Document	Parts Into Which Incorporated
Portions of the registrant's definitive Proxy Statement for its Annual Meeting of Stockholders scheduled to be held on May 17, 2018, to be filed pursuant to Regulation 14A	Part III

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PART I

Preliminary Note: **This Annual Report on Form 10-K contains "forward-looking statements" as that term is defined in the Private Securities Litigation Reform Act of 1995. Forward-looking statements should be read in conjunction with the cautionary statements and other important factors included in this Form 10-K. See Item 1A. "*Risk Factors*" for a description of important factors which could cause actual results to differ materially from those contained in the forward-looking statements.**

In this Form 10-K, "ION Geophysical," "ION," "the company" (or, "the Company"), "we," "our," "ours" and "us" refer to ION Geophysical Corporation and its consolidated subsidiaries, except where the context otherwise requires or as otherwise indicated. Certain trademarks, service marks and registered marks of ION referred to in this Form 10-K are defined in Item 1. "*Business—Intellectual Property*."

Item 1. Business

We are a global, technology-focused company that provides geoscience products, services and solutions to the global oil and gas industry. Our offerings are designed to allow oil and gas exploration and production ("E&P") companies to obtain higher resolution images of the Earth's subsurface to reduce their risk in hydrocarbon exploration and development. We acquire, process and interpret seismic data from seismic surveys on a multi-client or proprietary basis. Seismic surveys for our multi-client data library business are pre-funded, or underwritten, in part by our customers, and, with the exception of our ocean bottom seismic ("OBS"), data acquisition services company, OceanGeo B.V. ("OceanGeo"), we contract with third party seismic data acquisition companies to acquire the seismic data, all of which is intended to minimize our risk exposure. We serve customers in most major energy producing regions of the world from strategically located offices in 23 cities on six continents.

Seismic imaging plays a fundamental role in hydrocarbon exploration and reservoir development by delineating structures, rock types and fluid locations in the subsurface. Our technologies, services and solutions are used by E&P companies to generate high-resolution images of the Earth's subsurface to identify hydrocarbons and pinpoint drilling locations for wells.

We provide our services and products through three business segments—E&P Technology & Services, E&P Operations Optimization, and Ocean Bottom Seismic Services. In addition, we have a 49% ownership interest in our INOVA Geophysical Equipment Limited joint venture ("INOVA Geophysical," or "INOVA").

For decades, we have provided innovative seismic data acquisition technology, such as multicomponent imaging with VectorSeis® products, technology to record seismic data below ice, and cableless seismic acquisition technology. The advanced technologies we currently offer include our Orca® and Gator™ command and control software systems, WiBand® broadband data processing technology, 4Sea® OBS acquisition system, Marlin™ operations optimization solution and other technologies, each of which is designed to deliver improvements in image quality, productivity and/or safety. We have approximately 500 patents and pending patent applications in various countries around the world. Approximately 48% of our employees are involved in technical roles and over 24% of our employees have advanced degrees.

E&P Technology & Services. Our E&P Technology & Services business provides three distinct service activities that often work together.

Our E&P Technology & Services business focuses on providing products and services that help E&P companies, National Oil Companies ("NOCs") and private equity firms maximize the value of their assets throughout the E&P lifecycle.

Our Ventures group provides full-scope two-dimensional ("2-D") and three-dimensional ("3-D") multi-client and proprietary programs, including survey design and planning, data acquisition, project management, advanced processing and imaging services, reservoir characterization, and interpretation. Our Ventures group focuses on the geologically intensive components of the image development process, such as survey planning and design, and data processing and interpretation, outsourcing the logistics components (such as field acquisition) to experienced seismic and other geophysical contractors. Our global data library consists of over 550,000 km of 2-D and over 150,000 sq km of 3-D multi-client seismic data in virtually all major offshore petroleum provinces. In addition, we have 3-D ResSCAN onshore imaging, characterization and microseismic monitoring programs.

Our Imaging Services group offers data processing and imaging services designed to help our E&P customers reduce exploration and production risk, evaluate and develop reservoirs, and increase production. We have more than 24 petabytes of digital seismic data storage in 4 global data centers, including two core data centers located in Houston and in the U.K.

Our E&P Advisors group partners with E&P operators, energy industry regulators and capital institutions to capture and monetize E&P opportunities worldwide. This group provides technical, commercial and strategic advice across the E&P value chain, working at basin, prospect and field scales.

E&P Operations Optimization. Our E&P Operations Optimization business combines our Optimization Software & Services and Devices offerings.

Our Optimization Software & Services business provides command and control software systems, related software and services for marine towed streamer and ocean bottom seismic operations, as well as survey design. Our Orca software system is installed on towed streamer vessels worldwide, and our Gator software is utilized on many ocean bottom seismic surveys.

Our Marlin solution is designed to optimize operations for a variety of offshore industries with simultaneous operations challenges such as seismic data acquisition, E&P assets, supply vessel management, offshore wind farm management, and others.

Our 4-D (time lapse) and wide-azimuth survey operations is designed to offer consulting services for planning and supervising complex surveys.

Our Devices business is engaged in the manufacture and repair of marine towed streamer acquisition and positioning systems and analog geophone sensors.

Ocean Bottom Seismic ("OBS") Services. We offer a fully integrated OBS solution designed to maximize seismic image quality, operational efficiency and safety. The integrated OBS solution includes expert survey design, planning and optimization, superior data captured using multicomponent acquisition systems available exclusively to OceanGeo; data acquisition by the experienced team at OceanGeo; and data processing, interpretation and reservoir services, by our Imaging Services experts. In addition, OceanGeo is engaged in the manufacture of redeployable ocean bottom cable seismic data acquisition systems.

INOVA Geophysical. We conduct our land seismic equipment business through INOVA Geophysical, a joint venture with BGP Inc., a subsidiary of China National Petroleum Corporation ("CNPC"). BGP is generally regarded as the world's largest land geophysical service contractor. BGP owns a 51% equity interest in INOVA Geophysical, and we own the remaining 49% interest. INOVA manufactures land seismic data acquisition systems, digital sensors, vibroseis vehicles (i.e., vibrator trucks), and energy source controllers. We wrote our investment in INOVA down to zero as of December 31, 2014.

Seismic Industry Overview

1930s - 1970s. Since the 1930s, oil and gas companies have sought to reduce exploration risk by using seismic data to create an image of the Earth's subsurface. Seismic data is recorded when listening devices placed on the Earth's surface, ocean bottom floor, or carried within the streamer cable of a towed streamer vessel, measure how long it takes for sound vibrations to echo off rock layers underground. For seismic data acquisition onshore, the acoustic energy producing the sound vibrations is generated by the detonation of small explosive charges or by large vibroseis (vibrator) vehicles. In marine acquisition, the energy is provided by a series of source arrays that deliver compressed air into the water column.

The acoustic energy propagates through the subsurface as a spherical wave front, or seismic wave. Interfaces between different types of rocks will both reflect and transmit this wave front. Onshore, the reflected signals return to the surface where they are measured by sensitive receivers that are analog coil-spring geophones. Offshore, the reflected signals are recorded by either hydrophones towed in an array behind a streamer acquisition vessel or by multicomponent geophones or MEMS sensors that are placed directly on the ocean floor. Once the recorded seismic energy is processed using advanced algorithms and workflows, images of the subsurface can be created to depict the structure, lithology (rock type), fracture patterns, and fluid content of subsurface horizons, highlighting the most promising places to drill for oil and natural gas. This processing also aids in engineering decisions, such as drilling and completion methods, as well as decisions affecting overall reservoir production and economic decisions relating to drilling risk and reserves in place.

Typically, an E&P company engages the services of a geophysical acquisition contractor to develop a seismic survey design, secure permits, coordinate logistics, and acquire seismic data in a selected area. The E&P company generally relies on third parties, such as ION, to provide the contractor with equipment, navigation and data management software, and field support services necessary for data acquisition. After the data is collected, the same geophysical contractor, a third-party data processing company, or the E&P company itself will process the data using proprietary algorithms and workflows to create a series of seismic images. Geoscientists then interpret the data by reviewing the images of the subsurface and integrating the geophysical data with other geological and production information such as well logs or core information.

During the 1960s, digital seismic data acquisition systems (which converted the analog output from the geophones into digital data for recording) and computers for seismic data processing were introduced. Using the new systems and computers, the signals could be recorded on magnetic tape and sent to data processors where they could be adjusted and corrected for known distortions. The final processed data was displayed in a form known as "stacked" data. Computer filing, storage, database management, and algorithms used to process the raw data quickly grew more sophisticated, dramatically increasing the amount of subsurface seismic information.

1980s. Until the early 1980s, the primary commercial seismic imaging technology was 2-D. 2-D seismic data is recorded using a single line of receivers. Once processed, 2-D seismic data allows geoscientists to see only a thin vertical slice of the Earth, and that image may be distorted by reflections originating out of the place of the receiver line. A geoscientist using 2-D seismic technology must speculate on the characteristics of the Earth between the slices and attempt to visualize the true 3-D structure of the subsurface.

The commercial development of 3-D imaging technology in the early 1980s was an important technological milestone for the seismic industry. Previously, the high cost of 3-D seismic data acquisition techniques and the lack of computing power necessary to process, display, and interpret 3-D data on a commercial basis slowed its widespread adoption. Today's 3-D seismic techniques record the reflected energy across a patch of receivers that collectively provide a more holistic, spatially-sampled depiction of geological horizons and, in some cases, rock and fluid properties, within the Earth.

3-D seismic data and the associated computer-based processing platforms enable geoscientists to generate more accurate subsurface maps than could be constructed from 2-D seismic lines. In particular, 3-D seismic data provided more detailed information about and higher-quality images of subsurface structures, including the geometry of bedding layers, salt structures, and fault planes. The improved 3-D seismic images enabled the oil and gas industry to discover new reservoirs, reduce finding and development costs, and lower overall hydrocarbon exploration risk. Driven by faster computers and more sophisticated mathematical equations to process the data, the technology advanced quickly.

1990s. As commodity prices decreased in the late 1990s and the pace of innovation in 3-D seismic imaging technology slowed, E&P companies slowed the commissioning of new seismic surveys. Also, business practices employed by geophysical contractors impacted demand for seismic data. In an effort to sustain higher utilization of existing capital assets, geophysical contractors increasingly began to collect speculative seismic data for their own data libraries in the hopes of selling it later to E&P companies. There became an abundance of speculative multi-client data in many regions. Additionally, since contractors incurred most of the costs of this speculative seismic data at the time of acquisition, contractors lowered prices to recover as much of their investment as possible, which drove operating margins down. During the 1990's, the accuracy of 3-D seismic surveys improved to the point that a survey acquired after significant oil production could be compared to a pre-production survey, and a map of the drainage pattern of the reservoir could be produced. This technique became known as time lapse, or 4-D seismic.

2000s. The conditions from the 1990s continued to prevail until 2004-2005, when commodity prices began increasing and E&P companies increased capital spending programs, driving higher demand for our services and products. During this time, the use of horizontal drilling and hydraulic fracturing increased, as onshore North American production became economically viable with higher oil prices. These techniques, used to extract oil from and gas from unconventional reservoirs, made once "hard to produce" oil and gas accessible and caused an upsurge in North American onshore oil and gas activity.

The financial crisis that occurred in 2008 and the resulting economic downturn drove hydrocarbon prices down sharply, reducing exploration activities in North America and in many parts of the world. However, crude oil prices rebounded and were fairly consistent from 2011-2014 exceeding $100 per barrel, and U.S. oil production exceeded even the most optimistic forecasts. In late 2014, however, oil prices began to decline significantly, dropping by approximately half and continued into 2015 and 2016 as signs emerged that non-U.S. demand was weakening.

Throughout 2014-2017, oil companies prioritized shareholder returns and cash flow generation over hydrocarbon resource growth, minimizing discretionary spending and shifting their focus from exploration to production. This shift caused a contraction in E&P spending, especially on seismic data and services for exploration. In addition, oil and gas companies have tended to shift toward reprocessing existing seismic data as a more cost-effective alternative to acquiring new data where possible.

Our Strategy

The key elements of our business strategy are to:

- ***Leverage our key technologies to provide integrated solutions to oil and gas companies, across the entire E&P lifecycle.*** More of our customers are seeking fully integrated offerings from seismic companies, from survey planning and design, to leading technology differentiation in acquisition and processing. We have transformed our company from an equipment provider to an integrated service provider, where leading equipment and software technologies underpin our solution offerings. The growth in our E&P Technology & Services business over the past decade is a

testament to our steadfast execution of this strategy. Whereas our E&P Technology & Services offerings, including our BasinSPAN™ 2-D seismic programs, were focused on the earlier frontier exploration phase of the E&P lifecycle, our newest offering, OBS Services through OceanGeo, is geared to the later, production phase of the E&P lifecycle leveraging our internally developed technology, including 4Sea®, our newest OBS data acquisition system.

- ***Expand and globalize our E&P Technology & Services business.*** We seek to expand and grow our E&P Technology & Services business into new regions, with new customers and new offerings, including data processing services through our Imaging Services group and our Ventures multi-client and proprietary programs. Historically known for our 2-D programs, we entered the 3-D multi-client market in 2013 by acquiring and processing our first survey offshore Ireland. Since then, we have expanded our 3-D seismic data library considerably by purchasing existing seismic data and reimaging the data by using new data processing techniques and algorithms. For the foreseeable future, we expect the majority of our near-term investments to be in research and development and computing infrastructure for our data processing business and to support our multi-client projects. We believe this focus better positions our company as a full-service technology company with an increasing proportion of revenues derived from E&P customers.
- ***Continue investing in advanced software and equipment technology to provide next generation services and products.*** We intend to continue investing in the development of new technologies for use by E&P companies. In particular, we intend to focus on the development of the next generation of our OBS technology, our Marlin operations optimization software, and derivative products, with the goal of obtaining technical and market leadership in what we continue to believe are important and expanding markets. In 2017, our total investment in research and development and engineering was equal to approximately 8% of our total net revenue for the year.
- ***Collaborate with our customers to provide products and solutions designed to meet their needs.*** A key element of our business strategy has been to understand the challenges faced by E&P companies in seismic survey planning, data acquisition, processing, and interpretation. We will continue to develop and offer technology and services that enable us to work with E&P companies to solve their unique challenges around the world. We have found collaborating with E&P companies to better understand their imaging challenges and working with them to ensure the right technologies are properly applied, is the most effective method for meeting their needs. Our goal of being a full solutions provider to solve the most difficult challenges for our customers is an important element of our long-term business strategy, and we are implementing this partnership approach globally through local personnel in our regional organizations who understand the unique challenges in their areas. We formed an E&P Advisors group in 2015 designed to focus specifically on this element of our strategy.

Our Strengths

We believe that we are solidly positioned to successfully execute the key elements of our business strategy based on the following competitive strengths:

- ***We are leveraging our key technologies to provide integrated solutions to oil and gas companies.*** More of our customers are seeking fully integrated offerings from seismic companies, from survey planning and design, to leading technology differentiation in acquisition and processing. ION has become an integrated solution provider for both towed streamer and ocean bottom seismic services.
- ***We are a broad-based seismic solutions provider, with offerings spanning the entire geophysical workflow.*** We are a technology-focused service provider, with offerings that span the entire seismic workflow, from survey planning and data acquisition to processing and interpretation. Our offerings include seismic data acquisition hardware, data acquisition services, command and

control software, value-added services associated with seismic survey design, seismic data processing and interpretation, and multi-client seismic data libraries.

- ***Our "asset light" strategy enables us to avoid significant fixed costs and to remain financially flexible.*** We do not own a fleet of marine vessels and, with the exception of OceanGeo, we do not provide our own crews to acquire seismic data. We outsource a majority of our seismic data acquisition activity to third parties that operate their own fleets of seismic vessels and equipment. Doing so enables us to avoid fixed costs associated with these assets and personnel and to manage our business in a manner designed to afford us the flexibility to quickly decrease our costs or capital investments in the event of a downturn, as we experienced from 2014-2016. Similar to our asset light strategy, Schlumberger recently announced their plans to exit the land and marine acquisition business. We actively manage the costs of developing our multi-client data library business by requiring our customers to partially pre-fund, or underwrite, the investment for any new project. Our target goal is to have a vast majority of the total cost of each new project's data acquisition to be underwritten by our customers. We believe this conservative approach to data library investment is the most prudent way to reduce the impact of any sudden reduction in the demand for seismic data, giving us the flexibility to aggressively reduce cash outflows as we have successfully implemented in the current industry downturn.

- ***Our global footprint and ability to work in harsh conditions allow us to offset regional downturns.*** Our focus on conducting business around the world, even in the harshest and most extreme environments, has been and will continue to be a key component of our strategy. This global focus and diversified portfolio approach has been helpful in minimizing the impact of any regional or country-specific slowdown for short or extended periods of time.

- ***We have a diversified and blue chip customer base.*** We provide services and products to a diverse, global customer base that includes many of the largest oil and gas and geophysical companies in the world, including NOCs and International Oil Companies ("IOCs"). Over the past decade, we have made significant progress in expanding our customer list and revenue sources. Whereas almost all of our revenues in the early 2000s were derived principally from seismic service providers, in 2017, E&P companies accounted for approximately 73% of our total revenues. Although we provide services and products to some of the largest E&P companies in the world, no single customer accounted for more than 10% of our total revenue in 2016 and 2015; in 2017, we had one multi-national oil customer that exceeded 10% of our total revenue.

Services and Products

E&P Technology & Services Segment

Our E&P Technology & Services segment includes the following:

Ventures—Our Ventures group provides complete seismic data services, from survey planning and design through data acquisition to final subsurface imaging and reservoir characterization. We work backwards through the seismic workflow, with the final image in mind, to select the optimal survey design, acquisition technology, and processing techniques.

We offer our services to customers on both a proprietary and multi-client (non-exclusive) basis. In both cases, the customers generally pre-fund a majority of the survey costs. The period during which our multi-client surveys are being designed, acquired or processed is referred to as the "New Venture" phase. For proprietary services, the customer has exclusive ownership of the data. For multi-client surveys, we generally retain ownership of or long-term exclusive marketing rights to the data and receive ongoing revenue from subsequent data license sales.

Since 2002, we have acquired and processed a growing multi-client data library consisting of non-exclusive marine and ocean bottom data from around the world. The majority of the data licensed

by ION consists of ultra-deep 2-D seismic data that E&P companies use to evaluate petroleum systems at the basin level, including insights into the character of source rocks and sediments, migration pathways, and reservoir trapping mechanisms. In some cases, we extend beyond seismic data to include magnetic, gravity, well log, and electromagnetic information, to provide a more comprehensive picture of the subsurface. Known as "BasinSPAN" programs, these geophysical surveys cover most major offshore basins worldwide and we continue to build on them. In addition to our 2-D multi-client programs, in 2013, we acquired our first 3-D marine proprietary program, then in 2014, in collaboration with Polarcus Limited, a marine geophysical company, we jointly acquired and processed our first 3-D survey offshore Ireland.

In 2016, in collaboration with Schlumberger we began a 3-D multi-client broadband reimaging program offshore Mexico, leveraging Mexico's National Hydrocarbons Commission (CNH) data library. The successful Campeche program has since expanded due to customer demand and now consists of approximately 94,000 km^2 offshore southern Mexico. Since 2016, we have added an additional 70,000 km^2 of 3-D data offshore Mexico (in continued collaboration with Schlumberger) and in Brazil. These programs make up a significant portion of our backlog at December 31, 2017.

We also have a library of 3-D onshore reservoir imaging and characterization programs that provide E&P companies with the ability to better understand unconventional reservoirs to maximize production. Known as "ResSCAN™" programs, these 3-D multicomponent seismic data programs were designed, acquired and depth-imaged using advanced geophysical technology and proprietary processing techniques, resulting in high-definition images of the subsurface.

Imaging Services—Our Imaging Services group provides advanced marine and land seismic data processing and imaging. In addition to applying processing and imaging technologies to data we own or data licensed by our customers, we also provide our customers with seismic data acquisition support services, such as data pre-conditioning for imaging and quality control of seismic data acquisition.

We utilize a globally distributed network of Linux-cluster processing centers in combination with our major hubs in Houston and London to process seismic data using advanced, proprietary algorithms and workflows.

Our Imaging Services team has pioneered several differentiated processing and imaging solutions for both offshore and onshore environments including: Reverse Time Migration (RTM), Surface Related Multiple Elimination (SRME), and WiBand broadband deghosting. In 2013, we commercially released our Full Waveform Inversion and non-parametric picking tomography techniques to improve subsurface image resolution in areas with complex geologies. The advantages of these techniques are that they allow for the resolution of complex, small-scale velocity variations. In 2014, we introduced PrecisION™, an innovative compressed seismic inversion technique that is designed to build Earth reconstructions with improved accuracy and aid geoscientists in better quantifying exploration and development risk and uncertainty. In 2015, we released our next generation data processing system, Perseus, which removes our dependence on third party software and yielded turnaround improvements of over four times on our key processes. In addition to processing our own 2-D and 3-D multi-client programs, our proprietary processing and imaging business has been focused on key customers with complex 3-D imaging challenges predominantly in the marine environment for both towed streamer and seabed.

At December 31, 2017, our E&P Technology & Services segment backlog, which consists of commitments for (i) data processing work and (ii) both multi-client New Venture and proprietary projects that have been underwritten, has increased to $39.2 million compared with $33.9 million at December 31, 2016. The majority of the increase in backlog is attributable to our 3-D imaging programs. Our E&P Technology & Services segment's fiscal-year-end backlog includes signed contracts that we can usually fulfill within approximately six months. Investments in our multi-client data library are dependent upon the timing of our New Venture projects and the availability of underwriting by our

customers. Our asset light strategy enables us to scale our business to avoid significant fixed costs and to remain financially flexible as we manage the timing and levels of our capital expenditures.

E&P Advisors—Our E&P Advisors group partners with E&P operators, energy industry regulators and capital institutions to capture and monetize E&P opportunities worldwide. This group provides technical, commercial and strategic advice across the exploration and production value chain, working at basin, prospect and field scales. E&P Advisors couple ION's proven technical capabilities with the industry's best commercial and strategic minds to deliver fit-for-purpose solutions, employing a variety of commercial models specific to our clients' needs.

E&P Operations Optimization Segment

Our E&P Operations Optimization segment combines our Optimization Software & Services and Devices offerings.

Through this segment, we supply command and control software systems and related services for marine towed streamer and ocean bottom seismic operations. Software developed by our Optimizations Software & Services group is installed on marine towed streamer vessels and used by many ocean bottom survey crews. In addition we, recently began selling existing technology to new customers in scientific, military and academic industries. An advantage of our underlying software platform is that it provides common components from which to build other applications. This enables the acceleration of development and commercialization of new products as market opportunities are identified. Marlin, our newest software solution for optimizing offshore operations is an example where we leveraged the underlying software platform to quickly develop a new offering.

Products and services for our Optimizations Software & Services group include the following:

Towed Streamer Command & Control System—Our command and control software for towed streamer acquisition, Orca, integrates acquisition, planning, positioning, source and quality control systems into a seamless operation.

Ocean Bottom Command & Control System—Gator is our integrated navigation and data management system for multi-vessel OBS, electromagnetic and transition zone operations.

Survey Planning and Optimization—We offer consulting services for planning and supervising complex surveys, including for 4-D (time lapse) and wide-azimuth survey operations. Our acquisition expertise and in-field software platforms are designed to allow clients, including both oil companies and seismic data acquisition contractors, to optimize these complex surveys, improving efficiencies, data quality and reducing costs. Our Orca and Gator systems are designed to integrate with our post-survey tools for processing, analysis and data quality control. Orca and Gator both have modules that enable in-field survey optimization. These modules are designed to enable improved, safer acquisition through analysis and prediction of sea currents and integration of the information into the acquisition plan.

Products of our Devices group include the following:

Marine Positioning Systems—Our marine towed streamer positioning system includes streamer cable depth control devices, lateral control devices, compasses, acoustic positioning systems and other auxiliary sensors. This equipment is designed to control the vertical and horizontal positioning of the streamer cables and provides acoustic, compass and depth measurements to allow processors to tie navigation and location data to geophysical data to determine the location of potential hydrocarbon reserves. DigiBIRD II™ is designed to maintain streamers at pre-defined target depths more safely, efficiently, and cost effectively than ever before by eliminating workboat operations for battery changes on the majority of seismic surveys. DIGIFIN® is an advanced lateral streamer control system that we commercialized in 2008. DIGIFIN® is designed to maintain tighter, more uniform marine streamer separation along the entire length of the streamer cable, which allows for better sampling of seismic

data and improved subsurface images. We believe DIGIFIN® also enables faster line changes and minimizes the requirements for in-fill seismic work. In addition to manufacturing new marine positioning system devices, the Devices group also repairs its positioning equipment previously sold to its customers.

Analog Geophones—Analog geophones are sensors that measure acoustic energy reflected from rock layers in the Earth's subsurface using a mechanical, coil-spring element. We manufacture and market a full suite of geophones and geophone test equipment that operate in most environments, including land surface, transition zone and downhole. Our geophones are used in other industries as well.

Ocean Bottom Seismic Services Segment

ION offers a fully-integrated OBS solution that includes expert survey design, planning and optimization, to maximize seismic image quality; safe, efficient data acquisition by the experienced team at OceanGeo; superior imaging via OceanGeo's exclusive use of our acquisition systems; and data processing, interpretation and reservoir services through ION.

We believe the market for ocean bottom seismic imaging is growing. OBS provides more detailed reservoir imaging typically used for development rather than exploration objectives, leading E&P companies to prioritize in ocean bottom seismic activities, consistent with their desire for higher-quality seismic imaging for complex geological formations and more detailed reservoir characteristics. Since introducing our first ocean bottom acquisition system, VSO, in 2004, we have continued to develop advanced ocean bottom systems.

INOVA Geophysical Products

INOVA manufactures land acquisition systems, including the G3i® HD, ARIES® and Hawk® recording platforms, land source products, including the AHV-IV series, UNIVIB®, and UNIVIB 2 vibroseis vehicles, and source controllers and multicomponent sensors, including the ground-breaking VectorSeis® digital 3C receivers.

Product Research and Development

Our ability to compete effectively in the seismic market depends principally upon continued innovation in our underlying technologies. As such, the overall focus of our research and development efforts has remained on improving both the quality of the subsurface images we generate and the economics, efficiency and quality of the seismic data. In particular, we have concentrated on enhancing the nature and quality of the information that can be extracted from the subsurface images.

Research and development efforts in 2017 targeted the consolidation of key technologies across ION, together with the expansion of our portfolio of product offerings. A range of new technologies have been developed, with an over-arching focus on Ocean Bottom Seismic Services, including new and flexible seismic acquisition optimization and processing tools, as well as in-water control devices which improve the operational efficiency of marine sources.

The Optimization Software & Services group continued development of survey optimization and integration capabilities across the software portfolio as well as with products from the Devices group. Investment continued in the Marlin simultaneous operations tool including the aim of addressing alternative market opportunities.

Development within the Devices group was focused on the new in-water control device, SailWing™, including sea trials and integration with the Orca and Gator software products, as well as further development of the successful Digi family of products, including the automatic Streamer

Recovery Device and rechargeable battery option. We continue to invest in the development of new sensors with applicability both within and outside the seismic business.

The seismic data processing group continued to invest in production efficiencies, leading-edge technologies and OBS capabilities. Research continued into advanced imaging techniques such as the extension of Full Waveform Imaging to allow the use of reflection data as well as high-frequency FWI.

As many of these new services and products are under development and, as the development cycles from initial conception through to commercial introduction can extend over a number of years, their commercial feasibility or degree of commercial acceptance may not yet be established. No assurance can be given concerning the successful development of any new service or product, any enhancements to them, the specific timing of their release or their level of acceptance in the marketplace.

Markets and Customers

Our primary customers are E&P companies to whom we market and offer services, primarily multi-client seismic data programs from our Ventures group, imaging-related processing services from our Imaging Services group, and OBS data acquisition services through OceanGeo, as well as consulting services from our E&P Advisors and Optimization Software & Services group. Secondarily, seismic contractors purchase our towed streamer data acquisition systems and related equipment and software to collect data in accordance with their E&P company customers' specifications or for their own seismic data libraries.

A significant portion of our marketing effort is focused on areas outside of the United States. Foreign sales are subject to special risks inherent in doing business outside of the United States, including the risk of political instability, armed conflict, civil disturbances, currency fluctuations, embargo and governmental activities, customer credit risks and risk of non-compliance with U.S. and foreign laws, including tariff regulations and import/export restrictions.

We sell our services and products through a direct sales force consisting of employees and international third-party sales representatives responsible for key geographic areas. The majority of our foreign sales are denominated in U.S. dollars. During 2017, 2016 and 2015, sales to destinations outside of North America accounted for approximately 76%, 78% and 66% of our consolidated net revenues, respectively. Further, systems and equipment sold to domestic customers are frequently deployed internationally and, from time to time, certain foreign sales require export licenses.

Traditionally, our business has been seasonal, with strongest demand typically in the second half of our fiscal year.

For information concerning the geographic breakdown of our net revenues, see Footnote 2 "*Segment and Geographic Information*" of Footnotes to *Consolidated Financial Statements* contained elsewhere in this Annual Report on Form 10-K for additional information.

Competition

Our Imaging Services group within our E&P Technology & Services segment competes with more than a dozen companies that provide data processing services to E&P companies. See "*Services and Products—E&P Technology & Services Segment.*" While the barriers to enter this market are relatively low, we believe the barriers to compete at the higher end of the market—the advanced pre-stack depth migration market where our efforts are focused—are significantly higher. At the higher end of this market, CGG (an integrated geophysical company) and Schlumberger (a large integrated oilfield services company), are our E&P Technology & Services segment's two primary competitors for advanced imaging services. However, Schlumberger has recently announced its plan to exit the land and marine seismic acquisition business. Both of these companies are significantly larger than ION in terms

of revenue, processing locations and sales, marketing and financial resources. In addition, both CGG and Schlumberger possess an advantage in the data processing arena, as part of more vertically integrated seismic contractor companies; for example, when these companies acquire large 3-D multi-client surveys, the internal data processing organization will usually be awarded the data processing without any requirement to compete with external vendors. CGG and Schlumberger, along with other competitors, TGS-NOPEC Geophysical Company ASA and Spectrum ASA, also develop and sell multi-client data that compete with our data library. BGP also competes in this space by primarily partnering with other competitors to develop and sell multi-client data.

In the OBS market, OceanGeo competes with a number of companies, including Fairfield Nodal, Seabed GeoSolutions (a joint venture of Fugro and CGG), Magseis and BGP. The OBS market primarily addresses the production end of the E&P business. This market is primarily vertically integrated with a variety of proprietary technologies, comprising both cable and nodal systems. Most companies operate one to three crews, and there have been four new entrants in the last few years.

The market for seismic services and products is highly competitive and characterized by frequent changes in technology. Our principal competitor for marine seismic equipment is Sercel (a manufacturing subsidiary of CGG). Sercel has the advantage of being able to sell its products and services to its parent company that operates both land and marine crews, providing it with a significant and stable internal market and a greater ability to test new technology in the field. The recent downturn in the industry has disrupted traditional buying patterns. We have seen a generally increasing trend of companies such as Petroleum GeoServices ASA ("PGS") developing their own instrumentation to create a competitive advantage through products such as GeoStreamer. We also compete with other seismic equipment companies on a product-by-product basis. Our ability to compete effectively in the manufacture and sale of seismic instruments and data acquisition systems depends principally upon continued technological innovation, as well as pricing, system reliability, reputation for quality and ability to deliver on schedule.

Some seismic contractors design, engineer and manufacture seismic acquisition technology in-house (or through a network of third-party vendors) to differentiate themselves. Although this technology competes directly with our towed streamer, and ocean bottom equipment, it is not usually made available to other seismic acquisition contractors. However, the risk exists that other seismic contractors may decide to develop their own seismic technology, which would put additional pressure on the demand for our acquisition equipment.

In addition, we expect continued reductions in the market for spare parts and service of existing equipment as a result of the fleet reductions currently occurring in the marine seismic market. During 2017, the number of 2-D and 3-D marine streamer vessels, including those in operation, under construction, or announced additions to capacity, decreased by nine, to approximately 80 vessels total. In addition, there has been an increase in recent years of consolidation within the sector, with the major vessel operators—CGG, WesternGeco and PGS—all acquiring new market entrants in the last several years. The majority of the high-end 3-D seismic capacity is concentrated among the largest three companies—CGG, WesternGeco and PGS. Those three companies are vertically integrated with technology that uniquely differentiates them from the rest of the players. This consolidation reduces the number of potential customers and vessel outfitting opportunities for us. During the downturn in the price of crude oil and the resulting reduction in capital expenditures by E&P companies, we anticipate that older, smaller and less efficient vessels will drop out of the fleet to be replaced by newer vessels.

In the land seismic equipment market, where INOVA competes, the principal competitors are Sercel and Geospace Technologies. INOVA is a joint venture with BGP as a majority stake owner. BGP purchases land seismic equipment from both INOVA and competing land equipment suppliers.

Intellectual Property

We rely on a combination of patents, copyrights, trademark, trade secrets, confidentiality procedures and contractual provisions to protect our proprietary technologies. We have approximately 500 patents and pending patent applications, including filings in international jurisdictions with respect to the same kinds of technologies. Although our portfolio of patents is considered important to our operations, and particular patents may be material to specific business lines, no one patent is considered essential to our consolidated business operations.

Our patents, copyrights and trademarks offer us only limited protection. Our competitors may attempt to copy aspects of our products despite our efforts to protect our proprietary rights, or may design around the proprietary features of our products. Policing unauthorized use of our proprietary rights is difficult, and we may be unable to determine the extent to which such use occurs. Our difficulties are compounded in certain foreign countries where the laws do not offer as much protection for proprietary rights as the laws of the United States. From time to time, third parties inquire and claim that we have infringed upon their intellectual property rights and we make similar inquiries and claims to third parties. Material intellectual property litigation is discussed in detail in Item 3. "*Legal Proceedings.*"

The information contained in this Annual Report on Form 10-K contains references to trademarks, service marks and registered marks of ION and our subsidiaries, as indicated. Except where stated otherwise or unless the context otherwise requires, the terms "VectorSeis," "ARIES II," "DigiFIN," "DigiCOURSE," "Hawk," "Orca," "G3i," "WiBand,", "4Sea,", "UNIVIB", "VectorSeis" and "MESA" refer to the VECTORSEIS®, ARIES® II, DIGIFIN®, DIGICOURSE®, HAWK®, ORCA®, G3I®, WiBand®, 4Sea®, UNIVIB®, VectorSeis® and MESA® registered marks owned by ION or INOVA Geophysical or their affiliates, and the terms "BasinSPAN," "Calypso," "DigiSTREAMER," "Gator," "AHV-IV," "Vib Pro," "Shot Pro," "Optimiser," "Reflex," "ResSCAN," "PrecisION", "Calypso," "SailWing" and "Marlin" refer to the BasinSPAN™, Calypso™, DigiSTREAMER™, GATOR™, AHV-IV™, Vib Pro™, Shot Pro™, Optimiser™, Reflex™, ResSCAN™, PrecisION™, Calypso™, SailWing™ and Marlin™ trademarks and service marks owned by ION or INOVA Geophysical or their affiliates.

Regulatory Matters

Our operations are subject to various international conventions, laws and regulations in the countries in which we operate, including laws and regulations relating to the importation of and operation of seismic equipment, currency conversions and repatriation, oil and gas exploration and development, taxation of offshore earnings and earnings of expatriate personnel, environmental protection, the use of local employees and suppliers by foreign contractors and duties on the importation and exportation of equipment. Our operations are subject to government policies and product certification requirements worldwide. Governments in some foreign countries have become increasingly active in regulating the companies holding concessions, the exploration for oil and gas and other aspects of the oil and gas industries in their countries. In some areas of the world, this governmental activity has adversely affected the amount of exploration and development work done by major oil and gas companies and may continue to do so. Operations in less developed countries can be subject to legal systems that are not as mature or predictable as those in more developed countries, which can lead to greater uncertainty in legal matters and proceedings.

Changes in these conventions, regulations, policies or requirements could affect the demand for our services and products or result in the need to modify them, which may involve substantial costs or delays in sales and could have an adverse effect on our future operating results. Our export activities are subject to extensive and evolving trade regulations. Certain countries are subject to trade

restrictions, embargoes and sanctions imposed by the U.S. government. These restrictions and sanctions prohibit or limit us from participating in certain business activities in those countries.

Our operations are also subject to numerous local, state and federal laws and regulations in the United States and in foreign jurisdictions concerning the containment and disposal of hazardous materials, the remediation of contaminated properties and the protection of the environment. While the industry has experienced an increase in general environmental regulation worldwide and laws and regulations protecting the environment have generally become more stringent, we do not believe compliance with these regulations has resulted in a material adverse effect on our business or results of operations, and we do not currently foresee the need for significant expenditures in order to be able to remain compliant in all material respects with current environmental protection laws. Regulations in this area are subject to change, and there can be no assurance that future laws or regulations will not have a material adverse effect on us.

Our customers' operations are also significantly impacted in other respects by laws and regulations concerning the protection of the environment and endangered species. For instance, many of our marine contractors have been affected by regulations protecting marine mammals in the Gulf of Mexico. To the extent that our customers' operations are disrupted by future laws and regulations, our business and results of operations may be materially adversely affected.

Employees

As of December 31, 2017, we had 478 regular, full-time employees, 280 of whom were located in the U.S. From time to time and on an as-needed basis, we supplement our regular workforce with individuals that we hire temporarily or retain as independent contractors in order to meet certain internal manufacturing or other business needs. Our U.S. employees are not represented by any collective bargaining agreement, and we have never experienced a labor-related work stoppage. We believe that our employee relations are satisfactory.

Financial Information by Segment and Geographic Area

For a discussion of financial information by business segment and geographic area, see Footnote 2 "*Segment and Geographic Information*" of Footnotes to *Consolidated Financial Statements.*

Available Information

Our executive headquarters are located at 2105 CityWest Boulevard, Suite 100, Houston, Texas 77042-2839. Our telephone number is (281) 933-3339. Our home page on the Internet is *www.iongeo.com.* We make our website content available for information purposes only. Unless specifically incorporated by reference in this Annual Report on Form 10-K, information that you may find on our website is not part of this report.

In portions of this Annual Report on Form 10-K, we incorporate by reference information from parts of other documents filed with the Securities and Exchange Commission ("SEC"). The SEC allows us to disclose important information by referring to it in this manner, and you should review this information. We make our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K, annual reports to stockholders, and proxy statements for our stockholders' meetings, as well as any amendments, available free of charge through our website as soon as reasonably practicable after we electronically file those materials with, or furnish them to, the SEC.

You can learn more about us by reviewing our SEC filings on our website. Our SEC reports can be accessed through the Investor Relations section on our website. The SEC also maintains a website at www.sec.gov that contains reports, proxy statements, and other information regarding SEC registrants, including our company.

Item 1A. ***Risk Factors***

This report contains or incorporates by reference statements concerning our future results and performance and other matters that are "forward-looking" statements within the meaning of Section 27A of the Securities Act of 1933, as amended ("Securities Act"), and Section 21E of the Securities Exchange Act of 1934, as amended ("Exchange Act"). These statements involve known and unknown risks, uncertainties and other factors that may cause our or our industry's results, levels of activity, performance, or achievements to be materially different from any future results, levels of activity, performance, or achievements expressed or implied by such forward-looking statements. In some cases, you can identify forward-looking statements by terminology such as "may," "will," "would," "should," "intend," "expect," "plan," "anticipate," "believe," "estimate," "predict," "potential," or "continue" or the negative of such terms or other comparable terminology. Examples of other forward-looking statements contained or incorporated by reference in this report include statements regarding:

- any additional damages or adverse rulings in the WesternGeco litigation and future potential adverse effects on our financial results and liquidity;
- future levels of capital expenditures of our customers for seismic activities;
- future oil and gas commodity prices;
- the effects of current and future worldwide economic conditions (particularly in developing countries) and demand for oil and natural gas and seismic equipment and services;
- future cash needs and availability of cash to fund our operations and pay our obligations;
- facing a significant debt maturity in 2018;
- the effects of current and future unrest in the Middle East, North Africa and other regions;
- the timing of anticipated revenues and the recognition of those revenues for financial accounting purposes;
- the effects of ongoing and future industry consolidation, including, in particular, the effects of consolidation and vertical integration in the towed marine seismic streamers market;
- the timing of future revenue realization of anticipated orders for multi-client survey projects and data processing work in our E&P Technology & Services segment;
- future levels of our capital expenditures;
- future government regulations, pertaining to the oil and gas industry;
- expected net revenues, income from operations and net income;
- expected gross margins for our services and products;
- future benefits to be derived from our OceanGeo subsidiary;
- future seismic industry fundamentals, including future demand for seismic services and equipment;
- future benefits to our customers to be derived from new services and products;
- future benefits to be derived from our investments in technologies, joint ventures and acquired companies;
- future growth rates for our services and products;
- the degree and rate of future market acceptance of our new services and products;

- expectations regarding E&P companies and seismic contractor end-users purchasing our more technologically-advanced services and products;
- anticipated timing and success of commercialization and capabilities of services and products under development and start-up costs associated with their development;
- future opportunities for new products and projected research and development expenses;
- expected continued compliance with our debt financial covenants;
- expectations regarding realization of deferred tax assets;
- expectations regarding the impact of the U.S. Tax Cuts and Jobs Act;
- anticipated results with respect to certain estimates we make for financial accounting purposes; and
- compliance with the U.S. Foreign Corrupt Practices Act and other applicable U.S. and foreign laws prohibiting corrupt payments to government officials and other third parties.

These forward-looking statements reflect our best judgment about future events and trends based on the information currently available to us. Our results of operations can be affected by inaccurate assumptions we make or by risks and uncertainties known or unknown to us. Therefore, we cannot guarantee the accuracy of the forward-looking statements. Actual events and results of operations may vary materially from our current expectations and assumptions. While we cannot identify all of the factors that may cause actual results to vary from our expectations, we believe the following factors should be considered carefully:

An unfavorable outcome in our pending litigation matter with WesternGeco could have a materially adverse effect on our financial results and liquidity.

In June 2009, WesternGeco L.L.C. ("WesternGeco") filed a lawsuit against us in the United States District Court for the Southern District of Texas, Houston Division. In the lawsuit, styled *WesternGeco L.L.C. v. ION Geophysical Corporation*, WesternGeco alleged that we had infringed several method and apparatus claims contained in four of its United States patents regarding marine seismic streamer steering devices.

The trial began in July 2012. A verdict was returned by the jury in August 2012, finding that we infringed the claims contained in the four patents by supplying our DigiFIN, lateral streamer control units and the related software from the United States and awarded WesternGeco the sum of $105.9 million in damages, consisting of $12.5 million in reasonable royalty and $93.4 million in lost profits.

In June 2013, the presiding judge entered a Memorandum and Order, denying our post-verdict motions that challenged the jury's infringement findings and the damages amount. In the Memorandum and Order, the judge also stated that WesternGeco was entitled to be awarded supplemental damages for the additional DigiFIN units that were supplied from the United States before and after trial that were not included in the jury verdict due to the timing of the trial. In October 2013, the judge entered another Memorandum and Order, ruling on the number of DigiFIN units that were subject to supplemental damages and also ruling that the supplemental damages applicable to the additional units were to be calculated by adding together the jury's previous reasonable royalty and lost profits damages awards per unit, resulting in supplemental damages of $73.1 million.

In April 2014, the judge entered another Order, ruling that lost profits should not have been included in the calculation of supplemental damages in the October 2013 Memorandum and Order and reducing the supplemental damages award in the case from $73.1 million to $9.4 million. In the Order, the judge also further reduced the damages awarded in the case by $3.0 million to reflect a settlement

and license that WesternGeco entered into with a customer of ours that had purchased and used DigiFIN units that were also included in the damage amounts awarded against us.

In May 2014, the judge signed and entered a Final Judgment against us in the amount of $123.8 million. The Final Judgment also included an injunction that enjoins us, our agents and anyone acting in concert with us, from supplying in or from the United States the DigiFIN product or any parts unique to the DigiFIN product, or any instrumentality no more than colorably different from any of these products or parts, for combination outside of the United States. We have conducted our business in compliance with the District Court's orders in the case, and we have reorganized our operations such that we no longer supply the DigiFIN product or any parts unique to the DigiFIN product in or from the United States.

We and WesternGeco each appealed the Final Judgment to the United States Court of Appeals for the Federal Circuit in Washington, D.C. (the "Court of Appeals"). On July 2, 2015, the Court of Appeals reversed in part the Final Judgment of the District Court, holding the District Court erred by including lost profits in the Final Judgment. Lost profits were $93.4 million and prejudgment interest on the lost profits was approximately $10.9 million of the $123.8 million Final Judgment. Pre-judgment interest on the lost profits portion will be treated in the same way as the lost profits. Post-judgment interest will likewise be treated in the same fashion. On July 29, 2015, WesternGeco filed a petition for rehearing en banc before the Court of Appeals. On October 30, 2015 the Court of Appeals denied WesternGeco's petition for rehearing en banc.

As previously disclosed, we had previously taken a loss contingency accrual of $123.8 million. As a result of the reversal by the Court of Appeals, as of June 30, 2015, we reduced our loss contingency accrual to $22.0 million.

On February 26, 2016, WesternGeco filed a petition for writ of certiorari by the Supreme Court. We filed our response on April 27, 2016. Subsequently, on June 20, 2016, the Supreme Court vacated the Court of Appeals' ruling although it did not address the lost profits question at that time. Rather, in light of the changes in case law regarding the standard of proof for willfulness in the Halo and Stryker cases, the Supreme Court indicated that the case should be remanded to the Court of Appeals for a determination of whether or not the willfulness determination by the District Court was appropriate.

On October 14, 2016, the Court of Appeals issued a mandate returning the case to the District Court for consideration of whether or not additional damages for willfulness were appropriate.

On March 14, 2017, the District Court held a hearing on whether or not additional damages for willfulness would be payable. The Judge found that ION's infringement was willful, based on his perception that ION did not adequately investigate the scope of the patent, and ION's conduct during trial. However, in his ruling at the hearing, he limited enhanced damages to $5.0 million because it was a "close case," there was no evidence of copying, and ION was simply acting as a competitor in a capitalist marketplace. The District Court also ordered the appeal bond to be released and discharged. The Court's findings and ruling were memorialized in an order issued on May 16, 2017. On June 30, 2017, WesternGeco and we jointly agreed that neither party would appeal the District Court's award of $5.0 million in enhanced damages. The parties also agreed that the $5.0 million would be paid over the course of 12 months with $1.25 million being paid in two installments of $0.625 million in 2017 and the remaining $3.75 million being paid in three quarterly payments of $1.25 million beginning January 1, 2018. This agreement was memorialized by the court in an order issued on July 26, 2017.

WesternGeco filed a second petition for writ of certiorari in the U.S. Supreme Court on February 17, 2017, appealing the lost profits issue again. We filed our response to WesternGeco's second attempt to appeal to the Supreme Court the lost profits issue, raising both the substantive matters the Company addressed by opposing WesternGeco's first petition, and also raising a procedural

argument that WesternGeco cannot raise the same issue for a second time in a second petition for certiorari. On May 30, 2017, the Supreme Court called for the views of the U.S. Solicitor General regarding whether or not to grant certiorari. We and WesternGeco each met with the Solicitor General's office in late July, 2017. On December 6, 2017, the Solicitor General filed its brief, and took the position that the Supreme Court ought to grant certiorari. On January 12, 2018, the Supreme Court granted certiorari as to whether the Court of Appeals erred in holding that lost profits arising from use of prohibited combinations occurring outside of the United States are categorically unavailable in cases where patent infringement is proven under 35 U.S.C. § 271(f)(2) (the specific statute under which we were ultimately held to have infringed WesternGeco's patents and upon which the District Court and the Federal Circuit relied in entering their final rulings). We will argue to the Supreme Court that the decision of the Court of Appeals that eliminated lost profits ought to be upheld. We anticipate oral arguments will take place in April of 2018 and that the Supreme Court will issue a decision by the end of June of 2018.

At the Court of Appeals we presented multiple arguments as to why the District Court's award of lost profits was improper. The lost profits damages awarded by the District Court were based on the use of our products by our customers outside of the United States. We argued at the Court of Appeals that, as a matter of law, WesternGeco cannot recoup lost profits for the overseas use of our products. We also argued that, under the jury instructions given in our case, WesternGeco would need to have been a direct competitor of ours in the survey markets to recoup lost profits, and that the jury was required to find that WesternGeco and ION were direct competitors. Because the Court of Appeals ruled in our favor on the first argument, and overturned the award of lost profits on that basis, the Court of Appeals did not rule on our "direct competitor" argument. If the Supreme Court overturns the Court of Appeals' decision that lost profits cannot be awarded to WesternGeco because the subsequent use of the apparatus was overseas, the case will be remanded back to the Court of Appeals, at which time we will present our second argument (that lost profits should not be awarded to WesternGeco because they were not our direct competitor).

Other proceedings may have an impact on WesternGeco's ability to recover lost profits damages even if WesternGeco prevails in the Supreme Court, and even if we do not prevail on the "direct competitor" argument in the Court of Appeals. We were a party to a challenge to the validity of several of WesternGeco's patent claims by means of an Inter Partes Review ("IPR") with the Patent Trial and Appeal Board ("PTAB"). While the above-described lawsuit was pending on appeal, the PTAB invalidated four of the six patent claims that formed the basis for the jury verdict in the lawsuit. WesternGeco appealed that decision to the Court of Appeals, which heard our and WesternGeco's arguments on January 23, 2018. If the Court of Appeals affirms the PTAB's invalidation of the patents, that may provide a separate ground for reducing or vacating any lost-profits award in the lawsuit. We expect the Court of Appeals to rule on the PTAB issue late in the first quarter of 2018 or in the second quarter of 2018.

We may not ultimately prevail in any of the appeals processes noted above and we could be required to pay some or all of the lost profits that were awarded by the District Court. Our assessment that we do not have a loss contingency may change in the future due to developments at the Supreme Court, the Court of Appeals, or the District Court, and other events, such as changes in applicable law, and such reassessment could lead to the determination that a significant loss contingency (up to the full amount of the lost profits awarded by the District Court) is probable, which could have a material adverse effect on our business, financial condition, cash flows and results of operations.

Our business depends on the level of exploration and production activities by the oil and natural gas industry. If crude oil and natural gas prices or the level of capital expenditures by E&P companies decline, demand for our services and products would decline and our results of operations would be materially adversely affected.

Demand for our services and products depends upon the level of spending by E&P companies and seismic contractors for exploration and production activities, and those activities depend in large part on oil and gas prices. Spending by our customers on services and products that we provide is highly discretionary in nature, and subject to rapid and material change. Any decline in oil and gas related spending on behalf of our customers could cause alterations in our capital spending plans, project modifications, delays or cancellations, general business disruptions or delays in payment, or non-payment of amounts that are owed to us, any one of which could have a material adverse effect on our financial condition. Additionally, the recent increases in oil and gas prices may not increase demand for our services and products or otherwise have a positive effect on our financial condition or results of operations. E&P companies' willingness to explore, develop and produce depends largely upon prevailing industry conditions that are influenced by numerous factors over which our management has no control, such as:

- the supply of and demand for oil and gas;
- the level of prices, and expectations about future prices, of oil and gas;
- the cost of exploring for, developing, producing and delivering oil and gas;
- the expected rates of decline for current production;
- the discovery rates of new oil and gas reserves;
- weather conditions, including hurricanes, that can affect oil and gas operations over a wide area, as well as less severe inclement weather that can preclude or delay seismic data acquisition;
- domestic and worldwide economic conditions;
- significant devaluation of the Mexican Peso and its impact on the Mexican economy and offshore exploration programs;
- political instability in oil and gas producing countries;
- technical advances affecting energy consumption;
- government policies regarding the exploration, production and development of oil and gas reserves;
- the ability of oil and gas producers to raise equity capital and debt financing;
- merger and divestiture activity among oil and gas companies and seismic contractors; and
- compliance by members of the Organization of the Petroleum Exporting Countries ("OPEC") and non-OPEC members such as Russia, with recent agreements to cut oil production.

The level of oil and gas exploration and production activity has been volatile in recent years. Trends in oil and gas exploration and development activities have declined, together with demand for our services and products. Any prolonged substantial reduction in oil and gas prices would likely further affect oil and gas production levels and therefore adversely affect demand for the services we provide and products we sell.

Our operating results often fluctuate from period to period, and we are subject to cyclicality and seasonality factors.

Our industry and the oil and gas industry in general are subject to cyclical fluctuations. Demand for our services and products depends upon spending levels by E&P companies for exploration and production of oil and natural gas and, in the case of new seismic data acquisition, the willingness of those companies to forgo ownership of the seismic data. Capital expenditures by E&P companies for these activities depend upon several factors, including actual and forecasted prices of oil and natural gas and those companies' short-term and strategic plans.

After a period of heightened exploration activity by E&P companies leading up to the fourth quarter of 2014, many E&P companies shifted their focus more to production activities and less on exploration during 2015 and 2016, as the continued decline in oil and gas prices resulted in decreasing revenues and prompted cost reduction initiatives across the industry. The U.S. Energy Information Administration ("EIA") forecasts the Brent crude oil spot price will average $60 per barrel in 2018 and $61 per barrel in 2019, as members of OPEC limited production after a long period of unrestrained output. Energy prices, which include oil, natural gas and coal, are projected to increase overall next year as demand strengthens and supplies tighten. As of December 31, 2017, our E&P Technology & Services segment backlog, consisting of commitments for data processing work and for underwritten multi-client New Venture and proprietary projects increased by 16% compared to our existing backlog as of December 31, 2016. The increase in our backlog was primarily due to our 3-D reimaging projects offshore Mexico and Brazil.

Our operating results are subject to fluctuations from period to period as a result of introducing new services and products, the timing of significant expenses in connection with customer orders, unrealized sales, levels of research and development activities in different periods, the product and service mix of our revenues and the seasonality of our business. Because some of our products feature a high sales price and are technologically complex, we generally experience long sales cycles for these types of products and historically incur significant expense at the beginning of these cycles. In addition, the revenues can vary widely from period to period due to changes in customer requirements and demand. These factors can create fluctuations in our net revenues and results of operations from period to period. Variability in our overall gross margins for any period, which depend on the percentages of higher-margin and lower-margin services and products sold in that period, compounds these uncertainties. As a result, if net revenues or gross margins fall below expectations, our results of operations and financial condition will likely be materially adversely affected.

Additionally, our business can be seasonal in nature, with strongest demand typically in the fourth calendar quarter of each year. Customer budgeting cycles at times result in higher spending activity levels by our customers at different points of the year.

Due to the relatively high sales price of many of our products and seismic data libraries, our quarterly operating results have historically fluctuated from period to period due to the timing of orders and shipments and the mix of services and products sold. This uneven pattern makes financial predictions for any given period difficult, increases the risk of unanticipated variations in our quarterly results and financial condition, and places challenges on our inventory management. Delays caused by factors beyond our control can affect our E&P Technology & Services segment's revenues from its imaging and multi-client services from period to period. Also, delays in ordering products or in shipping or delivering products in a given period could significantly affect our results of operations for that period. While we experienced an all-time record for data library sales in the fourth quarter of 2013, sales starting in 2014 and continuing through 2017 have been negatively impacted by a softening of exploration spending by our E&P customers. Fluctuations in our quarterly operating results may cause greater volatility in the market price of our common stock.

Our indebtedness could adversely affect our liquidity, financial condition and our ability to fulfill our obligations and operate our business.

As of December 31, 2017, we had approximately $156.7 million of total outstanding indebtedness, including $0.3 million of capital leases. As of December 31, 2017, there was $10.0 million outstanding indebtedness under our Credit Facility. Under our Credit Facility, as amended, the lender has committed $40.0 million of revolving credit, subject to a borrowing base. As of December 31, 2017, we have $15.5 million remaining availability under the Credit Facility. The amount available will increase or decrease monthly as our borrowing base changes. We may also incur additional indebtedness in the future. See *"Management's Discussion and Analysis of Financial Condition and Results of Operations"* appearing below in this Form 10-K.

In October 2016, S&P Global Ratings ("S&P") raised our corporate credit rating to CCC+ from SD and maintains a negative outlook. In May 2016, Moody's Investors Service ("Moody's") affirmed a Corporate Family Rating of Caa2 and its rating outlook was changed from negative to stable. These rating actions followed our completed exchange offer. S&P continues to hold a negative outlook on our Company reflecting the high debt leverage, expected negative free cash flow and the potential for liquidity to weaken, if market conditions do not significantly improve.

Our high level of indebtedness could have negative consequences to us, including:

- we may have difficulty satisfying our obligations with respect to our outstanding debt;
- we may have difficulty obtaining financing in the future for working capital, capital expenditures, acquisitions or other purposes;
- we may need to use all, or a substantial portion, of our available cash flow to pay interest and principal on our debt, which will reduce the amount of money available to finance our operations and other business activities;
- our vulnerability to general economic downturns and adverse industry conditions could increase;
- our flexibility in planning for, or reacting to, changes in our business and in our industry in general could be limited;
- our amount of debt and the amount we must pay to service our debt obligations could place us at a competitive disadvantage compared to our competitors that have less debt;
- our customers may react adversely to our significant debt level and seek or develop alternative licensors or suppliers;
- we may have insufficient funds, and our debt level may also restrict us from raising the funds necessary to repurchase all of the Notes, as defined below, tendered to us upon the occurrence of a change of control, which would constitute an event of default under the Notes; and
- our failure to comply with the restrictive covenants in our debt instruments which, among other things, limit our ability to incur debt and sell assets, could result in an event of default that, if not cured or waived, could have a material adverse effect on our business or prospects.

Our level of indebtedness will require that we use a substantial portion of our cash flow from operations to pay principal of, and interest on, our indebtedness, which will reduce the availability of cash to fund working capital requirements, capital expenditures, research and development and other general corporate or business activities.

We face a significant debt maturity in 2018.

Our $28.5 million aggregate principal amount of Senior Secured Third-Priority Lien notes mature on May 15, 2018. If our cash flows from operations and other capital resources are insufficient to pay

off such notes, we may face substantial liquidity problems and may be forced to reduce or delay investments, dispose of material assets or operations, or issue additional debt or equity. We may not be able to take such actions, if necessary, on commercially reasonable terms or at all. Our inability to generate sufficient cash flows to satisfy our debt obligations, or to refinance our indebtedness on commercially reasonable terms or at all, would materially and adversely affect our financial position and results or operations.

We are subject to intense competition, which could limit our ability to maintain or increase our market share or to maintain our prices at profitable levels.

Many of our sales are obtained through a competitive bidding process, which is standard for our industry. Competitive factors in recent years have included price, technological expertise, and a reputation for quality, safety and dependability. While no single company competes with us in all of our segments, we are subject to intense competition in each of our segments. New entrants in many of the markets in which certain of our services and products are currently strong should be expected. See Item 1. "*Business—Competition.*" We compete with companies that are larger than we are in terms of revenues, technical personnel, number of processing locations and sales and marketing resources. A few of our competitors have a competitive advantage in being part of a large affiliated seismic contractor company. In addition, we compete with major service providers and government-sponsored enterprises and affiliates. Some of our competitors conduct seismic data acquisition operations as part of their regular business, which we have traditionally not conducted, and have greater financial and other resources than we do. These and other competitors may be better positioned to withstand and adjust more quickly to volatile market conditions, such as fluctuations in oil and natural gas prices, as well as changes in government regulations. In addition, any excess supply of services and products in the seismic services market could apply downward pressure on prices for our services and products. The negative effects of the competitive environment in which we operate could have a material adverse effect on our results of operations. In particular, the consolidation in recent years of many of our competitors in the seismic services and products markets has negatively impacted our results of operations.

There are a number of geophysical companies that create, market and license seismic data and maintain seismic libraries. Competition for acquisition of new seismic data among geophysical service providers historically has been intense and we expect this competition will continue to be intense. Larger and better-financed operators could enjoy an advantage over us in a competitive environment for new data.

Our OceanGeo subsidiary involves numerous risks.

Our OceanGeo subsidiary is focused on operating as a seismic acquisition contractor concentrating on OBS data acquisition. There can be no assurance that we will achieve the expected benefits from this company. OceanGeo (and any future acquisitions that we may undertake) may result in unexpected costs, expenses and liabilities, which may have a material adverse effect on our business, financial condition or results of operations. OceanGeo may encounter further difficulties in developing and expanding its business.

OceanGeo's business exposes us to the operating risks of being a seismic contractor with seismic crews:

- Seismic data acquisition activities in marine ocean bottom areas are subject to the risk of downtime or reduced productivity, as well as to the risks of loss to property and injury to personnel, mechanical failures and natural disasters. In addition to losses caused by human errors and accidents, we may also become subject to losses resulting from, among other things, political instability, business interruption, strikes and weather events; and

- OceanGeo's equipment and services may expose us to litigation and legal proceedings, including those related to product liability, personal injury and contract liability.

We have in place insurance coverage against operating hazards, including product liability claims and personal injury claims, damage, destruction or business interruption related to OceanGeo's equipment and services, and whenever possible, OceanGeo will obtain agreements from customers that limit our liability. We also carry war, strikes, terrorism and related perils coverage for OceanGeo. However, we cannot provide assurance that the nature and amount of insurance will be sufficient to fully indemnify OceanGeo and us against liabilities arising from pending and future claims or that its insurance coverage will be adequate in all circumstances or against all hazards, and that we will be able to maintain adequate insurance coverage in the future at commercially reasonable rates or on acceptable terms.

OceanGeo is also subject to, and exposes OceanGeo and us to, various additional risks that could adversely affect our results of operations and financial condition. These risks include the following:

- increased costs associated with the operation of the business and the management of geographically dispersed operations;
- OceanGeo's cash flows may be inadequate to fund its capital requirements, thereby requiring additional contributions to OceanGeo by us;
- OceanGeo's cash flows may be inadequate to realize the value of manufactured equipment for use in its ocean bottom seismic surveys;
- risks associated with our Calypso and 4Sea ocean bottom products that are intended to be utilized by OceanGeo in its operations, including risks that the new technology may not perform as well as we anticipate;
- difficulties in retaining and integrating key technical, sales and marketing personnel and the possible loss of such employees and costs associated with their loss;
- the diversion of management's attention and other resources from other business operations and related concerns;
- the requirement to maintain uniform standards, controls and procedures;
- our inability to realize operating efficiencies, cost savings or other benefits that we expect from OceanGeo's operations; and
- difficulties and delays in securing new business and customer projects.

The indentures governing the 9.125% Senior Secured Second-Priority Notes due 2021 and 8.125% Senior Secured Third-Priority Notes due 2018 (the "Notes") contain a number of restrictive covenants that limit our ability to finance future operations or capital needs or engage in other business activities that may be in our interest.

The indenture governing the Notes imposes, and the terms of any future indebtedness may impose, operating and other restrictions on us and our subsidiaries. Such restrictions affect, or will affect, and in many respects limit or prohibit, among other things, our ability and the ability of certain of our subsidiaries to:

- incur additional indebtedness;
- create liens;
- pay dividends and make other distributions in respect of our capital stock;
- redeem our capital stock;

- make investments or certain other restricted payments;
- sell certain kinds of assets;
- enter into transactions with affiliates; and
- effect mergers or consolidations.

The restrictions contained in the indenture governing the Notes could:

- limit our ability to plan for or react to market or economic conditions or meet capital needs or otherwise restrict our activities or business plans; and
- adversely affect our ability to finance our operations, acquisitions, investments or strategic alliances or other capital needs or to engage in other business activities that would be in our interest.

A breach of any of these covenants could result in a default under the indenture governing the Notes. If an event of default occurs, the trustee and holders of the Notes could elect to declare all borrowings outstanding, together with accrued and unpaid interest, to be immediately due and payable. An event of default under the indenture governing the Notes would also constitute an event of default under our Credit Facility. See Footnote 3 "*Long-term Debt and Lease Obligations*" of the Footnotes to *Consolidated Financial Statements* appearing below in this Form 10-K.

As a technology-focused company, we are continually exposed to risks related to complex, highly technical services and products.

We have made, and we will continue to make, strategic decisions from time to time as to the technologies in which we invest. If we choose the wrong technology, our financial results could be adversely impacted. Our operating results are dependent upon our ability to improve and refine our seismic imaging and data processing services and to successfully develop, manufacture and market our products and other services and products. New technologies generally require a substantial investment before any assurance is available as to their commercial viability. If we choose the wrong technology, or if our competitors develop or select a superior technology, we could lose our existing customers and be unable to attract new customers, which would harm our business and operations.

New data acquisition or processing technologies may be developed. New and enhanced services and products introduced by one of our competitors may gain market acceptance and, if not available to us, may adversely affect us.

The markets for our services and products are characterized by changing technology and new product introductions. We must invest substantial capital to develop and maintain a leading edge in technology, with no assurance that we will receive an adequate rate of return on those investments. If we are unable to develop and produce successfully and timely new or enhanced services and products, we will be unable to compete in the future and our business, our results of operations and our financial condition will be materially and adversely affected. Our business could suffer from unexpected developments in technology, or from our failure to adapt to these changes. In addition, the preferences and requirements of customers can change rapidly.

The businesses of our E&P Technology & Services segment and Optimization Software & Services group within our E&P Operations Optimization segment, being more concentrated in software, processing services and proprietary technologies, have also exposed us to various risks that these technologies typically encounter, including the following:

- future competition from more established companies entering the market;
- technology obsolescence;

- dependence upon continued growth of the market for seismic data processing;
- the rate of change in the markets for these segments' technology and services;
- further consolidation of the participants within this market;
- research and development efforts not proving sufficient to keep up with changing market demands;
- dependence on third-party software for inclusion in these segments' services and products;
- misappropriation of these segments' technology by other companies;
- alleged or actual infringement of intellectual property rights that could result in substantial additional costs;
- difficulties inherent in forecasting sales for newly developed technologies or advancements in technologies;
- recruiting, training and retaining technically skilled, experienced personnel that could increase the costs for these segments, or limit their growth; and
- the ability to maintain traditional margins for certain of their technology or services.

Seismic data acquisition and data processing technologies historically have progressed rather rapidly and we expect this progression to continue. In order to remain competitive, we must continue to invest additional capital to maintain, upgrade and expand our seismic data acquisition and processing capabilities. However, due to potential advances in technology and the related costs associated with such technological advances, we may not be able to fulfill this strategy, thus possibly affecting our ability to compete.

Our customers often require demanding specifications for performance and reliability of our services and products. Because many of our products are complex and often use unique advanced components, processes, technologies and techniques, undetected errors and design and manufacturing flaws may occur. Even though we attempt to assure that our systems are always reliable in the field, the many technical variables related to their operations can cause a combination of factors that can, and have from time to time, caused performance and service issues with certain of our products. Product defects result in higher product service, warranty and replacement costs and may affect our customer relationships and industry reputation, all of which may adversely impact our results of operations. Despite our testing and quality assurance programs, undetected errors may not be discovered until the product is purchased and used by a customer in a variety of field conditions. If our customers deploy our new products and they do not work correctly, our relationship with our customers may be materially and adversely affected.

As a result of our systems' advanced and complex nature, we expect to experience occasional operational issues from time to time. Generally, until our products have been tested in the field under a wide variety of operational conditions, we cannot be certain that performance and service problems will not arise. In that case, market acceptance of our new products could be delayed and our results of operations and financial condition could be adversely affected.

We also face exposure to product liability claims in the event that certain of our products, or certain components manufactured by others that are incorporated into our products, fail to perform to specification, which failure results, or is alleged to result, in property damage, bodily injury and/or death. Any product liability claims decided adversely against us may have a material adverse effect on our results of operations and cash flows. While we maintain insurance coverage with respect to certain product liability claims, we may not be able to obtain such insurance on acceptable terms in the future, if at all, and any such insurance may not provide adequate coverage against product liability claims. In addition, product liability claims can be expensive to defend and can divert the attention of

management and other personnel for significant periods of time, regardless of the ultimate outcome. Furthermore, even if we are successful in defending against a claim relating to our products, claims of this nature could cause our customers to lose confidence in our products and us.

We have invested, and expect to continue to invest, significant sums of money in acquiring and processing seismic data for our E&P Technology & Services' multi-client data library, without knowing precisely how much of this seismic data we will be able to license or when and at what price we will be able to license the data sets. Our business could be adversely affected by the failure of our customers to fulfill their obligations to reimburse us for the underwritten portion of our seismic data acquisition costs for our multi-client library.

We invest significant amounts in acquiring and processing new seismic data to add to our E&P Technology & Services' multi-client data library. The costs of most of these investments are funded by our customers, with the remainder generally being recovered through future data licensing fees. In 2017, we invested approximately $23.7 million in our multi-client data library. Our customers generally commit to licensing the data prior to our initiating a new data library acquisition program. However, the aggregate amounts of future licensing fees for this data are uncertain and depend on a variety of factors, including the market prices of oil and gas, customer demand for seismic data in the library, and the availability of similar data from competitors.

By making these investments in acquiring and processing new seismic data for our E&P Technology & Services' multi-client library, we are exposed to the following risks:

- We may not fully recover our costs of acquiring and processing seismic data through future sales. The ultimate amounts involved in these data sales are uncertain and depend on a variety of factors, many of which are beyond our control.
- The timing of these sales is unpredictable and can vary greatly from period to period. The costs of each survey are capitalized and then amortized as a percentage of sales and/or on a straight-line basis over the expected useful life of the data. This amortization will affect our earnings and, when combined with the sporadic nature of sales, will result in increased earnings volatility.
- Regulatory changes that affect companies' ability to drill, either generally or in a specific location where we have acquired seismic data, could materially adversely affect the value of the seismic data contained in our library. Technology changes could also make existing data sets obsolete. Additionally, each of our individual surveys has a limited book life based on its location and oil and gas companies' interest in prospecting for reserves in such location, so a particular survey may be subject to a significant decline in value beyond our initial estimates.
- The value of our multi-client data could be significantly adversely affected if any material adverse change occurs in the general prospects for oil and gas exploration, development and production activities.
- The cost estimates upon which we base our pre-commitments of funding could be wrong. The result could be losses that have a material adverse effect on our financial condition and results of operations. These pre-commitments of funding are subject to the creditworthiness of our clients. In the event that a client refuses or is unable to pay its commitment, we could incur a substantial loss on that project.
- As part of our asset-light strategy, we routinely charter vessels from third-party vendors to acquire seismic data for our multi-client business. As a result, our cost to acquire our multi-client data could significantly increase if vessel charter prices rise materially.

Reductions in demand for our seismic data, or lower revenues of or cash flows from our seismic data, may result in a requirement to increase amortization rates or record impairment charges in order

to reduce the carrying value of our data library. These increases or charges, if required, could be material to our operating results for the periods in which they are recorded.

A substantial portion of our seismic acquisition project costs (including third-party project costs) are underwritten by our customers. In the event that underwriters for such projects fail to fulfill their obligations with respect to such underwriting commitments, we would continue to be obligated to satisfy our payment obligations to third-party contractors.

We derive a substantial amount of our revenues from foreign operations and sales, which pose additional risks.

The majority of our foreign sales are denominated in U.S. dollars. Sales to customer destinations outside of North America represented 76%, 78% and 66% of our consolidated net revenues for 2017, 2016 and 2015, respectively, of our consolidated net revenues. We believe that export sales will remain a significant percentage of our revenue. U.S. export restrictions affect the types and specifications of products we can export. Additionally, in order to complete certain sales, U.S. laws may require us to obtain export licenses, and we cannot assure you that we will not experience difficulty in obtaining these licenses.

Like many energy services companies, we have operations in and sales into certain international areas, including parts of the Middle East, West Africa, Latin America, India, Asia Pacific and the former Soviet Union, that are subject to risks of war, political disruption, civil disturbance, political corruption, possible economic and legal sanctions (such as possible restrictions against countries that the U.S. government may in the future consider to be state sponsors of terrorism) and changes in global trade policies. Our sales or operations may become restricted or prohibited in any country in which the foregoing risks occur. In particular, the occurrence of any of these risks could result in the following events, which in turn, could materially and adversely impact our results of operations:

- disruption of E&P activities;
- restriction on the movement and exchange of funds;
- inhibition of our ability to collect advances and receivables;
- enactment of additional or stricter U.S. government or international sanctions;
- limitation of our access to markets for periods of time;
- expropriation and nationalization of assets of our company or those of our customers;
- political and economic instability, which may include armed conflict and civil disturbance;
- currency fluctuations, devaluations and conversion restrictions;
- confiscatory taxation or other adverse tax policies; and
- governmental actions that may result in the deprivation of our contractual rights.

Our international operations and sales increase our exposure to other countries' restrictive tariff regulations, other import/export restrictions and customer credit risk.

In addition, we are subject to taxation in many jurisdictions and the final determination of our tax liabilities involves the interpretation of the statutes and requirements of taxing authorities worldwide. Our tax returns are subject to routine examination by taxing authorities, and these examinations may result in assessments of additional taxes, penalties and/or interest.

We may be unable to obtain broad intellectual property protection for our current and future products and we may become involved in intellectual property disputes; we rely on developing and acquiring proprietary data which we keep confidential.

We rely on a combination of patent, copyright and trademark laws, trade secrets, confidentiality procedures and contractual provisions to protect our proprietary technologies. We believe that the technological and creative skill of our employees, new product developments, frequent product enhancements, name recognition and reliable product maintenance are the foundations of our competitive advantage. Although we have a considerable portfolio of patents, copyrights and trademarks, these property rights offer us only limited protection. Our competitors may attempt to copy aspects of our products despite our efforts to protect our proprietary rights, or may design around the proprietary features of our products. Policing unauthorized use of our proprietary rights is difficult, and we are unable to determine the extent to which such use occurs. Our difficulties are compounded in certain foreign countries where the laws do not offer as much protection for proprietary rights as the laws of the United States.

Third parties inquire and claim from time to time that we have infringed upon their intellectual property rights. Many of our competitors own their own extensive global portfolio of patents, copyrights, trademarks, trade secrets and other intellectual property to protect their proprietary technologies. We believe that we have in place appropriate procedures and safeguards to help ensure that we do not violate a third party's intellectual property rights. However, no set of procedures and safeguards is infallible. We may unknowingly and inadvertently take action that is inconsistent with a third party's intellectual property rights, despite our efforts to do otherwise. Any such claims from third parties, with or without merit, could be time consuming, result in costly litigation, result in injunctions, require product modifications, cause product shipment delays or require us to enter into royalty or licensing arrangements. Such claims could have a material adverse effect on our results of operations and financial condition.

Much of our litigation in recent years have involved disputes over our and others' rights to technology. See Item 3. "*Legal Proceedings*."

To protect the confidentiality of our proprietary and trade secret information, we require employees, consultants, contractors, advisors and collaborators to enter into confidentiality agreements. Our customer data license and acquisition agreements also identify our proprietary, confidential information and require that such proprietary information be kept confidential. While these steps are taken to strictly maintain the confidentiality of our proprietary and trade secret information, it is difficult to ensure that unauthorized use, misappropriation or disclosure will not occur. If we are unable to maintain the secrecy of our proprietary, confidential information, we could be materially adversely affected.

If we do not effectively manage our transition into new services and products, our revenues may suffer.

Services and products for the geophysical industry are characterized by rapid technological advances in hardware performance, software functionality and features, frequent introduction of new services and products, and improvement in price characteristics relative to product and service performance. Among the risks associated with the introduction of new services and products are delays in development or manufacturing, variations in costs, delays in customer purchases or reductions in price of existing products in anticipation of new introductions, write-offs or write-downs of the carrying costs of inventory and raw materials associated with prior generation products, difficulty in predicting customer demand for new product and service offerings and effectively managing inventory levels so that they are in line with anticipated demand, risks associated with customer qualification, evaluation of new products, and the risk that new products may have quality or other defects or may not be supported adequately by application software. The introduction of new services and products by our competitors also may result in delays in customer purchases and difficulty in predicting customer

demand. If we do not make an effective transition from existing services and products to future offerings, our revenues and margins may decline.

Furthermore, sales of our new services and products may replace sales, or result in discounting of some of our current product or service offerings, offsetting the benefits of a successful introduction. In addition, it may be difficult to ensure performance of new services and products in accordance with our revenue, margin and cost estimations and to achieve operational efficiencies embedded in our estimates. Given the competitive nature of the seismic industry, if any of these risks materializes, future demand for our services and products, and our future results of operations, may suffer.

Global economic conditions and credit market uncertainties could have an adverse effect on customer demand for certain of our services and products, which in turn would adversely affect our results of operations, our cash flows, our financial condition and our stock price.

Historically, demand for our services and products has been sensitive to the level of exploration spending by E&P companies and geophysical contractors. The demand for our services and products will be lessened if exploration expenditures by E&P companies are reduced. During periods of reduced levels of exploration for oil and natural gas, there have been oversupplies of seismic data and downward pricing pressures on our seismic services and products, which, in turn, have limited our ability to meet sales objectives and maintain profit margins for our services and products. In the past, these then-prevailing industry conditions have had the effect of reducing our revenues and operating margins. The markets for oil and gas historically have been volatile and may continue to be so in the future.

Turmoil or uncertainty in the credit markets and its potential impact on the liquidity of major financial institutions may have an adverse effect on our ability to fund our business strategy through borrowings under either existing or new debt facilities in the public or private markets and on terms we believe to be reasonable. Likewise, there can be no assurance that our customers will be able to borrow money for their working capital or capital expenditures on a timely basis or on reasonable terms, which could have a negative impact on their demand for our services and products and impair their ability to pay us for our services and products on a timely basis, or at all.

Our sales have historically been affected by interest rate fluctuations and the availability of liquidity, and we and our customers would be adversely affected by increases in interest rates or liquidity constraints. This could have a material adverse effect on our business, results of operations, financial condition and cash flows.

The loss of any significant customer or the inability of our customers to meet their payment obligations to us could materially and adversely affect our results of operations and financial condition.

Our business is exposed to risks related to customer concentration. While no single customer represented 10% or more of our consolidated net revenues for 2016 and 2015; in 2017, we had one customer with sales that exceeded 10%. Our top five customers together accounted for approximately 34%, 50% and 36%, of our consolidated net revenues during 2017, 2016 and 2015. The loss of any of our significant customers or deterioration in our relations with any of them could materially and adversely affect our results of operations and financial condition.

During the last ten years, our traditional seismic contractor customers have been rapidly consolidating, thereby consolidating the demand for our services and products. The loss of any of our significant customers to further consolidation could materially and adversely affect our results of operations and financial condition.

Our business is exposed to risks of loss resulting from nonpayment by our customers. Many of our customers finance their activities through cash flow from operations, the incurrence of debt or the issuance of equity. Declines in commodity prices, and the credit markets could cause the availability of

credit to be constrained. The combination of lower cash flow due to commodity prices, a reduction in borrowing bases under reserve-based credit facilities and the lack of available debt or equity financing may result in a significant reduction in our customers' liquidity and ability to pay their obligations to us. Furthermore, some of our customers may be highly leveraged and subject to their own operating and regulatory risks, which increases the risk that they may default on their obligations to us. The inability or failure of our significant customers to meet their obligations to us or their insolvency or liquidation may adversely affect our financial results.

Our stock price has been volatile from time to time, declining and increasing from time to time during the period from 2008 through the present, and it could decline again.

The securities markets in general and our common stock in particular have experienced significant price and volume volatility in recent years. The market price and trading volume of our common stock may continue to experience significant fluctuations due not only to general stock market conditions but also to a change in sentiment in the market regarding our operations or business prospects or those of companies in our industry. In addition to the other risk factors discussed in this section, the price and volume volatility of our common stock may be affected by:

- operating results that vary from the expectations of securities analysts and investors;
- factors influencing the levels of global oil and natural gas exploration and exploitation activities, such as the decline in crude oil prices and depressed prices for natural gas in North America or disasters such as the Deepwater Horizon incident in the Gulf of Mexico in 2010;
- the operating and securities price performance of companies that investors or analysts consider comparable to us;
- actions by rating agencies related to the Notes;
- announcements of strategic developments, acquisitions and other material events by us or our competitors; and
- changes in global financial markets and global economies and general market conditions, such as interest rates, commodity and equity prices and the value of financial assets.

To the extent that the price of our common stock declines, our ability to raise funds through the issuance of equity or otherwise use our common stock as consideration will be reduced. In addition, a low price for our equity may negatively impact our ability to access additional debt capital. These factors may limit our ability to implement our operating and growth plans.

Goodwill, intangible assets and multi-client data library that we have recorded are subject to impairment evaluations and, as a result, we could be required to write-off additional goodwill and intangible assets. In addition, portions of our products inventory may become obsolete or excessive due to future changes in technology, changes in market demand, or changes in market expectations. Write-downs of these assets may adversely affect our financial condition and results of operations.

In accordance with Accounting Standard Codification ("ASC") 350, "*Intangibles—Goodwill and Other*" ("ASC 350"), we are required to compare the fair value of our goodwill and intangible assets (when certain impairment indicators under ASC 350 are present) to their carrying amount. If the fair value of such goodwill or intangible assets is less than its carrying value, an impairment loss is recorded to the extent that the fair value of these assets within the reporting units is less than their carrying value.

Reductions in or an impairment of the value of our goodwill or other intangible assets will result in additional charges against our earnings, which could have a material adverse effect on our reported results of operations and financial position in future periods. At December 31, 2017, our remaining goodwill and other intangible asset balances were $24.1 million and $1.7 million, respectively.

Our services and products' technologies often change relatively quickly. Phasing out of old products involves estimating the amounts of inventories we need to hold to satisfy demand for those products and satisfy future repair part needs. Based on changing technologies and customer demand, we may find that we have either obsolete or excess inventory on hand. Because of unforeseen future changes in technology, market demand or competition, we might have to write off unusable inventory, which would adversely affect our results of operations.

Due to the international scope of our business activities, our results of operations may be significantly affected by currency fluctuations.

We derived approximately 76% of our 2017 consolidated net revenues from international sales, subjecting us to risks relating to fluctuations in currency exchange rates. Currency variations can adversely affect margins on sales of our products in countries outside of the United States and margins on sales of products that include components obtained from suppliers located outside of the United States. Through our subsidiaries, we operate in a wide variety of jurisdictions, including the United Kingdom, Latin America, Australia, the Netherlands, Brazil, China, Canada, Russia, the United Arab Emirates, Egypt and other countries. Certain of these countries have experienced geopolitical instability, economic problems and other uncertainties from time to time. To the extent that world events or economic conditions negatively affect our future sales to customers in these and other regions of the world, or the collectability of receivables, our future results of operations, liquidity and financial condition may be adversely affected. To the extent that world events or economic conditions negatively affect our future sales to customers in many regions of the world, as well as the collectability of our existing receivables, our future results of operations, liquidity and financial condition would be adversely affected.

We currently require customers in certain higher risk countries to provide their own financing. We do not currently extend long-term credit through notes to companies in countries where we perceive excessive credit risk.

Our subsidiaries in the U.K. and in other foreign countries receive their income and pay their expenses primarily in their local currencies. To the extent that transactions of these subsidiaries are settled in their local currencies, a devaluation of those currencies versus the U.S. dollar could reduce the contribution from these subsidiaries to our consolidated results of operations as reported in U.S. dollars. For financial reporting purposes, such depreciation will negatively affect our reported results of operations since earnings denominated in foreign currencies would be converted to U.S. dollars at a decreased value. In addition, since we participate in competitive bids for sales of certain of our services and products that are denominated in U.S. dollars, a depreciation of the U.S. dollar against other currencies could harm our competitive position relative to other companies. While we periodically employ economic cash flow and fair value hedges to minimize the risks associated with these exchange rate fluctuations, the hedging activities may be ineffective or may not offset more than a portion of the adverse financial impact resulting from currency variations. Accordingly, we cannot provide assurance that fluctuations in the values of the currencies of countries in which we operate will not materially adversely affect our future results of operations.

We rely on highly skilled personnel in our businesses, and if we are unable to retain or motivate key personnel or hire qualified personnel, we may not be able to effectively operate our business.

Our performance is largely dependent on the talents and efforts of highly skilled individuals. Our future success depends on our continuing ability to identify, hire, develop, motivate and retain skilled personnel for all areas of our organization. We require highly skilled personnel to operate and provide technical services and support for our businesses. Competition for qualified personnel required for our data processing operations and our other businesses has intensified in recent years. A well-trained, motivated and adequately-staffed work force has a positive impact on our ability to attract and retain

business. Our continued ability to compete effectively depends on our ability to attract new employees and to retain and motivate our existing employees.

However, from time to time, we have to rightsize our work force due to economic and market conditions. We initiated workforce reductions in December 2014, continuing into 2016, and reduced our full-time employee base by approximately 60%, our workforce has since stabilized.

Certain of our facilities could be damaged by hurricanes and other natural disasters, which could have an adverse effect on our results of operations and financial condition.

Certain of our facilities are located in regions of the United States that are susceptible to damage from hurricanes and other weather events, and, during 2005, were impacted by hurricanes or other weather events. Our Devices group leases 144,000 square feet of facilities located in Harahan, Louisiana, in the greater New Orleans metropolitan area. In late August 2005, we suspended operations at these facilities and evacuated and locked down the facilities in preparation for Hurricane Katrina. These facilities did not experience flooding or significant damage during or after the hurricane. However, because of employee evacuations, power failures and lack of related support services, utilities and infrastructure in the New Orleans area, we were unable to resume full operations at the facilities until late September 2005. In August 2017, we lost use of our offices located in the Houston metropolitan area for several days, as a result of Hurricane Harvey.

Future hurricanes or similar natural disasters that impact our facilities may negatively affect our financial position and operating results for those periods. These negative effects may include reduced production, product sales and data processing revenues; costs associated with resuming production; reduced orders for our services and products from customers that were similarly affected by these events; lost market share; late deliveries; additional costs to purchase materials and supplies from outside suppliers; uninsured property losses; inadequate business interruption insurance and an inability to retain necessary staff. To the extent that climate change increases the severity of hurricanes and other weather events, as some have suggested, it could worsen the severity of these negative effects on our financial position and operating results.

Our operations, and the operations of our customers, are subject to numerous government regulations, which could adversely limit our operating flexibility. Regulatory initiatives undertaken from time to time, such as restrictions, sanctions and embargoes, can adversely affect, and have adversely affected, our customers and our business.

In addition to the specific regulatory risks discussed elsewhere in this Item 1A. "*Risk Factors*" section, our operations are subject to other laws, regulations, government policies and product certification requirements worldwide. Changes in such laws, regulations, policies or requirements could affect the demand for our products or services or result in the need to modify our services and products, which may involve substantial costs or delays in sales and could have an adverse effect on our future operating results. Our export activities in particular are subject to extensive and evolving trade regulations. Certain countries (including Russia) are subject to restrictions, sanctions and embargoes imposed by the United States government. These restrictions, sanctions and embargoes also prohibit or limit us from participating in certain business activities in those countries. In addition, our operations are subject to numerous local, state and federal laws and regulations in the United States and in foreign jurisdictions concerning the containment and disposal of hazardous materials, the remediation of contaminated properties, and the protection of the environment. These laws have been changed frequently in the past, and there can be no assurance that future changes will not have a material adverse effect on us. In addition, our customers' operations are also significantly impacted by laws and regulations concerning the protection of the environment and endangered species. Consequently, changes in governmental regulations applicable to our customers may reduce demand for our services

and products. To the extent that our customers' operations are disrupted by future laws and regulations, our business and results of operations may be materially and adversely affected.

Offshore oil and gas exploration and development recently has been a regulatory focus. Future changes in laws or regulations regarding such activities, and decisions by customers, governmental agencies or other industry participants in response, could reduce demand for our services and products, which could have a negative impact on our financial position, results of operations or cash flows. We cannot reasonably or reliably estimate that such changes will occur, when they will occur, or whether they will impact us. Such changes can occur quickly within a region, which may impact both the affected region and global exploration and production, and we may not be able to respond quickly, or at all, to mitigate these changes. In addition, these future laws and regulations could result in increased compliance costs or additional operating restrictions that may adversely affect the financial health of our customers and decrease the demand for our services and products.

Existing or future laws and regulations related to greenhouse gases and climate change could have a material adverse effect on our business, results of operations, and financial condition.

Changes in environmental requirements related to greenhouse gases and climate change may negatively impact demand for our services. For example, oil and natural gas exploration and production may decline as a result of environmental requirements. Local, state, and federal agencies have been evaluating climate-related legislation and other regulatory initiatives that would restrict emissions of greenhouse gases in areas in which we conduct business. Because our business depends on the level of activity in the oil and natural gas industry, existing or future laws and regulations related to greenhouse gases and climate change, including incentives to conserve energy or use alternative energy sources, could have a negative impact on our business if such laws or regulations reduce demand for oil and natural gas.

We have outsourcing arrangements with third parties to manufacture some of our products. If these third party suppliers fail to deliver quality products or components at reasonable prices on a timely basis, we may alienate some of our customers and our revenues, profitability and cash flow may decline. Additionally, current global economic conditions could have a negative impact on our suppliers, causing a disruption in our vendor supplies. A disruption in vendor supplies may adversely affect our results of operations.

Our manufacturing processes require us to purchase quality components. In addition, we use contract manufacturers as an alternative to our own manufacturing of products. We have outsourced the manufacturing of our products, including our towed marine streamers, geophone manufacturing and ocean bottom cables. Certain components used in our towed marine manufacturing operations are currently provided by a single supplier. Without these sole suppliers, we would be required to find other suppliers who could build these components for us, or set up to make these parts internally. If, in implementing any outsource initiative, we are unable to identify contract manufacturers willing to contract with us on competitive terms and to devote adequate resources to fulfill their obligations to us or if we do not properly manage these relationships, our existing customer relationships may suffer. In addition, by undertaking these activities, we run the risk that the reputation and competitiveness of our services and products may deteriorate as a result of the reduction of our control over quality and delivery schedules. We also may experience supply interruptions, cost escalations and competitive disadvantages if our contract manufacturers fail to develop, implement, or maintain manufacturing methods appropriate for our products and customers.

Reliance on certain suppliers, as well as industry supply conditions, generally involves several risks, including the possibility of a shortage or a lack of availability of key components, increases in component costs and reduced control over delivery schedules. If any of these risks are realized, our revenues, profitability and cash flows may decline. In addition, the more we come to rely on contract

manufacturers, we may have fewer personnel resources with expertise to manage problems that may arise from these third-party arrangements.

Additionally, our suppliers could be negatively impacted by current global economic conditions. If certain of our suppliers were to experience significant cash flow issues or become insolvent as a result of such conditions, it could result in a reduction or interruption in supplies to us or a significant increase in the price of such supplies and adversely impact our results of operations and cash flows.

Our business is subject to cybersecurity risks and threats.

Threats to our information technology systems associated with cybersecurity risk and cyber incidents or attacks continue to grow. It is also possible that breaches to our systems could go unnoticed for some period of time. Risks associated with these threats include, among other things, loss of intellectual property, impairment of our ability to conduct our operations, disruption of our customers' operations, loss or damage to our customer data delivery systems, and increased costs to prevent, respond to or mitigate cybersecurity events.

Our certificate of incorporation and bylaws, Delaware law and certain contractual obligations under our agreement with BGP contain provisions that could discourage another company from acquiring us.

Provisions of our certificate of incorporation and bylaws, Delaware law and the terms of our investor rights agreement with BGP may have the effect of discouraging, delaying or preventing a merger or acquisition that our stockholders may consider favorable, including transactions in which you might otherwise receive a premium for shares of our common stock. These provisions include:

- authorizing the issuance of "blank check" preferred stock without any need for action by stockholders;
- providing for a classified board of directors with staggered terms;
- requiring supermajority stockholder voting to effect certain amendments to our certificate of incorporation and bylaws;
- eliminating the ability of stockholders to call special meetings of stockholders;
- prohibiting stockholder action by written consent; and
- establishing advance notice requirements for nominations for election to the board of directors or for proposing matters that can be acted on by stockholders at stockholder meetings.

In addition, the terms of our INOVA Geophysical joint venture with BGP and BGP's investment in our company contain a number of provisions, such as certain pre-emptive rights granted to BGP with respect to certain future issuances of our stock, that could have the effect of discouraging, delaying or preventing a merger or acquisition of our company that our stockholders may otherwise consider to be favorable.

Failure to maintain effective internal controls in accordance with Section 404 of the Sarbanes-Oxley Act could have a material adverse effect on our stock price.

If, in the future, we fail to maintain the adequacy of our internal controls, as such standards are modified, supplemented or amended from time to time, we may not be able to ensure that we can conclude on an ongoing basis that we have effective internal controls over financial reporting in accordance with Section 404 of the Sarbanes-Oxley Act. Failure to achieve and maintain an effective internal control environment could have a material adverse effect on the price of our common stock.

***Note:* The foregoing factors pursuant to the Private Securities Litigation Reform Act of 1995 should not be construed as exhaustive. In addition to the foregoing, we wish to refer readers to other factors discussed elsewhere in this report as well as other filings and reports with the SEC for a further discussion of risks and uncertainties that could cause actual results to differ materially from those contained in forward-looking statements. We undertake no obligation to publicly release the result of any revisions to any such forward-looking statements, which may be made to reflect the events or circumstances after the date hereof or to reflect the occurrence of unanticipated events.**

Item 1B. ***Unresolved Staff Comments***

None.

Item 2. ***Properties***

Our principal operating facilities at December 31, 2017 were as follows:

Operating Facilities	Square Footage	Segment
Houston, Texas	226,000	Global Headquarters, E&P Technology & Services and Ocean Bottom Seismic Services
Harahan, Louisiana .	144,000	Devices group within E&P Operations Optimization
Edinburgh, Scotland	16,000	Optimization Software & Services group within E&P Operations Optimization
Chertsey, England . .	18,000	E&P Technology & Services
	404,000	

Each of these operating facilities is leased by us under long-term lease agreements. These lease agreements have terms that expire ranging from 2017 to 2025. See Footnote 12 "*Operating Leases*" of Footnotes to *Consolidated Financial Statements.*

In addition, we lease offices in Beijing, China; Rio de Janeiro, Brazil; and Moscow, Russia to support our global sales force. We lease offices for our seismic data processing centers in Port Harcourt, Nigeria; Luanda, Angola; Cairo, Egypt; Villahermosa, Mexico; and Rio de Janeiro, Brazil. Our executive headquarters is located at 2105 CityWest Boulevard, Suite 100, Houston, Texas. The machinery, equipment, buildings and other facilities owned and leased by us are considered by our management to be sufficiently maintained and adequate for our current operations.

Item 3. ***Legal Proceedings***

WesternGeco

In June 2009, WesternGeco filed a lawsuit against us in the United States District Court for the Southern District of Texas, Houston Division. In the lawsuit, styled *WesternGeco L.L.C. v. ION Geophysical Corporation*, WesternGeco alleged that we had infringed several method and apparatus claims contained in four of its United States patents regarding marine seismic streamer steering devices.

The trial began in July 2012. A verdict was returned by the jury in August 2012, finding that we infringed the claims contained in the four patents by supplying our DigiFIN, lateral streamer control units and the related software from the United States and awarded WesternGeco the sum of $105.9 million in damages, consisting of $12.5 million in reasonable royalty and $93.4 million in lost profits.

In June 2013, the presiding judge entered a Memorandum and Order, denying our post-verdict motions that challenged the jury's infringement findings and the damages amount. In the Memorandum and Order, the judge also stated that WesternGeco was entitled to be awarded supplemental damages for the additional DigiFIN units that were supplied from the United States before and after trial that were not included in the jury verdict due to the timing of the trial. In October 2013, the judge entered another Memorandum and Order, ruling on the number of DigiFIN units that were subject to supplemental damages and also ruling that the supplemental damages applicable to the additional units were to be calculated by adding together the jury's previous reasonable royalty and lost profits damages awards per unit, resulting in supplemental damages of $73.1 million.

In April 2014, the judge entered another Order, ruling that lost profits should not have been included in the calculation of supplemental damages in the October 2013 Memorandum and Order and reducing the supplemental damages award in the case from $73.1 million to $9.4 million. In the Order, the judge also further reduced the damages awarded in the case by $3.0 million to reflect a settlement and license that WesternGeco entered into with a customer of ours that had purchased and used DigiFIN units that were also included in the damage amounts awarded against us.

In May 2014, the judge signed and entered a Final Judgment against us in the amount of $123.8 million. The Final Judgment also included an injunction that enjoins us, our agents and anyone acting in concert with us, from supplying in or from the United States the DigiFIN product or any parts unique to the DigiFIN product, or any instrumentality no more than colorably different from any of these products or parts, for combination outside of the United States. We have conducted our business in compliance with the District Court's orders in the case, and we have reorganized our operations such that we no longer supply the DigiFIN product or any parts unique to the DigiFIN product in or from the United States.

We and WesternGeco each appealed the Final Judgment to the United States Court of Appeals for the Federal Circuit in Washington, D.C. (the "Court of Appeals"). On July 2, 2015, the Court of Appeals reversed in part the Final Judgment of the District Court, holding the District Court erred by including lost profits in the Final Judgment. Lost profits were $93.4 million and prejudgment interest on the lost profits was approximately $10.9 million of the $123.8 million Final Judgment. Pre-judgment interest on the lost profits portion will be treated in the same way as the lost profits. Post-judgment interest will likewise be treated in the same fashion. On July 29, 2015, WesternGeco filed a petition for rehearing en banc before the Court of Appeals. On October 30, 2015 the Court of Appeals denied WesternGeco's petition for rehearing en banc.

As previously disclosed, we had previously taken a loss contingency accrual of $123.8 million. As a result of the reversal by the Court of Appeals, as of June 30, 2015, we reduced our loss contingency accrual to $22.0 million.

On February 26, 2016, WesternGeco filed a petition for writ of certiorari by the Supreme Court. We filed our response on April 27, 2016. Subsequently, on June 20, 2016, the Supreme Court vacated the Court of Appeals' ruling although it did not address the lost profits question at that time. Rather, in light of the changes in case law regarding the standard of proof for willfulness in the Halo and Stryker cases, the Supreme Court indicated that the case should be remanded to the Court of Appeals for a determination of whether or not the willfulness determination by the District Court was appropriate.

On October 14, 2016, the Court of Appeals issued a mandate returning the case to the District Court for consideration of whether or not additional damages for willfulness were appropriate.

On March 14, 2017, the District Court held a hearing on whether or not additional damages for willfulness would be payable. The Judge found that ION's infringement was willful, based on his perception that ION did not adequately investigate the scope of the patent, and ION's conduct during

trial. However, in his ruling at the hearing, he limited enhanced damages to $5.0 million because it was a "close case," there was no evidence of copying, and ION was simply acting as a competitor in a capitalist marketplace. The District Court also ordered the appeal bond to be released and discharged. The Court's findings and ruling were memorialized in an order issued on May 16, 2017. On June 30, 2017, WesternGeco and we jointly agreed that neither party would appeal the District Court's award of $5.0 million in enhanced damages. The parties also agreed that the $5.0 million would be paid over the course of 12 months with $1.25 million being paid in two installments of $0.625 million in 2017 and the remaining $3.75 million being paid in three quarterly payments of $1.25 million beginning January 1, 2018. This agreement was memorialized by the court in an order issued on July 26, 2017.

WesternGeco filed a second petition for writ of certiorari in the U.S. Supreme Court on February 17, 2017, appealing the lost profits issue again. We filed our response to WesternGeco's second attempt to appeal to the Supreme Court the lost profits issue, raising both the substantive matters the Company addressed by opposing WesternGeco's first petition, and also raising a procedural argument that WesternGeco cannot raise the same issue for a second time in a second petition for certiorari. On May 30, 2017, the Supreme Court called for the views of the U.S. Solicitor General regarding whether or not to grant certiorari. We and WesternGeco each met with the Solicitor General's office in late July, 2017. On December 6, 2017, the Solicitor General filed its brief, and took the position that the Supreme Court ought to grant certiorari. On January 12, 2018, the Supreme Court granted certiorari as to whether the Court of Appeals erred in holding that lost profits arising from use of prohibited combinations occurring outside of the United States are categorically unavailable in cases where patent infringement is proven under 35 U.S.C. § 271(f)(2) (the specific statute under which we were ultimately held to have infringed WesternGeco's patents and which the District Court and the Federal Circuit relied in entering their final rulings). We will argue to the Supreme Court that the decision of the Court of Appeals that eliminated lost profits ought to be upheld. We anticipate oral arguments will take place in April of 2018 and that the Supreme Court will issue a decision by the end of June of 2018.

At the Court of Appeals we presented multiple arguments as to why the District Court's award of lost profits was improper. The lost profits damages awarded by the District Court were based on the use of our products by our customers outside of the United States. We argued at the Court of Appeals that, as a matter of law, WesternGeco cannot recoup lost profits for the overseas use of our products. We also argued that, under the jury instructions given in our case, WesternGeco would need to have been a direct competitor of ours in the survey markets to recoup lost profits, and that the jury was required to find that WesternGeco and ION were direct competitors. Because the Court of Appeals ruled in our favor on the first argument, and overturned the award of lost profits on that basis, the Court of Appeals did not rule on our "direct competitor" argument. If the Supreme Court overturns the Court of Appeals' decision that lost profits cannot be awarded to WesternGeco because the subsequent use of the apparatus was overseas, the case will be remanded back to the Court of Appeals, at which time we will present our second argument (that lost profits should not be awarded to WesternGeco because they were not our direct competitor).

Other proceedings may have an impact on WesternGeco's ability to recover lost profits damages even if WesternGeco prevails in the Supreme Court, and even if we do not prevail on the "direct competitor" argument in the Court of Appeals. We were a party to a challenge to the validity of several of WesternGeco's patent claims by means of an PTAB. While the above-described lawsuit was pending on appeal, the PTAB invalidated four of the six patent claims that formed the basis for the jury verdict in the lawsuit. WesternGeco appealed that decision to the Court of Appeals, which heard our and WesternGeco's arguments on January 23, 2018. If the Court of Appeals affirms the PTAB's invalidation of the patents, that may provide a separate ground for reducing or vacating any lost-profits award in the lawsuit. We expect the Court of Appeals to rule on the PTAB issue late in Q1 of 2018 or in Q2 of 2018.

We may not ultimately prevail in any of the appeals processes noted above and we could be required to pay some or all of the lost profits that were awarded by the District Court. Our assessment that we do not have a loss contingency may change in the future due to developments at the Supreme Court, Court of Appeals, or District Court, and other events, such as changes in applicable law, and such reassessment could lead to the determination that a loss contingency is probable, which could have a material effect on our business, financial condition and results of operations. Our assessments disclosed in this Annual Report on Form 10-K or elsewhere are based on currently available information and involve elements of judgment and significant uncertainties. Actual losses may equal or be considerably less than the lost profits awarded by the District Court. We do not anticipate that any losses from the date hereof would exceed the lost profits awarded by the District Court (except for the potential imposition of pre and post-judgment interest).

Other Litigation

We have been named in various other lawsuits or threatened actions that are incidental to our ordinary business. Litigation is inherently unpredictable. Any claims against us, whether meritorious or not, could be time-consuming, cause us to incur costs and expenses, require significant amounts of management time and result in the diversion of significant operational resources. The results of these lawsuits and actions cannot be predicted with certainty. We currently believe that the ultimate resolution of these matters will not have a material adverse effect on our financial condition or results of operations.

Item 4. ***Mine Safety Disclosures***

Not applicable.

PART II

Item 5. ***Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities***

Our common stock trades on the New York Stock Exchange ("NYSE") under the symbol "IO." The following table sets forth the high and low sales prices of the common stock for the periods indicated, as reported in NYSE composite tape transactions as adjusted for the one-for-fifteen reverse stock split completed on February 4, 2016.

Period	Price Range	
	High	Low
Year ended December 31, 2017:		
Fourth Quarter	$20.54	$7.55
Third Quarter	9.85	3.20
Second Quarter	4.85	4.10
First Quarter	6.30	3.87
Year ended December 31, 2016:		
Fourth Quarter	$ 8.40	$5.65
Third Quarter	6.99	4.73
Second Quarter	9.65	5.45
First Quarter	9.50	5.10

We have not historically paid, and do not intend to pay in the foreseeable future, cash dividends on our common stock. We presently intend to retain cash from operations for use in our business, with any future decision to pay cash dividends on our common stock dependent upon our growth, profitability, financial condition and other factors our board of directors consider relevant. In addition, the terms of our Credit Facility and the indenture governing the Notes prohibit us from paying dividends on or repurchasing shares of our common stock without the prior consent of the lenders.

The terms of our Credit Facility contain covenants that restrict us from paying cash dividends on our common stock, or repurchasing or acquiring shares of our common stock, unless (i) there is no event of default under the Credit Facility, (ii) there is excess availability under the Credit Facility greater than $20.0 million (or, at the time that the borrowing base formula amount is less than $20.0 million, the borrowers' level of liquidity (as defined in the revolving credit and security agreement) is greater than $20.0 million) and (iii) the agent receives satisfactory projections showing that excess availability under the Credit Facility for the immediately following period of ninety (90) consecutive days will not be less than $20.0 million (or, at the time that the borrowing base formula amount is less than $20.0 million, the borrowers' level of liquidity is greater than $20.0 million). The aggregate amount of permitted cash dividends and stock repurchases may not exceed $10.0 million in any fiscal year or $40.0 million in the aggregate from and after the closing date of the Credit Facility.

The indenture governing the Notes contains certain covenants that, among other things, limit our ability to pay certain dividends or distributions on our common stock or purchase, redeem or retire shares of our common stock, unless (i) no default under the indenture has occurred or would occur as a result of that payment, (ii) we would have, after giving pro forma effect to the payment, been permitted to incur at least $1.00 of additional indebtedness under a fixed charge coverage ratio test under the indenture, and (iii) the total cumulative amount of all such payments would not exceed a sum calculated by reference to, among other items, our consolidated net income, proceeds from certain sales of equity or assets, certain conversions or exchanges of debt for equity and certain other reductions in our indebtedness and in aggregate not to exceed at any one time $25.0 million.

On December 31, 2017, there were 636 holders of record of our common stock.

On December 14, 2017, in connection with the Equity Investment Program (as described in Footnote 10 *Stockholders' Equity and Stock-based Compensation of Footnotes to the Consolidated Financial Statements*), we sold, in a private placement under Section 4(a)(2) of the Securities Act of 1933, as amended, 120,567 shares of our common stock at $13.05 per share (the closing price of the our common stock on the NYSE on such date).

On November 4, 2015, our board of directors approved a stock repurchase program authorizing us to repurchase, from time to time from November 10, 2015 through November 10, 2017, up to $25 million in shares of our outstanding common stock. The stock repurchase program may be implemented through open market repurchases or privately negotiated transactions, at management's discretion. The actual timing, number and value of shares repurchased under the program will be determined by management at its discretion and will depend on a number of factors including the market price of the shares of our common stock and general market and economic conditions, applicable legal requirements and compliance with the terms of our outstanding indebtedness. The repurchase program does not obligate us to acquire any particular amount of common stock and may be modified or suspended at any time and could be terminated prior to completion. We were authorized to repurchase up to $25 million through November 10, 2017 and had repurchased $3 million or 451,792 shares of our common stock under the repurchase program at an average price per share of $6.54. The program expired November 10, 2017.

Item 6. *Selected Financial Data*

Special Items Affecting Comparability

The selected consolidated financial data set forth below under "*Historical Selected Financial Data*" with respect to our consolidated statements of operations for 2017, 2016, 2015, 2014 and 2013, and with respect to our consolidated balance sheets at December 31, 2017, 2016, 2015, 2014 and 2013, have been derived from our audited consolidated financial statements.

Our results of operations and financial condition have been affected by restructuring activities, legal contingencies, dispositions, debt refinancings and impairments and write-downs of assets during the periods presented, which affect the comparability of the financial information shown. In particular, our results of operations for the fiscal years ended December 31, 2013 - 2017 time period were impacted by the following items (before tax):

	Years Ended December 31,				
	2017	2016	2015	2014	2013
	(In thousands)				
Cost of sales:					
Write-down of multi-client data library	$(2,304)	$ —	$ (399)	$(100,100)	$ (5,461)
Write-down of excess and obsolete inventory	$ (398)	$ (429)	$ (151)	$ (6,952)	$ (21,197)
Operating expenses:					
Impairment of goodwill and intangible assets	$ —	$ —	$ —	$ (23,284)	$ —
Write-down of receivables	$ —	$ —	$ —	$ (8,214)	$ (9,157)
Accelerated vesting and cash exercise of stock appreciation right awards	$(6,141)	$ —	$ —	$ —	$ —
Other income (expense):					
Reversal of (accrual for) loss contingency related to legal proceedings	$(5,000)	$ 1,168	$101,978	$ 69,557	$(183,327)
Gain on sale of Source product line	$ —	$ —	$ —	$ 6,522	$ —
Gain on sale of cost method investments	$ —	$ —	$ —	$ 5,463	$ 3,591
Recovery of INOVA bad debts	$ 844	$ 3,983	$ —	$ —	$ —
Loss on bond exchange	$ —	$(2,182)	$ —	$ —	$ —
Equity in earnings (losses) of investments	$ —	$ —	$ —	$ (49,485)	$ (42,320)
Conversion payment of preferred stock	$ —	$ —	$ —	$ —	$ (5,000)

The historical selected financial data shown below should not be considered as being indicative of future operations, and should be read in conjunction with Item 7. "*Management's Discussion and Analysis of Financial Condition and Results of Operations*" and the consolidated financial statements and the notes thereto included elsewhere in this Form 10-K.

Historical Selected Financial Data

	Years Ended December 31,				
	2017	2016	2015	2014	2013
	(In thousands, except for per share data)				
Statement of Operations Data:					
Net revenues	$197,554	$172,808	$ 221,513	$ 509,558	$ 549,167
Gross profit	75,639	36,032	8,003	62,223	159,313
Income (loss) from operations	(8,699)	(43,171)	(100,632)	(117,929)	16,396
Net income (loss) applicable to common shares	(30,242)	(65,148)	(25,122)	(128,252)	(251,874)
Net income (loss) per basic share	$ (2.55)	$ (5.71)	$ (2.29)	$ (11.72)	$ (23.84)
Net income (loss) per diluted share	$ (2.55)	$ (5.71)	$ (2.29)	$ (11.72)	$ (23.84)
Weighted average number of common shares outstanding	11,876	11,400	10,957	10,939	10,567
Weighted average number of diluted shares outstanding	11,876	11,400	10,957	10,939	10,567
Balance Sheet Data (end of year):					
Working capital	$ (8,628)[a]	$ 16,555	$ 93,160	$ 222,099	$ 248,857
Total assets	301,069	313,216	435,088	617,257	864,671
Long-term debt[b]	156,744	158,790	182,992	190,594	220,152
Total equity	30,806	53,398	112,040	135,712	257,885
Other Data:					
Investment in multi-client library	$ 23,710	$ 14,884	$ 45,558	$ 67,785	$ 114,582
Capital expenditures	1,063	1,488	19,241	8,264	16,914
Depreciation and amortization (other than multi-client library)	16,592	21,975	26,527	27,656	18,158
Amortization of multi-client library	47,102	33,335	35,784	64,374	86,716

(a) Working Capital at December 31, 2017 is negative due to $28.5 million of Third Lien Notes (maturing May 15, 2018) being reclassified from long-term to current.

(b) Includes current maturities of long-term debt.

Item 7. *Management's Discussion and Analysis of Financial Condition and Results of Operations*

Note: The following should be read in conjunction with our Consolidated Financial Statements and related Footnotes to Consolidated Financial Statements that appear elsewhere in this Annual Report on Form 10-K. References to "Footnotes" in the discussion below refer to the numbered Footnotes to Consolidated Financial Statements.

Executive Summary

Our Business

The terms "we," "us" and similar or derivative terms refer to ION Geophysical Corporation and its consolidated subsidiaries, except where the context otherwise requires or as otherwise indicated.

We are a global, technology-focused company that provides geophysical technology, services and solutions to the global oil and gas industry. We provide our services and products through three

business segments—E&P Technology & Services, E&P Operations Optimization and Ocean Bottom Seismic Services.

For a full discussion of our business, see Part I, Item 1. "*Business*."

Macroeconomic Conditions

Demand for our services and products is cyclical and dependent upon activity levels in the oil and gas industry, particularly our customers' willingness to invest capital in the exploration for oil and natural gas. Our customers' capital spending programs are generally based on their outlook for near-term and long-term commodity prices, economic growth, commodity demand and estimates of resource production. Third-party reports now indicate that global exploration and production spending is expected to increase 8% in 2018. This is an improvement from the 4% growth in 2017 that was preceded by 2 years of double-digit declines.

The following is a summary of recent oil and gas pricing trends:

	Brent Crude (per bbl)		West Texas Intermediate Crude (per bbl)		Henry Hub Natural Gas (per mcf)	
Quarter ended	**High**	**Low**	**High**	**Low**	**High**	**Low**
12/31/2017	$66.80	$55.29	$60.46	$49.34	$3.69	$2.60
9/30/2017	$59.77	$46.47	$52.14	$44.25	$3.18	$2.76
6/30/2017	$55.05	$43.98	$53.38	$42.48	$3.27	$2.85
3/31/2017	$56.34	$49.56	$54.48	$47.00	$3.71	$2.44
12/31/2016	$54.96	$41.61	$54.01	$43.29	$3.80	$2.08
9/30/2016	$49.66	$40.00	$49.02	$39.50	$3.19	$2.67
6/30/2016	$50.73	$35.88	$51.23	$34.30	$2.94	$1.71
3/31/2016	$40.54	$26.01	$41.45	$26.19	$2.54	$1.49

Source: EIA.

In the past few years, crude oil prices have been volatile due to global economic uncertainties. Significant downward oil price volatility began late in 2014 and reached a low average of $33 per barrel in early 2016. The material decrease in crude oil prices can be attributed principally to high levels of global crude oil inventories resulting from significant production growth in the U.S. shale plays, the strengthening of the U.S. dollar relative to other foreign currencies and the Organization of Petroleum Exporting Countries ("OPEC") increasing its production, causing a global supply and demand imbalance for crude oil. In late November 2016, OPEC and other non-OPEC participants such as Russia reached an agreement to cut their oil production.

The prices for West Texas Intermediate ("WTI") and Intercontinental Exchange Brent ("Brent") crude oil increased to an average of $50 per barrel and $53 per barrel, respectively, in 2017 compared to $42 per barrel and $43 per barrel, respectively for 2016. This increase was due to multiple factors, including successful OPEC production cuts and net inventory crude draws which reduced the current crude surplus. The EIA forecasts the Brent crude oil spot price will average $60 per barrel in 2018 and $61 per barrel in 2019. Global supply and demand for crude oil is now largely in balance and some industry analysts forecast that worldwide inventories will fall below the five-year historical average in the first half of 2018. Energy reform in Mexico and a bill passed in Brazil that eliminates the requirement for Petrobras to participate in every presalt offshore block, in conjunction with the stability of oil prices, has resulted in increased investment in those areas. In addition, in January, 2018, the Interior Department proposed to make more than 98% of outer continental shelf acreage available for exploration and development. This price stability has encouraged North American drillers to increase shale production. During 2017, U.S. producers added 270 oil rigs. This brought the total U.S. rig count

to 929, at December 31, 2017, an increase of 41% during 2017 compared to 659 rigs at the end of the 2016.

Given the historical volatility of crude prices, there is a continued risk that if prices do not continue to improve, or if they start to decline again due to high levels of crude oil production, there is a potential for slowing growth rates in various global regions and/or for ongoing supply/demand imbalances.

Prices for natural gas in the U.S. averaged $2.99 per mmBtu for 2017, compared to $2.40 per mmBtu for 2016. As a result of natural gas production growth outpacing demand in the U.S., natural gas prices continue to be weak relative to prices experienced from 2006 through 2008 and are expected to remain below levels considered economical for new investments in numerous natural gas fields. Draws in late 2017 were larger than normal, resulting in total U.S. natural gas inventories of 2.8 trillion cubic feet at the end of 2017, 13.0% lower than levels at this time a year ago, and 12.1% lower than the five-year average. Inventories are expected to build slightly above the five year average by the end of October 2018.

After a period of growth in exploration activities and associated spending leading up to the end of 2014, many E&P companies shifted their focus to production activities, away from exploration, as the continued decline in oil and gas prices resulted in decreased revenues, prompting cost reduction initiatives across the industry. From the end of 2014 through 2017, E&P companies decreased spending on exploration and reportedly focused their spending on critical production requirements and existing commitments. We believe this was due to several factors, but primarily because operational cash flows of E&P companies were no longer sufficient to cover capital expenditures while continuing to pay cash dividends to shareholders. E&P companies relied on asset sales and debt financings to fund capital requirements amid demands for greater returns to shareholders. The combination of these factors placed many E&P companies in a position where they were unable to cover both their capital expenditure budgets and targeted cash returns to shareholders. As a result, E&P companies dramatically cut spending, with exploration spending receiving the largest reductions and seismic spending being one of the most discretionary parts of their exploration budgets. As a result of this industry downturn, many customers experienced a significant reduction in their liquidity with challenges accessing the capital markets. Several exploration and production companies declared bankruptcy, or exchanged equity for the forgiveness of debt, while others were forced to sell assets in an effort to preserve liquidity. However, over the past 12 months, access to the capital and debt markets improved significantly for certain of these customers.

E&P spending is expected to continue to rebound in 2018 over 2017, which was preceded by two successive years of double digit declines as commodity prices are forecasted to remain more stable. This positive trend in E&P spending, aided by favorable macroeconomic conditions has resulted in increased revenues during 2017. If the global supply of oil decreases due to reduced capital investment by E&P companies, government instability occurs in a major oil-producing nation or energy demand increases in the U.S. or in countries such as China and India, the recovery in WTI and Brent crude oil prices could continue to improve. If commodity prices do not continue to improve or if they start to deteriorate again, demand for our services and products could decline.

Impact to Our Business

During 2017, we saw renewed customer interest in underwriting of our New Venture multi-client programs as oil companies were able to right-size their expenditures to current oil prices and generate profits for the first time in eight quarters. During 2017, revenues increased 14% versus prior year. Investments in our multi-client data library are dependent upon the timing of our New Venture projects and the availability of underwriting by our customers. We continue to maintain high standards for the underwriting of any new projects, and sanctioned several new programs during 2017 that were originally

planned to occur during 2016. Our "asset light" strategy enables us to scale our business to avoid significant fixed costs and to remain financially flexible as we manage the timing and levels of our capital expenditures.

In our E&P Technology & Services segment, our New Venture revenues increased driven by our 3-D multi-client reimaging programs offshore Mexico and Brazil, as well as revenues from a new 2-D multi-client program in Panama and other programs that have recently been launched, which met our conservative underwriting standards. Imaging Services revenues decreased as a result of our strategic shift toward higher return multi-client programs. The imaging work on multi-client programs are reflected as part of New Venture or Data Library revenues depending on the program status, whereas revenues from proprietary imaging programs are reflected as part of Imaging Services. The Imaging Services group is fully utilized, with a large portion of our capacity dedicated to multi-client programs. Our data library sales were flat in 2017 compared to 2016. We invested $23.7 million, approximately $9 million more, in our multi-client data library during 2017, compared to 2016, but $22 million less compared to 2015.

At December 31, 2017, our E&P Technology & Services segment backlog, which consists of commitments for (i) imaging services work and (ii) multi-client New Venture and proprietary projects underwritten by our customers, increased 16% or $5.3 million to $39.2 million, compared with $33.9 million at December 31, 2016. The growth of backlog was due to ongoing activity in Mexico and Brazil as well as activity related to several newly sanctioned programs. We anticipate that the majority of our backlog will be recognized as revenue over the first half of 2018.

During 2017, our Ocean Bottom Seismic Services segment continues to be affected by E&P companies delaying or canceling decisions to commit capital to OBS projects, while our crew has remained idle since completion of a survey offshore Nigeria in the third quarter 2016. Despite political issues and uncertainty, we see significant long-term potential for OceanGeo and our technologies to improve OBS productivity, and we expect demand for OBS surveys to increase.

It is our view that technologies that add a competitive advantage through improved imaging, cost reductions or improvements in well productivity will continue to be valued in our marketplace. We believe that our newest technologies, such as 4Sea, WiBand, Orca, and Marlin, will continue to attract customer interest, because those technologies are designed to deliver improvements in safety, efficiency or image quality.

Key Financial Metrics

The tables below provide (i) a summary of our net revenues for our company as a whole, and by segment, for 2017, 2016 and 2015, and (ii) an overview of other certain key financial metrics for our company as a whole and our three business segments on a comparative basis for 2017, 2016 and 2015,

as reported and as adjusted in all three years for the restructuring and other charges recorded for those years.

	Years Ended December 31,		
	2017	2016	2015
		(In thousands)	
Net revenues:			
E&P Technology & Services:			
New Venture	$100,824	$ 27,362	$ 48,294
Data Library	40,016	39,989	63,326
Total multi-client revenues	140,840	67,351	111,620
Imaging Services	16,409	25,538	45,630
Total	$157,249	$ 92,889	$157,250
E&P Operations Optimization:			
Devices	$ 23,610	$ 26,746	$ 36,269
Optimization Software & Services	16,695	16,756	27,994
Total	$ 40,305	$ 43,502	$ 64,263
Ocean Bottom Seismic Services	$ —	$ 36,417	$ —
Total	$197,554	$172,808	$221,513

	Year Ended December 31, 2017			Year Ended December 31, 2016			Year Ended December 31, 2015		
	As Reported	Restructuring and Other Charges	As Adjusted	As Reported	Restructuring and Other Charges	As Adjusted	As Reported	Restructuring and Other Charges	As Adjusted
Gross profit:									
E&P Technology & Services	$ 65,196	$ —	**$ 65,196**	$ 4,708	$ 766	**$ 5,474**	$ 13,508	$ 3,193	**$ 16,701**
E&P Operations Optimization	20,076	—	**20,076**	21,745	188	**21,933**	33,995	536	**34,531**
Ocean Bottom Seismic Services	(9,633)	—	**(9,633)**	9,579	123	**9,702**	(39,500)	252	**(39,248)**
Total	$ 75,639	$ —	**$ 75,639**	$ 36,032	$1,077[c]	**$ 37,109**	$ 8,003	$ 3,981[e]	**$ 11,984**
Gross margin:									
E&P Technology & Services	41%	—%	**41%**	5%	1%	**6%**	9%	2%	**11%**
E&P Operations Optimization	50%	—%	**50%**	50%	—%	**50%**	53%	1%	**54%**
Ocean Bottom Seismic Services	—%	—%	**—%**	26%	—%	**27%**	—%	—%	**—%**
Total	38%	—%	**38%**	21%	—%	**21%**	4%	1%	**5%**
Income (loss) from operations:									
E&P Technology & Services	$ 42,505	$ —	**$ 42,505**	$(16,446)	$1,128	**$(15,318)**	$ (24,941)	$ 4,295	**$ (20,646)**
E&P Operations Optimization	8,022	—	**8,022**	9,652	197	**9,849**	20,131	1,790	**21,921**
Ocean Bottom Seismic Services	(16,259)	—	**(16,259)**	(1,756)	504	**(1,252)**	(55,080)	252	**(54,828)**
Support and other	(42,967)	6,141[a]	**(36,826)**	(34,621)	180	**(34,441)**	(40,742)	877	**(39,865)**
Total	$ (8,699)	$ 6,141	**$ (2,558)**	$(43,171)	$2,009[c]	**$(41,162)**	$(100,632)	$ 7,214[e]	**$ (93,418)**
Operating margin:									
E&P Technology & Services	27%	—%	**27%**	(18)%	2%	**(16)%**	(16)%	3%	**(13)%**
E&P Operations Optimization	20%	—%	**20%**	22%	1%	**23%**	31%	3%	**34%**
Ocean Bottom Seismic Services	—%	—%	**—%**	(5)%	2%	**(3)%**	—%	—%	**—%**
Support and other	(22)%	3%	**(19)%**	(20)%	—%	**(20)%**	(18)%	—%	**(18)%**
Total	(4)%	3%	**(1)%**	(25)%	1%	**(24)%**	(45)%	3%	**(42)%**
Net income (loss) applicable to common shares	$(30,242)	$11,141[b]	**$(19,101)**	$(65,148)	$ (960)[d]	**$(66,108)**	$ (25,122)	$(93,587)[f]	**$(118,709)**
Diluted net income (loss) per common share	$ (2.55)	$ 0.94	**$ (1.61)**	$ (5.71)	$(0.09)	**$ (5.80)**	$ (2.29)	$ (8.54)	**$ (10.83)**

(a) Represents accelerated vesting and cash exercise of stock appreciation right awards

(b) In addition to item (a), also impacting net loss applicable to common shares was a loss contingency accrual related to legal proceedings.

(c) Represents severance and facility charges related to the Company's 2016 restructuring.

(d) Represents a $3.9 million recovery of INOVA bad debts, partially offset by item (b).

(e) Represents severance and facility charges related to the Company's 2015 restructuring.

(f) In addition to item (d), also impacting net income (loss) applicable to common shares was a reduction in the WesternGeco legal contingency by $102.0 million.

We intend that the following discussion of our financial condition and results of operations will provide information that will assist in understanding our consolidated financial statements, the changes in certain key items in those financial statements from year to year, and the primary factors that accounted for those changes.

For a discussion of factors that could impact our future operating results and financial condition, see Item 1A. "*Risk Factors*" above.

Results of Operations

Year Ended December 31, 2017 (As Adjusted) Compared to Year Ended December 31, 2016 (As Adjusted)

Our total net revenues of $197.6 million for 2017 increased $24.8 million, or 14%, compared to total net revenues of $172.8 million for 2016. Our overall gross profit percentage for 2017 was 38%, compared to a gross profit percentage of 21%, as adjusted, for 2016. Total operating expenses as a percentage of net revenues for 2017 and 2016 were 40% and 45%, as adjusted, respectively. During 2017, our loss from operations was $2.6 million, as adjusted, compared to a loss of $41.2 million, as adjusted, for 2016.

Our net loss for 2017 was $19.1 million, as adjusted, or $(1.61) per share, compared to net loss of $66.1 million, as adjusted, or $(5.80) per share for 2016. As noted above, our net loss for 2017 and 2016 included restructuring charges and other special items totaling $11.1 million and $(1.0) million, respectively, impacting our earnings per share by $0.94 and $(0.09), respectively.

Net Revenues, Gross Profits and Gross Margins (As Adjusted for 2016)

E&P Technology & Services—Net revenues for 2017 increased by $64.4 million, or 69%, to $157.2 million, compared to $92.9 million for 2016. The increase was driven by New Venture revenues from our 3-D multi-client reimaging programs offshore Mexico and Brazil, as well as revenues from a new 2-D multi-client program in Panama and other programs that have recently been launched. This increase was partially offset by lower Imaging Services revenues as a result of the shift towards higher return multi-client programs during 2017. Revenues from Data Library sales were consistent year over year.

Gross profit increased by $59.7 million to $65.2 million, representing a 41% gross margin, compared to $5.5 million, as adjusted, or 6% gross margin, for 2016. These improvements in gross profit and margin were due to the increase in revenues and the mix of higher margin 3-D reimaging programs as noted above, as well as the full benefit of our cost control initiatives implemented in prior years. These increases were partially offset by higher sales-based amortization of our multi-client data library.

E&P Operations Optimization—Devices net revenues for 2017 decreased by $3.1 million, or 12%, to $23.6 million, compared to $26.7 million for 2016. This decrease was due to a decline in our repairs business, partially offset by sales of new product offerings during 2017. Optimization Software & Services net revenues remained flat at $16.7 million. Excluding the effect of foreign currencies, Optimization Software & Services revenues were up 4% in terms of local GBP currency. E&P Operations Optimization gross profit for 2017 decreased by $1.9 million to $20.0 million, in 2017, compared to $21.9 million, as adjusted, for 2016. Gross margin remained flat at 50%.

Ocean Bottom Seismic Services—Net revenues for 2017 were zero compared to 36.4 million for 2016. The crew was idle throughout 2017 as we pursued additional OBS work. Gross loss was $9.6 million for 2017 compared to gross income of $9.7 million, as adjusted, for 2016. This decline was due to the decrease in revenues, partially offset by several cost control initiatives implemented in 2017, including the renegotiation of our vessel leases, which reduced our vessel lease costs.

Operating Expenses (As Adjusted for 2016)

The following table presents the "As Adjusted" in 2016, excluding special charges that resulted from 2016 restructurings and other special items (in thousands):

	Year Ended December 31, 2017			Year Ended December 31, 2016		
	As Reported	Special Items	As Adjusted	As Reported	Special Items[a]	As Adjusted
Operating expenses:						
Research, development and engineering	$16,431	$ —	$16,431	$ 17,833	$ (397)	$ 17,436
Marketing and sales	20,778	—	20,778	17,371	(262)	17,109
General, administrative and other operating expenses	47,129	(6,141)	40,988	43,999	(273)	43,726
Total operating expenses	$84,338	$(6,141)	$78,197	$ 79,203	$ (932)	$ 78,271
Income (loss) from operations	$(8,699)	$ 6,141	$(2,558)	$(43,171)	$2,009	$(41,162)

[a] Includes severance affecting operating expenses.

Research, Development and Engineering—Research, development and engineering expense decreased $1.0 million, or 6%, to $16.4 million, for 2017, compared to $17.4 million, as adjusted, for 2016. During the current down-cycle in E&P exploration spending, we have been selective in spending on research and development ("R&D") projects in order to reduce expenses without sacrificing our ability to develop our technologies. As discussed above, despite the extended market downturn and uncertainty, we see significant long-term potential for OceanGeo and our technologies to improve OBS productivity. We continue to invest in our 4Sea system and we expect long-term demand for OBS production surveys (4-D) to increase.

Marketing and Sales—Marketing and sales expense increased $3.7 million, or 22%, to $20.8 million, for 2017, compared to $17.1 million, as adjusted, for 2016. This increase was primarily due to higher commissions driven by increased sales in the E&P Technology & Services segment.

General, Administrative and Other Operating Expenses—General, administrative and other operating expenses decreased $2.7 million, as adjusted, or 6%, to $41.0 million, as adjusted for 2017 compared to $43.7 million, as adjusted, for 2016. This decrease for 2017 was primarily due to the full benefit of our cost control initiatives implemented in prior years.

Other Items

Interest Expense, net—Interest expense, net, of $16.7 million for 2017 compared to $18.5 million for 2016. This improvement was primarily due to reduced debt caused by the bond exchange during 2016. For additional information, please refer to "*—Liquidity and Capital Resources—Sources of Capital*" below.

Other Income (Expense)—Other income (expense) for 2017 was $(3.9) million compared to other income of $1.4 million for 2016. The difference primarily relates to changes in our accrual for loss contingency related to a legal matter. See further discussion at Footnote 6 *"Legal Matters"* and in Part 1, Item 3, "*Legal Proceedings.*"

The following table reflects the significant items of other income (in thousands):

	Years Ended December 31,	
	2017	2016
Reduction of (accrued for) loss contingency related to legal proceedings (Footnote 6)	$(5,000)	$ 1,168
Recovery of INOVA bad debts	844	3,983
Loss on bond exchange	—	(2,182)
Other expense	211	(1,619)
Total other income (expense)	$(3,945)	$ 1,350

Income Tax Expense—Income tax expense for 2017 was less than $0.1 million compared to $4.4 million for 2016. Our effective tax rates for 2017 and 2016 were (0.1)% and (7.3)%, respectively. The income tax expense for 2017 and 2016 primarily relates to results generated by our non-U.S. businesses. Tax expense for 2017 includes a $1.3 million tax benefit for the release of the valuation allowance against refundable U.S. alternative minimum tax ("AMT") credits. Tax expense has not been offset by the tax benefits on losses within the U.S. and other jurisdictions, from which we cannot currently benefit. Our effective tax rate for 2017 was negatively impacted by the change in valuation allowance related to U.S. operating losses for which we cannot currently recognize a tax benefit. See further discussion of establishment of the deferred tax valuation allowance at Footnote 5 "*Income Taxes*" of Footnotes to *Consolidated Financial Statements.*

Results of Operations

Year Ended December 31, 2016 (As Adjusted) Compared to Year Ended December 31, 2015 (As Adjusted)

Our total net revenues of $172.8 million for 2016 decreased $48.7 million, or 22%, compared to total net revenues of $221.5 million for 2015. Our overall gross profit percentage for 2016 was 21%, as adjusted, compared to a gross profit percentage of 5%, as adjusted, for 2015. Total operating expenses, as adjusted, as a percentage of net revenues for 2016 and 2015 were 45% and 48%, respectively. During 2016, our loss from operations was $41.2 million, as adjusted, compared to a loss of $93.4 million, as adjusted, for 2015.

Our net loss for 2016 was $66.1 million, as adjusted, or $(5.80) per share, compared to net loss of $118.7 million, as adjusted, or $(10.83) per share for 2015. As noted above, our net loss for 2016 and 2015 included restructuring charges and other (credits) totaling $(1.0) million and $(93.6) million, respectively, impacting our earnings per share by $(0.09) and $(8.54), respectively.

Net Revenues, Gross Profits and Gross Margins (As Adjusted)

E&P Technology & Services—Net revenues for 2016 decreased by $64.4 million, or 41%, to $92.9 million, compared to $157.3 million for 2015. Revenues for our New Venture, Data Library and Imaging Services businesses decreased due to the continued softness in exploration spending.

Gross profit decreased by $11.2 million to $5.5 million, as adjusted, representing a 6% gross margin, compared to $16.7 million, as adjusted, or an 11% gross margin, for 2015. This decrease was attributable to the significant revenue decline in our New Venture, Data Library and Imaging Services businesses in 2016, partially offset by cost cutting measures.

E&P Operations Optimization—Devices net revenues for 2016 decreased by $9.5 million, or 26%, to $26.7 million, compared to $36.3 million for 2015. This decrease in revenues was principally due to lower sales of new marine positioning products and lower marine replacement revenues on existing

equipment. Optimization Software & Services net revenues for 2016 decreased by $11.2 million, or 40%, to $16.8 million, compared to $28.0 million for 2015. This decrease in revenues was due to a reduction in Orca licensing revenues during 2016, due to reduced activity by seismic contractors who have taken vessels out of service. E&P Operations Optimization gross profit for 2016 decreased by $12.6 million to $21.9 million, as adjusted, representing a 50% gross margin, compared to $34.5 million, as adjusted, or a 54% gross margin, for 2015. Gross profit and gross margin decreased due to the significant reduction in revenues in 2016 compared to 2015.

Ocean Bottom Seismic Services—Net revenues for 2016 were $36.4 million representing a 27% gross margin, compared to zero revenues and gross margins for 2015. Revenues and gross margin during 2016 were favorably impacted by the completion of data acquisition for an OBS survey offshore Nigeria in the current period, compared to our idle ocean bottom vessels and crew during 2015.

Operating Expenses (As Adjusted)

The following table presents the "As Adjusted" in both 2016 and 2015, excluding special charges that resulted from both the 2016 and 2015 restructurings and other write-downs (in thousands):

	Year Ended December 31, 2016			Year Ended December 31, 2015		
	As Reported	Special Items[a]	As Adjusted	As Reported	Special Items[b]	As Adjusted
Operating expenses:						
Research, development and engineering	$ 17,833	$ (397)	$ 17,436	$ 26,445	$ (603)	$ 25,842
Marketing and sales	17,371	(262)	17,109	30,493	(304)	30,189
General, administrative and other operating expenses	43,999	(273)	43,726	51,697	(2,326)	49,371
Total operating expenses	$ 79,203	$ (932)	$ 78,271	$ 108,635	$(3,233)	$105,402
Income (loss) from operations	$(43,171)	$2,009	$(41,162)	$(100,632)	$ 7,214	$ (93,418)

(a) Includes severance affecting operating expenses.

(b) Includes severance affecting operating expenses and facility abandonment charges.

Research, Development and Engineering—Research, development and engineering expense decreased $8.4 million, or 33%, to $17.4 million, as adjusted, for 2016, compared to $25.8 million, as adjusted, for 2015. During the current down-cycle in E&P exploration spending, we have been selective in spending on research and development ("R&D") projects in order to reduce expenses without sacrificing our ability to develop our technologies. As discussed above, despite the extended market downturn and uncertainty, we see significant long-term potential for OceanGeo and our technologies to improve ocean bottom survey productivity, and we expect long-term demand for ocean bottom production surveys (4-D) to increase.

Marketing and Sales—Marketing and sales expense decreased $13.1 million, or 43%, to $17.1 million, as adjusted, for 2016, compared to $30.2 million, as adjusted, for 2015. During the current down-cycle in oil and gas exploration spending, we have also reduced our payroll and marketing expenses.

General, Administrative and Other Operating Expenses—General, administrative and other operating expenses decreased $5.7 million, or 12%, to $43.7 million, as adjusted, for 2016 compared to $49.4 million, as adjusted, for 2015. This decrease was primarily due to reduced payroll expenses and

professional fees resulting from our cost cutting measures in order to right-size the business to current revenue levels.

Other Items

Interest Expense, net—Interest expense, net, of $18.5 million for 2016 compared to $18.8 million for 2015. For additional information, please refer to "*—Liquidity and Capital Resources—Sources of Capital*" below.

Other Income—Other income for 2016 was $1.4 million compared to other income of $98.3 million for 2015. The difference primarily relates to changes in our accrual for loss contingency related to a legal matter. See further discussion at Footnote 6 *"Legal Matters"* and in Part 1, Item 3, "*Legal Proceedings.*"

The following table reflects the significant items of other income (in thousands):

	Years Ended December 31,	
	2016	**2015**
Reduction of loss contingency related to legal proceedings (Footnote 6)	$ 1,168	$101,978
Recovery of INOVA bad debts	3,983	—
Loss on bond exchange	(2,182)	—
Other expense	(1,619)	(3,703)
Total other income	$ 1,350	$ 98,275

Income Tax Expense—Income tax expense for 2016 was $4.4 million compared to $4.0 million for 2015. Our effective tax rates for 2016 and 2015 were (7.3)% and (19.2)%, respectively. Our effective tax rate for 2016 and 2015 was negatively impacted by the establishment of a valuation allowance related to our U.S. losses incurred in both years. See further discussion of establishment of the deferred tax valuation allowance at Footnote 5 "*Income Taxes*" of Footnotes to *Consolidated Financial Statements.* Our income tax expense for 2016 and 2015 relates to income from our non-U.S. businesses. This foreign tax expense has not been offset by the tax benefits on losses within the U.S. and other jurisdictions, from which we cannot currently benefit.

Liquidity and Capital Resources

Sources of Capital

As of December 31, 2017, we had $52.1 million in cash on hand and $15.5 million of undrawn borrowing base availability under the Credit Facility. Our cash requirements include working capital requirements and cash required for our debt service payments, multi-client seismic data acquisition activities and capital expenditures. As of December 31, 2017, we had working capital of $(8.6) million, which includes a current liability of $28.5 million of Senior Secured Third-Priority Lien notes that are payable during the second quarter of 2018, which we expect to pay using available liquidity. Working capital requirements are primarily driven by our investment in our (i) multi-client data library ($23.7 million in 2017) and royalty payments for multi-client sales. Also, our headcount has traditionally been a significant driver of our working capital needs. As a significant portion of our business is involved in the planning, processing and interpretation of seismic data, one of our largest investments is in our employees, which involves cash expenditures for their salaries, bonuses, payroll taxes and related compensation expenses. During late 2014 and continuing through mid-2016, we reduced our workforce by over 60%, and closed selected facilities. Our workforce has since stabilized. These actions are expected to result in annualized cash savings of approximately $95 million which we began to fully

realize in 2017. During 2017, we saw an improved operating environment in oil prices which has contributed to a stabilization in our workforce.

Our working capital requirements may change from time to time depending upon many factors, including our operating results and adjustments in our operating plan in response to industry conditions, competition and unexpected events. In recent years, our primary sources of funds have been cash flows generated from operations, existing cash balances, debt and equity issuances and borrowings under our revolving credit facilities.

Revolving Credit Facility

In August 2014, we and our material U.S. subsidiaries, GX Technology Corporation, ION Exploration Products (U.S.A.), Inc. and I/O Marine Systems, Inc. (collectively, the "Subsidiary Borrowers") entered into a Revolving Credit and Security Agreement with PNC Bank, National Association ("PNC"), as agent (the "Original Credit Agreement"), which was amended by the First Amendment to Revolving Credit and Security Agreement in August 2015 (the "First Amendment") and the Second Amendment to Revolving Credit and Security Agreement in April 2016 (the "Second Amendment"; the Original Credit Agreement, as amended by the First Amendment and the Second Amendment, the "Credit Facility").

The Credit Facility is available to provide for the Borrowers' general corporate needs, including working capital requirements, capital expenditures, surety deposits and acquisition financing. The maximum amount of the revolving line of credit under the Credit Facility is the lesser of $40.0 million and a monthly borrowing base (which may be recalculated more frequently under certain circumstances).

The borrowing base under the Credit Facility will increase or decrease monthly using a formula based on certain eligible receivables, eligible inventory and other amounts, including a percentage of the net orderly liquidation value of our multi-client data library (not to exceed $15.0 million for the multi-client data library data component). As of December 31, 2017, the borrowing base under the Credit Facility was $25.5 million, and there was $10.0 million of outstanding indebtedness under the Credit Facility. We experienced a significant increase in our accounts and unbilled receivables during the second half of 2017 due to the significant revenue increase, however, a majority of those increases were part of our foreign operations, which are not included in the borrowing base calculation.

The Credit Facility requires us to maintain compliance with various covenants. At December 31, 2017, we were in compliance with all of the covenants under the Credit Facility. For further information regarding our Credit Facility see Footnote 3 "*Long-term Debt and Lease Obligations*" of Footnotes to *Consolidated Financial Statements*.

Senior Secured Notes

In May 2013, we sold $175.0 million aggregate principal amount of 8.125% Senior Secured Second-Priority Notes due 2018 (the "Third Lien Notes") in a private offering pursuant to an indenture dated as of May 13, 2013 (the "Third Lien Notes Indenture"). Prior to the completion of the Exchange Offer and Consent Solicitation on April 28, 2016, the Third Lien Notes were our senior secured second-priority obligations. After giving effect to the Exchange Offer and Consent Solicitation, the remaining aggregate principal amount of approximately $28.5 million of outstanding Third Lien Notes became our senior secured third-priority obligations subordinated to the liens securing all of our senior and second priority indebtedness, including under the Credit Facility and Second Lien Notes.

Pursuant to the Exchange Offer and Consent Solicitation, we (i) issued approximately $120.6 million in aggregate principal amount of our new Second Lien Notes and 1,205,477 shares of common stock, (utilizing 508,464 of treasury shares) in exchange for approximately $120.6 million in

aggregate principal amount of Third Lien Notes, and (ii) purchased approximately $25.9 million in aggregate principal amount of Third Lien Notes in exchange for aggregate cash consideration totaling approximately $15 million, plus accrued and unpaid interest on the Third Lien Notes from the applicable last interest payment date to, but not including, April 28, 2016.

After giving effect to the Exchange Offer and Consent Solicitation, the aggregate principal amount of the Third Lien Notes remaining outstanding was approximately $28.5 million and the aggregate principal amount of Second Lien Notes outstanding was approximately $120.6 million.

The Third Lien Notes are guaranteed by our material U.S. subsidiaries, GX Technology Corporation, ION Exploration Products (U.S.A.), Inc. and I/O Marine Systems, Inc. (the "Guarantors"). The Third Lien Notes mature on May 15, 2018. Interest on the Third Lien Notes accrues at the rate of 8.125% per annum and is payable semiannually in arrears on May 15 and November 15 of each year during their term. In May 2014, the holders of the Third Lien Notes exchanged their Third Lien Notes for a like principal amount of registered Third Lien Notes with the same terms.

The Third Lien Notes Indenture requires us to maintain compliance with various covenants. At December 31, 2017, we were in compliance with all of the covenants under the Third Lien Notes Indenture. For further information regarding the Third Lien Notes, see Footnote 3 "*Long-term Debt and Lease Obligations*" of Footnotes to *Consolidated Financial Statements*.

The Second Lien Notes are senior secured second-priority obligations guaranteed by the Guarantors. The Second Lien Notes mature on December 15, 2021. Interest on the Second Lien Notes accrues at the rate of 9.125% per annum and is payable semiannually in arrears on June 15 and December 15 of each year during their term, beginning June 15, 2016, except that the interest payment otherwise payable on June 15, 2021 will be payable on December 15, 2021.

The indenture dated April 28, 2016 governing the Second Lien Notes (the "Second Lien Notes Indenture") contains certain covenants that, among other things, limit or prohibit our ability and the ability of our restricted subsidiaries to take certain actions or permit certain conditions to exist during the term of the Second Lien Notes, including among other things, incurring additional indebtedness, creating liens, paying dividends and making other distributions in respect of our capital stock, redeeming our capital stock, making investments or certain other restricted payments, selling certain kinds of assets, entering into transactions with affiliates, and effecting mergers or consolidations. These and other restrictive covenants contained in the Second Lien Notes Indenture are subject to certain exceptions and qualifications. At December 31, 2017, we were in compliance with all of the covenants under the Second Lien Notes Indenture. All of our subsidiaries are currently restricted subsidiaries.

On or after December 15, 2019, we may on one or more occasions redeem all or a part of the Second Lien Notes at the redemption prices set forth below, plus accrued and unpaid interest and special interest, if any, on the Second Lien Notes redeemed during the twelve-month period beginning on December 15th of the years indicated below:

Date	Percentage
2019	105.500%
2020	103.500%
2021 and thereafter	100.000%

Meeting our Liquidity Requirements

As of December 31, 2017, our total outstanding indebtedness (including capital lease obligations) was approximately $156.7 million, consisting primarily of approximately $28.5 million outstanding Third Lien Notes (maturing in May 2018), $120.6 million outstanding Second Lien Notes (maturing in December 2021) and $0.3 million of capital leases. As of December 31, 2017, there was $10.0 million of outstanding indebtedness under our Credit Facility.

For 2017, total capital expenditures, including investments in our multi-client data library, were $24.8 million. We currently expect that our capital expenditures, including investments in our multi-client data library, will be a range of $30.0 million to $50.0 million in 2018. Investments in our multi-client data library are dependent upon the timing of our New Venture projects and the availability of underwriting by our customers.

For 2017, we paid $1.3 million of the $5.0 million litigation accrual we established in the first quarter of 2017 and the remaining $3.7 million will be paid in quarterly installments during 2018. In addition, we reclassified the $28.5 million outstanding Third Lien Notes to a current liability as this balance matures in the second quarter of 2018. With respect to our ongoing WesternGeco litigation and the approaching maturity of our outstanding Third Lien Notes, we believe that our existing cash balance, cash from operations and undrawn availability under our Credit Facility will be sufficient to meet our anticipated cash needs for at least the next 12 months. However, as described at Part I, Item 3. "*Legal Proceedings,*" there are possible scenarios involving an outcome in the WesternGeco lawsuit that could materially and adversely affect our liquidity.

Cash Flow from Operations

Net cash provided by operating activities was $28.0 million for 2017, compared to net cash used in operating activities of $1.6 million for 2016. The increase in net cash provided by operations was due to a significant increase in New Venture revenues in 2017, compared to 2016 and due to $20.8 million damages payment in 2016 for the WesternGeco lawsuit, which was partially offset by increases in unbilled receivables as of December 31, 2017.

Net cash provided by operating activities was $1.6 million for 2016, compared to net cash used in operating activities of $16.5 million for 2015. The increase in our cash flows from operations was primarily due to reduced spend due to our cost reduction initiatives and accounts receivable collections offset by a $20.8 million damages payment for the WesternGeco lawsuit.

Cash Flow Used In Investing Activities

Net cash flow used in investing activities was $24.8 million for 2017, compared to $13.6 million for 2016. The principal uses of cash in our investing activities during 2017 were $23.7 million of investments in our multi-client data library and $1.1 million of investments in property, plant and equipment.

Net cash flow used in investing activities was $13.6 million for 2016, compared to $63.5 million for 2015. The principal uses of cash in our investing activities during 2016 were $14.9 million of investments in our multi-client data library and $1.5 million of investments in property, plant and equipment, partially offset by proceeds from the escrow related to the sale of a cost method investment in 2014.

Cash Flow Used in Financing Activities

Net cash flow used in financing activities was $3.6 million for 2017, compared to $21.6 million of net cash flow used in financing activities for 2016. The net cash flow used in financing activities during

2017 was primarily related to $4.8 million of payments on long-term debt related to equipment capital leases, partially offset by $1.6 million of proceeds from employee stock purchases.

Net cash flow used in financing activities was $21.6 million for 2016, compared to $9.5 million of net cash flow used in financing activities for 2015. The net cash flow used in financing activities during 2016 was primarily related to $15.0 million to repurchase bonds, $8.7 million of payments on long-term debt related to equipment capital leases, $6.6 million of debt issuance costs and $1.0 million to repurchase of common stock. In addition, we had net borrowings of $10.0 million on our revolving line of credit.

Inflation and Seasonality

Inflation in recent years has not had a material effect on our costs of goods or labor, or the prices for our products or services. Traditionally, our business has been seasonal, with strongest demand typically in the fourth quarter of our fiscal year.

Future Contractual Obligations

The following table sets forth estimates of future payments of our consolidated contractual obligations, as of December 31, 2017 (in thousands):

Contractual Obligations	Total	Less Than 1 Year	1 - 3 Years	3 - 5 Years	More Than 5 Years
Long-term and Short-term debt	$149,066	$28,497	$ —	$120,569	$ —
Interest on long-term debt obligations	44,885	12,197	22,144	10,544	—
Revolver credit facility	10,000	10,000	—	—	—
Equipment capital lease obligations	279	250	29	—	—
Operating leases	66,710	10,334	19,292	18,686	18,398
Purchase obligations	500	500	—	—	—
Total	$271,440	$61,778	$41,465	$149,799	$18,398

The Long-term and Short-term debt at December 31, 2017 included $28.5 million and $120.6 million of principal indebtedness outstanding under our Third Lien Notes issued in May 2013 and our Second Lien Notes issued in April 2016, respectively. The $0.3 million of equipment capital lease obligations relates to Imaging Services' financing of computer and other equipment purchases.

The operating lease commitments at December 31, 2017 relate to our leases for certain equipment, offices, processing centers, and warehouse space. Our purchase obligations primarily relate to our committed inventory purchase orders under which deliveries of inventory are scheduled to be made in 2018.

Critical Accounting Policies and Estimates

The preparation of consolidated financial statements in conformity with generally accepted accounting principles in the United States requires management to make choices between acceptable methods of accounting and to use judgment in making estimates and assumptions that affect the reported amounts of assets and liabilities, disclosure of contingent assets and liabilities, and the reported amounts of revenue and expenses. The following accounting policies are based on, among other things, judgments and assumptions made by management that include inherent risk and uncertainties. Management's estimates are based on the relevant information available at the end of each period. We believe that all of the judgments and estimates used to prepare our financial statements were reasonable at the time we made them, but circumstances may change requiring us to revise our estimates in ways that could be materially adverse to our results of operations and financial

condition. We describe our significant accounting policies more fully in Footnote 1 "*Summary of Significant Accounting Policies*" of Footnotes to *Consolidated Financial Statements*.

Revenue Recognition

We derive revenue from the sale of (i) multi-client and proprietary surveys, licenses of "on-the-shelf" data libraries and imaging services, within our E&P Technologies & Services segment; (ii) seismic data acquisition systems and other seismic equipment, (iii) seismic command and control software systems and software solutions for operations management within our E&P Operations Optimization segment; and (iv) fully-integrated OBS solutions that include survey design and planning and data acquisition within our Ocean Bottom Seismic Services segment. All revenues of the E&P Technology & Services and Ocean Bottom Seismic Services segments and the services component of revenues for the Optimization Software & Services group as part of the E&P Operations Optimization segment are classified as services revenues. All other revenues are classified as product revenues.

Multi-Client and Proprietary Surveys, and Imaging Services—As our multi-client surveys are being designed, acquired or processed, the New Venture phase, we enter into non-exclusive licensing arrangements with our customers. License revenues from these New Venture survey projects are recognized during the New Venture phase as the seismic data is acquired and/or processed on a proportionate basis as work is performed. Under this method, we recognize revenues based upon quantifiable measures of progress, such as kilometers acquired or days processed. Upon completion of a multi-client seismic survey, the seismic survey is considered "on-the-shelf," and licenses to the survey data are granted to customers on a non-exclusive basis. Revenues on licenses of completed multi-client data surveys are recognized when (a) a signed final master geophysical data license agreement and accompanying supplemental license agreement are returned by the customer; (b) the purchase price for the license is fixed or determinable; (c) delivery or performance has occurred; and (d) no significant uncertainty exists as to the customer's obligation, willingness or ability to pay. In limited situations, we have provided the customer with a right to exchange seismic data for another specific seismic data set. In these limited situations, we recognize revenue at the earlier of the customer exercising its exchange right or the expiration of the customer's exchange right.

We also perform seismic surveys under contracts to specific customers, whereby the seismic data is owned by those customers. We recognize revenue as the seismic data is acquired and/or processed on a proportionate basis as work is performed. We use quantifiable measures of progress consistent with our multi-client surveys.

Revenues from all imaging and other services are recognized when persuasive evidence of an arrangement exists, the price is fixed or determinable, and collectability is reasonably assured. Revenues from contract services performed on a day rate basis are recognized as the service is performed.

Acquisition Systems and Other Seismic Equipment—For the sales of seismic data acquisition systems and other seismic equipment, we follow the requirements of ASC 605-10 "*Revenue Recognition*" and recognize revenue when (a) evidence of an arrangement exists; (b) the price to the customer is fixed and determinable; (c) collectability is reasonably assured; and (d) the acquisition system or other seismic equipment is delivered to the customer and risk of ownership has passed to the customer, or, in the case in which a substantive customer-specified acceptance clause exists in the contract, the later of delivery or when the customer-specified acceptance is obtained

Software—For the sales of navigation, survey and quality control software systems, we follow the requirements for these transactions of ASC 985-605 "*Software Revenue Recognition*" ("ASC 985-605"). We recognize revenue from sales of these software systems when (a) evidence of an arrangement exists; (b) the price to the customer is fixed and determinable; (c) collectibility is reasonably assured; and (d) the software is delivered to the customer and risk of ownership has passed to the customer, or, in

the limited case in which a substantive customer-specified acceptance clause exists, the later of delivery or when the customer-specified acceptance is obtained. These arrangements generally include us providing related services, such as training courses, engineering services and annual software maintenance. We allocate revenue to each element of the arrangement based upon vendor-specific objective evidence ("VSOE") of fair value of the element or, if VSOE is not available for the delivered element, we apply the residual method.

In addition to perpetual software licenses, we offer time-based software licenses. For time-based licenses, we recognize revenue ratably over the contract term, which is generally two to five years.

Ocean Bottom Seismic Services—We recognize revenues as they are realized and earned and can be reasonably measured, based on contractual day rates or on a fixed-price basis, and when collectability is reasonably assured. In connection with acquisition contracts, we may receive revenues for preparation and mobilization of equipment and personnel or for capital improvements to vessels. We defer the revenues earned and incremental costs incurred that are directly related to contract preparation and mobilization and recognize such revenues and costs over the primary contract term of the acquisition project. We use the ratio of square kilometers acquired as a percentage of the total square kilometers expected to be acquired over the primary term of the contract to recognize deferred revenues and amortize, in cost of services, the costs related to contract preparation and mobilization. We recognize the costs of relocating vessels without contracts to more promising market sectors as such costs are incurred. Upon completion of acquisition contracts, we recognize in earnings any demobilization fees received and expenses incurred.

Multiple-element Arrangements—When separate elements (such as an acquisition system, other seismic equipment and/or imaging and acquisition services) are contained in a single sales arrangement, or in related arrangements with the same customer, we follow the requirements of ASC 605-25 "*Accounting for Multiple-Element Revenue Arrangement*" ("ASC 605-25').

This guidance requires that arrangement consideration be allocated at the inception of an arrangement to all deliverables using the relative selling price method. We allocate arrangement consideration to each deliverable qualifying as a separate unit of accounting in an arrangement based on its relative selling price. We determine selling price using VSOE, if it exists, and otherwise, third-party evidence ("TPE"). If neither VSOE nor TPE of selling price exists for a unit of accounting, we use estimated selling price ("ESP"). We generally expect that we will not be able to establish TPE due to the nature of the markets in which we compete, and, as such, we typically will determine selling price using VSOE or if not available, ESP. VSOE is generally limited to the price charged when the same or similar product is sold on a standalone basis. If a product is seldom sold on a standalone basis, it is unlikely that we can determine VSOE for the product.

The objective of ESP is to determine the price at which we would transact if the product were sold by us on a standalone basis. Our determination of ESP involves a weighting of several factors based on the specific facts and circumstances of the arrangement. Specifically, we consider the anticipated margin on the particular deliverable, the selling price and profit margin for similar products and our ongoing pricing strategy and policies.

Multi-Client Data Library

Our multi-client data library consists of seismic surveys that are offered for licensing to customers on a non-exclusive basis. The capitalized costs include the costs paid to third parties for the acquisition of data and related activities associated with the data creation activity and direct internal processing costs, such as salaries, benefits, computer-related expenses and other costs incurred for seismic data project design and management. For 2017, 2016 and 2015, we capitalized, as part of our multi-client data library, $12.7 million, $6.6 million and $6.1 million, respectively, of direct internal processing costs.

Our method of amortizing the costs of an in-process multi-client survey (the period during which the seismic data is being acquired or processed, the New Venture phase) consists of determining the percentage of actual revenue recognized to the total estimated revenues (which includes both revenues estimated to be realized during the New Venture phase and estimated revenues from the licensing of the resulting "on-the-shelf" survey data) and multiplying that percentage by the total cost of the project (the sales forecast method). We consider a multi-client survey to be complete when all work on the creation of the seismic data is finished and that survey is available for licensing.

Once a multi-client data survey is completed, the data survey is considered "on-the-shelf" and our method of amortization is then the greater of (i) the sales forecast method or (ii) the straight-line basis over a four-year period. The greater amount of amortization resulting from the sales forecast method or the straight-line amortization policy is applied on a cumulative basis at the individual survey level. Under this policy, we first record amortization using the sales forecast method. The cumulative amortization recorded for each survey is then compared with the cumulative straight-line amortization. The four-year period utilized in this cumulative comparison commences when the data survey is determined to be complete. If the cumulative straight-line amortization is higher for any specific survey, additional amortization expense is recorded, resulting in the accumulated amortization being equal to the cumulative straight-line amortization for that survey. We have determined the amortization period to be four years based upon our historical experience that indicates that the majority of our revenues from multi-client surveys are derived during the acquisition and processing phases and during the four years subsequent to survey completion.

Estimated sales are determined based upon discussions with our customers, our experience and our knowledge of industry trends. Changes in sales estimates may have the effect of changing the percentage relationship of cost of services to revenue. In applying the sales forecast method, an increase in the projected sales of a survey will result in lower cost of services as a percentage of revenue and higher earnings when revenue associated with that particular survey is recognized, while a decrease in projected sales will have the opposite effect. Assuming that the overall volume of sales mix of surveys generating revenue in the period was held constant in 2017, an increase of 10% in the sales forecasts of all surveys would have increased our amortization expense by approximately $1.5 million.

We estimate the ultimate revenue expected to be derived from a particular seismic data survey over its estimated useful economic life to determine the costs to amortize, if greater than straight-line amortization. That estimate is made by us at the project's initiation. For a completed multi-client survey, we review the estimate quarterly. If during any such review, we determine that the ultimate revenue for a survey is expected to be materially more or less than the original estimate of total revenue for such survey, we decrease or increase (as the case may be) the amortization rate attributable to the future revenue from such survey. In addition, in connection with such reviews, we evaluate the recoverability of the multi-client data library, and if required under ASC 360-10 "*Impairment and Disposal of Long-Lived Assets*," record an impairment charge with respect to such data.

Reserve for Excess and Obsolete Inventories

Our reserve for excess and obsolete inventories is based on historical sales trends and various other assumptions and judgments, including future demand for our inventory, the timing of market acceptance of our new products and the risk of obsolescence driven by new product introductions. When we record a charge for excess and obsolete inventories, the amount is applied as a reduction in the cost basis of the specific inventory item for which the charge was recorded. Should these assumptions and judgments not be realized for these or for other reasons, our reserve would be adjusted to reflect actual results. Our industry is subject to technological change and new product development that could result in obsolete inventory. Our reserve for inventory at December 31, 2017 was $15.0 million compared to $15.0 million at December 31, 2016.

Goodwill and Other Intangible Assets

Goodwill is allocated to our reporting units, which is either the operating segment or one reporting level below the operating segment. For purposes of performing the impairment test for goodwill as required by ASC 350 "*Intangibles—Goodwill and Other*" ("ASC 350"), we established the following reporting units: E&P Technology & Services, Optimization Software & Services, Devices, and Ocean Bottom Seismic Services. To determine the fair value of our reporting units, we use a discounted future returns valuation method. If we had established different reporting units or utilized different valuation methodologies, our impairment test results could differ. Additionally, we compared the sum of the estimated fair values of the individual reporting units less consolidated debt to our overall market capitalization as reflected by our stock price.

In accordance with ASC 350, we are required to evaluate the carrying value of our goodwill at least annually for impairment, or more frequently if facts and circumstances indicate that it is more likely than not impairment has occurred. We formally evaluate the carrying value of our goodwill for impairment as of December 31 for each of our reporting units. We first perform a qualitative assessment by evaluating relevant events or circumstances to determine whether it is more likely than not that the fair value of a reporting unit is less than its carrying amount. If we are unable to conclude qualitatively that it is more likely than not that a reporting unit's fair value exceeds its carrying value, then we will use a two-step quantitative assessment of the fair value of a reporting unit. If the carrying value of a reporting unit of an entity that includes goodwill is determined to be more than the fair value of the reporting unit, there exists the possibility of impairment of goodwill. An impairment loss of goodwill is measured in two steps by first allocating the fair value of the reporting unit to net assets and liabilities including recorded and unrecorded other intangible assets to determine the implied carrying value of goodwill. The next step is to measure the difference between the carrying value of goodwill and the implied carrying value of goodwill, and, if the implied carrying value of goodwill is less than the carrying value of goodwill, an impairment loss is recorded equal to the difference.

We completed our annual goodwill impairment testing as of December 31, 2017 and concluded no impairment was required. The goodwill balance as of December 31, 2017 was comprised of $21.1 million in our Optimization Software & Services and $2.9 million in our E&P Technology & Services reporting units.

Based on our qualitative assessment performed as of December 31, 2017, we concluded it was more likely than not that the fair values of our E&P Technology & Services, and Optimization Software & Services reporting units exceeded their carrying values. However, if the market value of our shares declines for a prolonged period, and if management's judgments and assumptions regarding future industry conditions and operations diminish, it is reasonably possible that our expectations of future cash flows may decline and ultimately result in a goodwill impairment for our E&P Technology & Services and Optimization Software & Services reporting units.

Our intangible assets, other than goodwill, relate to our customer relationships. We amortize our customer relationship intangible assets on an accelerated basis over a 10- to 15-year period, using the undiscounted cash flows of the initial valuation models. We use an accelerated basis as these intangible assets were initially valued using an income approach, with an attrition rate that resulted in a pattern of declining cash flows over a 10- to 15-year period.

Following the guidance of ASC 360 "*Impairment and Disposal of Long-Lived Assets*," we review the carrying values of these intangible assets for impairment if events or changes in the facts and circumstances indicate that it is more likely than not their carrying value may not be recoverable. Any impairment determined is recorded in the current period and is measured by comparing the fair value of the related asset to its carrying value.

Similar to our treatment of goodwill, in making these assessments, we rely on a number of factors, including operating results, business plans, internal and external economic projections, anticipated future cash flows and external market data. However, if our estimates or related projections associated with the reporting units significantly change in the future, we may be required to record further impairment charges.

Deferred Tax Assets

During 2013, we established a valuation allowance on a substantial majority of our U.S. net deferred tax assets due to the large one-time charges taken during the year. The valuation allowance was calculated in accordance with the provisions of ASC 740-10, "*Accounting for Income Taxes*," which requires that a valuation allowance be established or maintained when it is "more likely than not" that all or a portion of deferred tax assets will not be realized. We will continue to record a valuation allowance for the substantial majority of all of our deferred tax assets until there is sufficient evidence to warrant reversal. In the event our expectations of future operating results change, an additional valuation allowance may be required to be established on our existing unreserved net U.S. deferred tax assets. As a result of passage of the Tax Cut and Jobs Act (the "Act") on December 22, 2017, the Company's U.S. deferred tax assets, liabilities, and associated valuation allowance as of December 31, 2017 have been re-measured at the new U.S. federal tax rate of 21%.

Foreign Sales Risks

For 2017, we recognized $44.9 million of sales to customers in Europe, $18.9 million of sales to customers in Asia Pacific, $68.2 million of sales to customers in Latin America, $2.3 million of sales to customers in the Middle East, $6.8 million of sales to customers in Africa and $8.2 million of sales to customers in the Commonwealth of Independent States, or former Soviet Union (CIS). The majority of our foreign sales are denominated in U.S. dollars. For 2017, 2016 and 2015, international sales comprised 76%, 78% and 66%, respectively, of total net revenues. The significant decline in oil price that began in the fourth quarter of 2014 has continued to impact the global market through 2017. Our results of operations, liquidity and financial condition related to our operations in Russia are primarily denominated in U.S. dollars. To the extent that world events or economic conditions negatively affect our future sales to customers in many regions of the world, as well as the collectability of our existing receivables, our future results of operations, liquidity and financial condition would be adversely affected.

Off-Balance Sheet Arrangements

Variable interest entities. As of December 31, 2017, our investment in INOVA Geophysical constitutes an investment in a variable interest entity, as that term is defined in FASB ASC Topic 810-10 "*Consolidation—Overall*" and as defined in Item 303(a)(4)(ii) of SEC Regulation S-K. See Footnote 1 "*Summary of Significant Accounting Policies-Equity Method Investments*" of Footnotes to *Consolidated Financial Statements* included elsewhere in this Form 10-K for additional information.

Indemnification

In the ordinary course of our business, we enter into contractual arrangements with our customers, suppliers and other parties under which we may agree to indemnify the other party to such arrangement from certain losses it incurs relating to our products or services or for losses arising from certain events as defined within the particular contract. Some of these indemnification obligations may not be subject to maximum loss limitations. Historically, payments we have made related to these indemnification obligations have been immaterial.

Item 7A. ***Quantitative and Qualitative Disclosures about Market Risk***

Market risk is the risk of loss from adverse changes in market prices and rates. Our primary market risks include risks related to interest rates and foreign currency exchange rates.

Interest Rate Risk

As of December 31, 2017, we had outstanding total indebtedness of approximately $156.7 million. As of December 31, 2017, all of this indebtedness, other than borrowings under our Credit Facility (described below) accrues interest at fixed interest rates.

As our borrowings under the Credit Facility are subject to variable interest rates, we are subject to interest rate risk to the extent we have outstanding balances under the Credit Facility. We are therefore impacted by changes in LIBOR and/or our bank's base rates. We may, from time to time, use derivative financial instruments to help mitigate rising interest rates under our Credit Facility. We do not use derivatives for trading or speculative purposes and only enter into contracts with major financial institutions based on their credit rating and other factors.

Foreign Currency Exchange Rate Risk

Our operations are conducted in various countries around the world, and we receive revenue from these operations in a number of different currencies with the most significant of our international operations using British Pounds Sterling. As such, our earnings are subject to movements in foreign currency exchange rates when transactions are denominated in currencies other than the U.S. dollar, which is our functional currency, or the functional currency of many of our subsidiaries, which is not necessarily the U.S. dollar. To the extent that transactions of these subsidiaries are settled in currencies other than the U.S. dollar, a devaluation of these currencies versus the U.S. dollar could reduce the contribution from these subsidiaries to our consolidated results of operations as reported in U.S. dollars.

Through our subsidiaries, we operate in a wide variety of jurisdictions, including the United Kingdom, Australia, the Netherlands, Brazil, China, Canada, Russia, the United Arab Emirates, Egypt and other countries. Our financial results may be affected by changes in foreign currency exchange rates. Our consolidated balance sheet at December 31, 2017 reflected approximately $6.2 million of net working capital related to our foreign subsidiaries, a majority of which is within the United Kingdom. Our foreign subsidiaries receive their income and pay their expenses primarily in their local currencies. To the extent that transactions of these subsidiaries are settled in the local currencies, a devaluation of these currencies versus the U.S. dollar could reduce the contribution from these subsidiaries to our consolidated results of operations as reported in U.S. dollars. For the year ended December 31, 2017, we recorded net foreign currency losses of approximately $1.6 million in other income, a majority of these losses are due to currency fluctuations related to our operations within Brazil and the United Kingdom.

Item 8. ***Financial Statements and Supplementary Data***

The financial statements and related notes thereto required by this item begin at page F-1 hereof.

Item 9. ***Changes in and Disagreements with Accountants on Accounting and Financial Disclosure***

Not applicable.

Item 9A. ***Controls and Procedures***

(a) Evaluation of Disclosure Controls and Procedures. Disclosure controls and procedures are designed to ensure that information required to be disclosed in the reports we file with or submit to

the SEC under the Securities Exchange Act of 1934, as amended (the "Exchange Act"), is recorded, processed, summarized and reported within the time period specified by the SEC's rules and forms. Disclosure controls and procedures are defined in Rule 13a-15(e) under the Exchange Act, and they include, without limitation, controls and procedures designed to ensure that information required to be disclosed under the Exchange Act is accumulated and communicated to management, including the principal executive officer and the principal financial officer, as appropriate, to allow timely decisions regarding required disclosure.

Our management carried out an evaluation of the effectiveness of the design and operation of our disclosure controls and procedures as of December 31, 2017. Based upon that evaluation, our principal executive officer and principal financial officer have concluded that our disclosure controls and procedures were effective as of December 31, 2017.

(b) Management's Report on Internal Control Over Financial Reporting. Our management is responsible for establishing and maintaining adequate internal control over financial reporting as defined in Rules 13a-15(f) under the Exchange Act. Our internal control over financial reporting is designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. Our internal control over financial reporting includes those policies and procedures that:

(i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of our company;

(ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of our company are being made only in accordance with authorizations of our management and directors; and

(iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of our assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Under the supervision and with the participation of our management, including our principal executive officer and principal financial officer, we assessed the effectiveness of our internal control over financial reporting as of December 31, 2017 based upon criteria established in the 2013 *Internal Control—Integrated Framework* issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

The independent registered public accounting firm that has also audited our consolidated financial statements included in this Annual Report on Form 10-K has issued an audit report on our internal control over financial reporting. This report appears below.

(c) Changes in Internal Control over Financial Reporting. There was not any change in our internal control over financial reporting that occurred during the three months ended December 31, 2017, which has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

Report of Independent Registered Public Accounting Firm

Board of Directors and Stockholders
ION Geophysical Corporation

Opinion on internal control over financial reporting

We have audited the internal control over financial reporting of ION Geophysical Corporation (a Delaware corporation) and subsidiaries (the "Company") as of December 31, 2017, based on criteria established in the 2013 *Internal Control—Integrated Framework* issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). In our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2017, based on criteria established in the 2013 *Internal Control—Integrated Framework* issued by COSO.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) ("PCAOB"), the consolidated financial statements of the Company as of and for the year ended December 31, 2017, and our report dated February 8, 2018 expressed an unqualified opinion on those financial statements.

Basis for opinion

The Company's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying Management's Report on Internal Control Over Financial Reporting. Our responsibility is to express an opinion on the Company's internal control over financial reporting based on our audit.

We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, testing and evaluating the design and operating effectiveness of internal control based on the assessed risk, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

Definition and limitations of internal control over financial reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

/s/ GRANT THORNTON LLP

Houston, Texas

February 8, 2018

Item 9B. *Other Information*

Not applicable.

PART III

Item 10. *Directors, Executive Officers and Corporate Governance*

Reference is made to the information appearing in the definitive proxy statement, under *"Item 1— Election of Directors,"* for our annual meeting of stockholders to be held on May 16, 2018 (the "2018 Proxy Statement") to be filed with the SEC with respect to Directors, Executive Officers and Corporate Governance, which is incorporated herein by reference and made a part hereof in response to the information required by Item 10.

Item 11. *Executive Compensation*

Reference is made to the information appearing in the 2018 Proxy Statement, under *"Executive Compensation,"* to be filed with the SEC with respect to Executive Compensation, which is incorporated herein by reference and made a part hereof in response to the information required by Item 11.

Item 12. *Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters*

Reference is made to the information appearing in the 2018 Proxy Statement, under "*Item 1— Ownership of Equity Securities of ION*" and "*Equity Compensation Plan Information,*" to be filed with the SEC with respect to Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters, which is incorporated herein by reference and made a part hereof in response to the information required by Item 12.

Item 13. *Certain Relationships and Related Transactions, and Director Independence*

Reference is made to the information appearing in the 2018 Proxy Statement, under *"Item 1— Certain Transactions and Relationships,"* to be filed with the SEC with respect to Certain Relationships and Related Transactions and Director Independence, which is incorporated herein by reference and made a part hereof in response to the information required by Item 13.

Item 14. *Principal Accounting Fees and Services*

Reference is made to the information appearing in the 2018 Proxy Statement, under *"Principal Auditor Fees and Services,"* to be filed with the SEC with respect to Principal Accountant Fees and Services, which is incorporated herein by reference and made a part hereof in response to the information required by Item 14.

PART IV

Item 15. ***Exhibits and Financial Statement Schedules***

(a) List of Documents Filed

(1) *Financial Statements*

The financial statements filed as part of this report are listed in the "Index to Consolidated Financial Statements" on page F-1 hereof.

(2) *Financial Statement Schedules*

The following financial statement schedule is listed in the "Index to Consolidated Financial Statements" on page F-1 hereof, and is included as part of this Annual Report on Form 10-K:

Schedule II—Valuation and Qualifying Accounts

All other schedules are omitted because they are not applicable or the requested information is shown in the financial statements or noted therein.

(3) *Exhibits*

3.1 — Restated Certificate of Incorporation, as amended, filed on November 3, 2016 as Exhibit 3.1 to the Company's Quarterly Report on Form 10-Q and incorporated by reference.

3.2 — Amended and Restated Bylaws of ION Geophysical Corporation filed on September 24, 2007 as Exhibit 3.5 to the Company's Current Report on Form 8-K and incorporated herein by reference.

4.1 — Indenture, dated May 13, 2013, among ION Geophysical Corporation, the subsidiary guarantors named therein, Wilmington Trust, National Association, as trustee, and U.S. Bank National Association, as collateral agent, filed on May 13, 2013 as Exhibit 4.1 to the Company's Current Report on Form 8-K and incorporated herein by reference.

4.2 First Supplemental Indenture, dated as of April 28, 2016, to the Indenture, dated May 13, 2013, among ION Geophysical Corporation, the subsidiary guarantors named therein, Wilmington Savings Fund Society, FSB, as trustee, and U.S. Bank National Association, as collateral agent, filed on April 28, 2016 as Exhibit 4.3 to the Company's Current Report on Form 8-K and incorporated by reference.

4.3 Indenture, dated as of April 28, 2016, among ION Geophysical Corporation, the subsidiary guarantors named therein, Wilmington Savings Fund Society, FSB, as trustee and collateral agent filed on April 28, 2016 as Exhibit 4.1 to the Company's Current Report on Form 8-K and incorporated by reference.

4.4		Intercreditor Agreement, dated as of April 28, 2016, by and among PNC Bank, National Association, as first lien representative and first lien collateral agent for the first lien secured parties, and Wilmington Savings Fund Society, FSB, as second lien representative and second lien collateral agent for the second lien secured parties and as third lien representative for the third lien secured parties, and U.S. Bank National Association as third lien collateral agent for the third lien secured parties and acknowledged and agreed to by ION Geophysical Corporation and the other grantors named therein, filed on April 28, 2016 as Exhibit 10.1 to the Company's Current Report on Form 8-K and incorporated by reference.
**10.1	—	Form of Employee Stock Option Award Agreement for ARAM Systems Employee Inducement Stock Option Program, filed on November 14, 2008 as Exhibit 4.4 to the Company's Registration Statement on Form S-8 (Registration No. 333-155378) and incorporated herein by reference.
**10.2	—	Input/Output, Inc. 2003 Stock Option Plan, dated March 27, 2003, filed as Appendix B of the Company's definitive proxy statement filed with the SEC on April 30, 2003, and incorporated herein by reference.
**10.3	—	Sixth Amended and Restated—2004 Long-Term Incentive Plan, filed as Appendix A to the definitive proxy statement for the 2011 Annual Meeting of Stockholders of ION Geophysical Corporation, filed on April 21, 2011, and incorporated herein by reference.
**10.4	—	Form of Employment Inducement Stock Option Agreement for the Input/ Output, Inc.—GX Technology Corporation Employment Inducement Stock Option Program, filed on April 4, 2005 as Exhibit 4.1 to the Company's Registration Statement on Form S-8 (Reg. No. 333-123831), and incorporated herein by reference.
**10.5	—	ION Stock Appreciation Rights Plan dated November 17, 2008, filed as Exhibit 10.47 to the Company's Annual Report on Form 10-K for the year ended December 31, 2008, and incorporated herein by reference.
10.6	—	Stock Purchase Agreement dated as of March 19, 2010, by and between ION Geophysical Corporation and BGP Inc., China National Petroleum Corporation, filed on March 31, 2010 as Exhibit 10.1 to the Company's Current Report on Form 8-K, and incorporated herein by reference.
10.7	—	Investor Rights Agreement dated as of March 25, 2010, by and between ION Geophysical Corporation and BGP Inc., China National Petroleum Corporation, filed on March 31, 2010 as Exhibit 10.2 to the Company's Current Report on Form 8-K, and incorporated herein by reference.
10.8	—	Share Purchase Agreement dated as of March 24, 2010, by and among ION Geophysical Corporation, INOVA Geophysical Equipment Limited and BGP Inc., China National Petroleum Corporation, filed on March 31, 2010 as Exhibit 10.3 to the Company's Current Report on Form 8-K, and incorporated herein by reference.
10.9	—	Joint Venture Agreement dated as of March 24, 2010, by and between ION Geophysical Corporation and BGP Inc., China National Petroleum Corporation, filed on March 31, 2010 as Exhibit 10.4 to the Company's Current Report on Form 8-K, and incorporated herein by reference.

**10.10 — Employment Agreement dated August 2, 2011, effective as of January 1, 2012, between ION Geophysical Corporation and R. Brian Hanson, filed on November 3, 2011 as Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q for the quarterly period ended September 30, 2011, and incorporated herein by reference.

**10.11 — First Amendment to Credit Agreement and Loan Documents dated May 29, 2012, filed on May 29, 2012 as Exhibit 10.1 to the Company's Current Report on Form 8-K, and incorporated herein by reference.

**10.12 — Consulting Services Agreement dated January 1, 2013, between ION Geophysical Corporation and ThePeebler Group LLC, filed on January 4, 2013 as Exhibit 10.1 to the Company's Current Report on Form8-K, and incorporated herein by reference.

*10.13 — Second Amended and Restated 2013 Long-Term Incentive Plan, filed as Exhibit 10.39 to the Company's Annual Report on Form 10-K for the year ended December 31, 2016, and incorporated herein by reference.

10.14 — Revolving Credit and Security Agreement dated as of August 22, 2014 among PNC Bank, National Association, as agent for lenders, the lenders from time to time party thereto, as lenders, and PNC Capital Markets LLC, as lead arranger and bookrunner, with ION Geophysical Corporation, ION Exploration Products (U.S.A.), Inc., I/O Marine Systems, Inc. and GX Technology Corporation, as borrowers, filed on November 6, 2014 as Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q for the quarterly period ended September 30, 2014, and incorporated herein by reference.

10.15 — First Amendment to Revolving Credit and Security Agreement dated as of August 4, 2015 among PNC Bank, National Association, as lender and agent, the lenders from time to time party thereto, as lenders, with ION Geophysical Corporation, ION Exploration Products (U.S.A.), Inc., I/O Marine Systems, Inc. and GX Technology Corporation, as borrowers, filed on August 6, 2015 as Exhibit 10.1 to the Company's Current Report on Form 8-K, and incorporated herein by reference.

10.16 — Second Amendment to the Revolving Credit and Security Agreement, dated as of April 28, 2016, among ION Geophysical Corporation and the subsidiary co-borrowers named therein, as borrowers, the financial institutions party thereto, as lenders, and PNC Bank, National Association, as agent for the lenders, filed on April 28, 2016 as Exhibit 10.2 to the Company's Current Report on Form 8-K and incorporated by reference.

**10.17 — Employment Agreement dated effective as of November 13, 2014, between ION Geophysical Corporation and Steve Bate, filed as Exhibit 10.44 to the Company's Annual Report 10-K for the year ended December 31, 2014, and incorporated herein by reference.

**10.18 — Form of Rights Agreement dated March 1, 2015 issued under the ION Stock Appreciation Rights Plan dated November 17, 2008, filed on May 7, 2015 as Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q for the quarterly period ended March 31, 2015, and incorporated herein by reference.

*10.19 — Form of Rights Agreement dated March 1, 2016 issued under the ION Stock Appreciation Rights Plan Dated November 17, 2008, and incorporated herein by reference.

*10.20	—	Equity Investment Agreement dated December 14, 2017, issued under the Second Amended and Restated 2013 Long-Term Incentive Plan dated December 31, 2016, and incorporated herein by reference.
*10.21	—	Employee Stock Purchase Plan dated May 26, 2010, and incorporated herein by reference.
*21.1	—	Subsidiaries of the Company.
*23.1	—	Consent of Grant Thornton LLP.
*24.1	—	The Power of Attorney is set forth on the signature page hereof.
*31.1	—	Certification of Chief Executive Officer Pursuant to Rule 13a-14(a) or Rule 15d-14(a).
*31.2	—	Certification of Chief Financial Officer Pursuant to Rule 13a-14(a) or Rule 15d-14(a).
*32.1	—	Certification of Chief Executive Officer Pursuant to 18 U.S.C. §1350.
*32.2	—	Certification of Chief Financial Officer Pursuant to 18 U.S.C. §1350.
*101	—	The following materials are formatted in Extensible Business Reporting Language (XBRL): (i) Consolidated Balance Sheets at December 31, 2017 and 2016, (ii) Consolidated Statements of Operations for the years ended December 31, 2017, 2016 and 2015, (iii) Comprehensive Income (Loss) for the years ended December 31, 2017, 2016 and 2015, (iv) Consolidated Statements of Cash Flows for the years ended December 31, 2017, 2016 and 2015, (v) Consolidated Statements of Stockholders' Equity for the years ended December 31, 2017, 2016 and 2015, (vi) Footnotes to Consolidated Financial Statements and (vii) Schedule II—Valuation and Qualifying Accounts.

* Filed herewith.

** Management contract or compensatory plan or arrangement.

(b) Exhibits required by Item 601 of Regulation S-K.

Reference is made to subparagraph (a) (3) of this Item 15, which is incorporated herein by reference.

(c) Not applicable.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, as amended, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized in the City of Houston, State of Texas, on February 8, 2018.

ION GEOPHYSICAL CORPORATION

By /s/ R. BRIAN HANSON

R. Brian Hanson
President and Chief Executive Officer

POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints R. Brian Hanson and Matthew Powers and each of them, as his or her true and lawful attorneys-in-fact and agents with full power of substitution and re-substitution for him or her and in his or her name, place and stead, in any and all capacities, to sign any and all documents relating to the Annual Report on Form 10-K for the year ended December 31, 2017, including any and all amendments and supplements thereto, and to file the same with all exhibits thereto and other documents in connection therewith with the Securities and Exchange Commission, granting unto said attorneys-in-fact and agents full power and authority to do and perform each and every act and thing requisite and necessary to be done in and about the premises, as fully as to all intents and purposes as he or she might or could do in person, hereby ratifying and confirming all that said attorneys-in-fact and agents or their or his or her substitute or substitutes may lawfully do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Exchange Act of 1934, as amended, this Annual Report on Form 10-K has been signed below by the following persons on behalf of the Registrant and in the capacities and on the dates indicated.

Name	Capacities	Date
/s/ R. BRIAN HANSON R. Brian Hanson	President, Chief Executive Officer and Director (Principal Executive Officer)	February 8, 2018
/s/ STEVEN A. BATE Steven A. Bate	Executive Vice President and Chief Financial Officer (Principal Financial Officer)	February 8, 2018
/s/ SCOTT SCHWAUSCH Scott Schwausch	Vice President and Corporate Controller (Principal Accounting Officer)	February 8, 2018
/s/ JAMES M. LAPEYRE, JR. James M. Lapeyre, Jr.	Chairman of the Board of Directors and Director	February 8, 2018

Name	Capacities	Date
/s/ DAVID H. BARR David H. Barr	Director	February 8, 2018
/s/ HAO HUIMIN Hao Huimin	Director	February 8, 2018
/s/ MICHAEL C. JENNINGS Michael C. Jennings	Director	February 8, 2018
/s/ FRANKLIN MYERS Franklin Myers	Director	February 8, 2018
/s/ S. JAMES NELSON, JR. S. James Nelson, Jr.	Director	February 8, 2018
/s/ JOHN N. SEITZ John N. Seitz	Director	February 8, 2018

ION GEOPHYSICAL CORPORATION AND SUBSIDIARIES

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Report of Independent Registered Public Accounting Firm

Board of Directors and Stockholders

ION Geophysical Corporation

Opinion on the financial statements

We have audited the accompanying consolidated balance sheets of ION Geophysical Corporation (a Delaware corporation) and subsidiaries (the "Company") as of December 31, 2017 and 2016, the related consolidated statements of operations, comprehensive loss, stockholders' equity, and cash flows for each of the three years in the period ended December 31, 2017, and the related notes and schedule (collectively referred to as the "financial statements"). In our opinion, the financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2017 and 2016, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2017, in conformity with accounting principles generally accepted in the United States of America.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) ("PCAOB"), the Company's internal control over financial reporting as of December 31, 2017, based on criteria established in the 2013 *Internal Control—Integrated Framework* issued by the Committee of Sponsoring Organizations of the Treadway Commission ("COSO"), and our report dated February 8, 2018 expressed an unqualified opinion.

Basis for opinion

These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's financial statements based on our audits. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

/s/ GRANT THORNTON LLP

We have served as the Company's auditor since 2014

Houston, Texas

February 8, 2018

ION GEOPHYSICAL CORPORATION AND SUBSIDIARIES

CONSOLIDATED BALANCE SHEETS

	December 31,	
	2017	2016
	(In thousands, except share data)	
ASSETS		
Current assets:		
Cash and cash equivalents	$ 52,056	$ 52,652
Accounts receivable, net	19,478	20,770
Unbilled receivables	37,304	13,415
Inventories	14,508	15,241
Prepaid expenses and other current assets	7,643	9,559
Total current assets	130,989	111,637
Deferred income tax asset	1,753	—
Property, plant, equipment and seismic rental equipment, net	52,153	67,488
Multi-client data library, net	89,300	105,935
Goodwill	24,089	22,208
Intangible assets, net	1,666	3,103
Other assets	1,119	2,845
Total assets	$ 301,069	$ 313,216
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Current maturities of long-term debt	$ 40,024	$ 14,581
Accounts payable	24,951	26,889
Accrued expenses	38,697	26,240
Accrued multi-client data library royalties	27,035	23,663
Deferred revenue	8,910	3,709
Total current liabilities	139,617	95,082
Long-term debt, net of current maturities	116,720	144,209
Other long-term liabilities	13,926	20,527
Total liabilities	270,263	259,818
Equity:		
Common stock, $0.01 par value; authorized 26,666,667 shares; outstanding 12,019,701 and 11,792,447 shares at December 31, 2017 and 2016, respectively.	120	118
Additional paid-in capital	903,247	899,198
Accumulated deficit	(854,921)	(824,679)
Accumulated other comprehensive loss	(18,879)	(21,748)
Total stockholders' equity	29,567	52,889
Noncontrolling interests	1,239	509
Total equity	30,806	53,398
Total liabilities and equity	$ 301,069	$ 313,216

See accompanying Footnotes to Consolidated Financial Statements.

ION GEOPHYSICAL CORPORATION AND SUBSIDIARIES

CONSOLIDATED STATEMENTS OF OPERATIONS

	Years Ended December 31,		
	2017	2016	2015
	(In thousands, except per share data)		
Service revenues	$159,410	$130,640	$ 160,480
Product revenues	38,144	42,168	61,033
Total net revenues	197,554	172,808	221,513
Cost of services	103,124	115,763	180,215
Cost of products	18,791	21,013	33,295
Gross profit	75,639	36,032	8,003
Operating expenses:			
Research, development and engineering	16,431	17,833	26,445
Marketing and sales	20,778	17,371	30,493
General, administrative and other operating expenses	47,129	43,999	51,697
Total operating expenses	84,338	79,203	108,635
Loss from operations	(8,699)	(43,171)	(100,632)
Interest expense, net	(16,709)	(18,485)	(18,753)
Other income (expense)	(3,945)	1,350	98,275
Loss before income taxes	(29,353)	(60,306)	(21,110)
Income tax expense	24	4,421	4,044
Net loss	(29,377)	(64,727)	(25,154)
Net (income) loss attributable to noncontrolling interests	(865)	(421)	32
Net loss attributable to ION	$(30,242)	$(65,148)	$ (25,122)
Net loss per share:			
Basic	$ (2.55)	$ (5.71)	$ (2.29)
Diluted	$ (2.55)	$ (5.71)	$ (2.29)
Weighted average number of common shares outstanding:			
Basic	11,876	11,400	10,957
Diluted	11,876	11,400	10,957

See accompanying Footnotes to Consolidated Financial Statements.

ION GEOPHYSICAL CORPORATION AND SUBSIDIARIES

CONSOLIDATED STATEMENTS OF COMPREHENSIVE LOSS

	Years Ended December 31,		
	2017	2016	2015
		(In thousands)	
Net loss	$(29,377)	$(64,727)	$(25,154)
Other comprehensive income (loss), net of taxes, as appropriate:			
Foreign currency translation adjustments	2,869	(6,967)	(1,974)
Total other comprehensive income (loss), net of taxes	2,869	(6,967)	(1,974)
Comprehensive net loss	(26,508)	(71,694)	(27,128)
Comprehensive (income) loss attributable to noncontrolling interests	(865)	(421)	32
Comprehensive net loss attributable to ION	$(27,373)	$(72,115)	$(27,096)

See accompanying Footnotes to Consolidated Financial Statements.

ION GEOPHYSICAL CORPORATION AND SUBSIDIARIES

CONSOLIDATED STATEMENTS OF CASH FLOWS

	Years Ended December 31,		
	2017	2016	2015
	(In thousands)		
Cash flows from operating activities:			
Net loss	$(29,377)	$(64,727)	$ (25,154)
Adjustments to reconcile net loss to net cash provided by (used in) operating activities:			
Depreciation and amortization (other than multi-client library)	16,592	21,975	26,527
Amortization of multi-client data library	47,102	33,335	35,784
Impairment of multi-client data library	2,304	—	399
Stock-based compensation expense	2,552	3,267	5,486
Accrual (reduction) of loss contingency related to legal proceedings	5,000	(1,168)	(101,978)
Loss on bond exchange	—	2,182	—
Write-down of excess and obsolete inventory	398	429	151
Deferred income taxes	(5,420)	(1,181)	7,444
Change in operating assets and liabilities:			
Accounts receivable	1,692	20,426	69,491
Unbilled receivables	(23,947)	6,543	1,630
Inventories	190	2,312	2,251
Accounts payable, accrued expenses and accrued royalties	1,443	(5,085)	(30,264)
Deferred revenue	5,131	(2,759)	(1,571)
Other assets and liabilities	4,370	(13,978)	(6,720)
Net cash provided by (used in) operating activities	28,030	1,571	(16,524)
Cash flows from investing activities:			
Investment in multi-client data library	(23,710)	(14,884)	(45,558)
Purchase of property, plant, equipment and seismic rental equipment	(1,063)	(1,488)	(19,241)
Proceeds from sale of cost method investments	—	2,698	—
Other investing activities	—	30	1,263
Net cash used in investing activities	(24,773)	(13,644)	(63,536)
Cash flows from financing activities:			
Borrowings under revolving line of credit	—	15,000	—
Repayments under revolving line of credit	—	(5,000)	—
Payments on notes payable and long-term debt	(4,816)	(8,634)	(7,452)
Cost associated with issuance of debt	(53)	(6,744)	(145)
Repurchase of common stock	—	(964)	(1,989)
Payments to repurchase bonds	—	(15,000)	—
Proceeds from employee stock purchases and exercise of stock options	1,619	—	—
Dividend payment to non-controlling interest	(100)	—	—
Other financing activities	(243)	(252)	73
Net cash used in financing activities	(3,593)	(21,594)	(9,513)
Effect of change in foreign currency exchange rates on cash and cash equivalents	(260)	1,386	898
Net decrease in cash and cash equivalents	(596)	(32,281)	(88,675)
Cash and cash equivalents at beginning of period	52,652	84,933	173,608
Cash and cash equivalents at end of period	$ 52,056	$ 52,652	$ 84,933

See accompanying Footnotes to Consolidated Financial Statements.

ION GEOPHYSICAL CORPORATION AND SUBSIDIARIES

CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY

(In thousands, except shares)	Common Stock Shares	Common Stock Amount	Additional Paid-In Capital	Accumulated Deficit	Accumulated Other Comprehensive Loss	Treasury Stock	Noncontrolling Interests	Total Equity
Balance at January 1, 2015	10,965,606	$110	$889,284	$(734,409)	$(12,807)	$(6,565)	$ 99	$135,712
Net (loss) income[a]	—	—	—	(25,122)	—	—	4	(25,118)
Translation adjustment	—	—	—	—	(1,974)	—	(22)	(1,996)
Stock-based compensation expense	—	—	5,486	—	—	—	—	5,486
Vesting of restricted stock units/ awards	29,191	—	—	—	—	—	—	—
Purchase of treasury shares	(296,488)	(3)	—	—	—	(1,986)	—	(1,989)
Restricted stock cancelled for employee minimum income taxes	(6,208)	—	(126)	—	—	—	—	(126)
Issuance of stock for the ESPP	10,588	—	215	—	—	—	—	215
Purchase of subsidiary shares from noncontrolling interest	—	—	(144)	—	—	—	—	(144)
Balance at December 31, 2015[b]	10,702,689	107	894,715	(759,531)	(14,781)	(8,551)	81	112,040
Net (loss) income[a]	—	—	—	(65,148)	—	—	421	(64,727)
Translation adjustment	—	—	—	—	(6,967)	—	7	(6,960)
Stock-based compensation expense	—	—	3,267	—	—	—	—	3,267
Vesting of restricted stock units/ awards	40,495	—	—	—	—	—	—	—
Purchase of treasury shares	(155,304)	(1)	—	—	—	(963)	—	(964)
Restricted stock cancelled for employee minimum income taxes	(4,973)	—	(22)	—	—	—	—	(22)
Issuance of stock for the ESPP	4,100	—	23	—	—	—	—	23
Issuance of stock in bond exchange	1,205,440	12	1,215	—	—	9,514	—	10,741
Balance at December 31, 2016	11,792,447	118	899,198	(824,679)	(21,748)	—	509	53,398
Net (loss) income	—	—	—	(30,242)	—	—	865	(29,377)
Translation adjustment	—	—	—	—	2,869	—	(35)	2,834
Dividend payment to non-controlling interest	—	—	—	—	—	—	(100)	(100)
Stock-based compensation expense	—	—	2,552	—	—	—	—	2,552
Exercise of stock options	15,000	—	46	—	—	—	—	46
Vesting of restricted stock units/ awards	115,576	1	(1)	—	—	—	—	—
Employee purchases of unregistered shares of common stock	120,567	1	1,572	—	—	—	—	1,573
Restricted stock cancelled for employee minimum income taxes	(23,889)	—	(120)	—	—	—	—	(120)
Balance at December 31, 2017	12,019,701	$120	$903,247	$(854,921)	$(18,879)	$ —	$1,239	$ 30,806

(a) Net income attributable to noncontrolling interests for 2015 excludes less than $(0.1) million related to the redeemable noncontrolling interests, which is reported in the mezzanine equity section of the Consolidated Balance Sheet.

(b) The figures for 2015, set forth in the tables above have been retroactively adjusted to reflect the one-for-fifteen reverse stock split completed on February 4, 2016.

See accompanying Footnotes to Consolidated Financial Statements.

ION GEOPHYSICAL CORPORATION AND SUBSIDIARIES
FOOTNOTES TO CONSOLIDATED FINANCIAL STATEMENTS

(1) Summary of Significant Accounting Policies

General Description and Principles of Consolidation

ION Geophysical Corporation and its subsidiaries offer a full suite of services and products for seismic data acquisition and processing. The consolidated financial statements include the accounts of ION Geophysical Corporation and its majority-owned subsidiaries (collectively referred to as the "Company" or "ION"). Intercompany balances and transactions have been eliminated. Certain reclassifications were made to previously reported amounts in the consolidated financial statements and notes thereto to make them consistent with the current presentation format.

Use of Estimates

The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Significant estimates are made at discrete points in time based on relevant market information. These estimates may be subjective in nature and involve uncertainties and matters of judgment and, therefore, cannot be determined with precision. Areas involving significant estimates include, but are not limited to, accounts and unbilled receivables, inventory valuation, sales forecasts related to multi-client data libraries, goodwill and intangible asset valuation and deferred taxes. Actual results could materially differ from those estimates.

Cash and Cash Equivalents

The Company considers all highly liquid investments with an original maturity of three months or less to be cash equivalents. The Company places its temporary cash investments with high credit quality financial institutions. At times such investments may be in excess of the Federal Deposit Insurance Corporation (FDIC) insurance limit. At December 31, 2017 and 2016, there was $0.4 million and $0.8 million, respectively, of long-term and short-term restricted cash used to secure standby and commercial letters of credit, which is included within Long-term and Other Current Assets.

Accounts and Unbilled Receivables

Accounts and unbilled receivables are recorded at cost, less the related allowance for doubtful accounts. The Company considers current information and events regarding the customers' ability to repay their obligations, such as the length of time the receivable balance is outstanding, the customers' credit worthiness and historical experience. Unbilled receivables relate to revenues recognized on multi-client surveys, imaging services and ocean bottom acquisition services on a proportionate basis, and on licensing of multi-client data libraries for which invoices have not yet been presented to the customer.

Inventories

Inventories are stated at the lower of cost (primarily first-in, first-out method) or market. The Company provides reserves for estimated obsolescence or excess inventory equal to the difference between cost of inventory and its estimated market value based upon assumptions about future demand for the Company's products, market conditions and the risk of obsolescence driven by new product introductions.

Property, Plant, Equipment and Seismic Rental Equipment

Property, plant, equipment and seismic rental equipment are stated at cost. Depreciation expense is provided straight-line over the following estimated useful lives:

	Years
Machinery and equipment	3 - 7
Buildings	5 - 25
Seismic rental equipment	3 - 5
Leased equipment and other	3 - 10

Expenditures for renewals and betterments are capitalized; repairs and maintenance are charged to expense as incurred. The cost and accumulated depreciation of assets sold or otherwise disposed of are removed from the accounts and any gain or loss is reflected in operating expenses.

The Company evaluates the recoverability of long-lived assets, including property, plant, equipment and seismic rental equipment, when indicators of impairment exist, relying on a number of factors including operating results, business plans, economic projections and anticipated future cash flows. Impairment in the carrying value of an asset held for use is recognized whenever anticipated future cash flows (undiscounted) from an asset are estimated to be less than its carrying value. The amount of the impairment recognized is the difference between the carrying value of the asset and its fair value.

Multi-Client Data Library

The multi-client data library consists of seismic surveys that are offered for licensing to customers on a non-exclusive basis. The capitalized costs include costs paid to third parties for the acquisition of data and related activities associated with the data creation activity and direct internal processing costs, such as salaries, benefits, computer-related expenses and other costs incurred for seismic data project design and management. For 2017, 2016 and 2015, the Company capitalized, as part of its multi-client data library, $12.7 million, $6.6 million and $6.1 million, respectively, of direct internal processing costs. At December 31, 2017 and 2016, multi-client data library costs and accumulated amortization consisted of the following (in thousands):

	December 31,	
	2017	2016
Gross costs of multi-client data creation	$ 939,077	$ 906,306
Less accumulated amortization	(727,872)	(680,770)
Less impairments to multi-client data library	(121,905)	(119,601)
Total	$ 89,300	$ 105,935

The Company's method of amortizing the costs of an in-process multi-client data library (the period during which the seismic data is being acquired and/or processed, referred to as the "New Venture" phase) consists of determining the percentage of actual revenue recognized to the total estimated revenues (which includes both revenues estimated to be realized during the New Venture phase and estimated revenues from the licensing of the resulting "on-the-shelf" data survey) and multiplying that percentage by the total cost of the project (the sales forecast method). The Company considers a multi-client data survey to be complete when all work on the creation of the seismic data is finished and that data survey is available for licensing. Once a multi-client data survey is complete, the data survey is considered "on-the-shelf" and the Company's method of amortization is then the greater of (i) the sales forecast method or (ii) the straight-line basis over a four-year period. The greater amount of amortization resulting from the sales forecast method or the straight-line amortization policy is applied on a cumulative basis at the individual survey level. Under this policy, the Company first

records amortization using the sales forecast method. The cumulative amortization recorded for each survey is then compared with the cumulative straight-line amortization. The four-year period utilized in this cumulative comparison commences when the data survey is determined to be complete. If the cumulative straight-line amortization is higher for any specific survey, additional amortization expense is recorded, resulting in accumulated amortization being equal to the cumulative straight-line amortization for such survey. The Company has determined the amortization period of four years based upon its historical experience that indicates that the majority of its revenues from multi-client surveys are derived during the acquisition and processing phases and during four years subsequent to survey completion.

The Company estimates the ultimate revenue expected to be derived from a particular seismic data survey over its estimated useful economic life to determine the costs to amortize, if greater than straight-line amortization. That estimate is made by the Company at the project's initiation. For a completed multi-client survey, the Company reviews the estimate quarterly. If during any such review, the Company determines that the ultimate revenue for a survey is expected to be materially more or less than the original estimate of ultimate revenue for such survey, the Company decreases or increases (as the case may be) the amortization rate attributable to the future revenue from such survey. In addition, in connection with such reviews, the Company evaluates the recoverability of the multi-client data library, and, if required under Accounting Standards Codification ("ASC") 360-10 *"Impairment and Disposal of Long-Lived Assets,"* records an impairment charge with respect to such data.

Equity Method Investment

In accordance with ASC 810 "*Consolidation,*" the Company determined that INOVA Geophysical is a variable interest entity because the Company's voting rights with respect to INOVA Geophysical are not proportionate to its ownership interest and substantially all of INOVA Geophysical's activities are conducted on behalf of the Company and BGP, a related party to the Company. The Company is not the primary beneficiary of INOVA Geophysical because it does not have the power to direct the activities of INOVA Geophysical that most significantly impact its economic performance. Accordingly, the Company does not consolidate INOVA Geophysical, but instead accounts for INOVA Geophysical using the equity method of accounting. Under this method, an investment is carried at the acquisition cost, plus the Company's equity in undistributed earnings or losses since acquisition, less distributions received.

At December 31, 2014, the Company fully impaired its investment in INOVA reducing its equity investment in INOVA and its share of INOVA's accumulated other comprehensive loss, both to zero. As of December 31, 2017, the carrying value of this investment remains zero. The Company no longer records its equity in losses or earnings and has no obligation, implicit or explicit, to fund any expenses of INOVA Geophysical.

Noncontrolling Interests

The Company has non-redeemable noncontrolling interests. Non-redeemable noncontrolling interests in majority-owned affiliates are reported as a separate component of equity in "Noncontrolling interests" in the Consolidated Balance Sheets. Net loss in the Consolidated Statements of Operations is attributable to noncontrolling interests. The activity for this noncontrolling interest relates to proprietary processing projects in Brazil.

Goodwill and Other Intangible Assets

Goodwill is allocated to reporting units, which are either the operating segment or one reporting level below the operating segment. For purposes of performing the impairment test for goodwill as required by ASC 350 *"Intangibles—Goodwill and Other,"* ("ASC 350") the Company established the

following reporting units: E&P Technology & Services, Optimization Software & Services, Devices and Ocean Bottom Seismic Services.

In accordance with ASC 350, the Company is required to evaluate the carrying value of its goodwill at least annually for impairment, or more frequently if facts and circumstances indicate that it is more likely than not impairment has occurred. The Company formally evaluates the carrying value of its goodwill for impairment as of December 31 for each of its reporting units. The Company first performs a qualitative assessment by evaluating relevant events or circumstances to determine whether it is more likely than not that the fair value of a reporting unit exceeds its carrying amount. If the Company is unable to conclude qualitatively that it is more likely than not that a reporting unit's fair value exceeds its carrying value, then it will use a two-step quantitative assessment of the fair value of a reporting unit. To determine the fair value of these reporting units, the Company uses a discounted future returns valuation model, which includes a variety of level 3 inputs. The key inputs for the model include the operational three-year forecast for the Company and the then-current market discount factor. Additionally, the Company compares the sum of the estimated fair values of the individual reporting units less consolidated debt to the Company's overall market capitalization as reflected by the Company's stock price. If the carrying value of a reporting unit that includes goodwill is determined to be more than the fair value of the reporting unit, there exists the possibility of impairment of goodwill. An impairment loss of goodwill is measured in two steps by first allocating the fair value of the reporting unit to net assets and liabilities including recorded and unrecorded intangible assets to determine the implied carrying value of goodwill. The next step is to measure the difference between the carrying value of goodwill and the implied carrying value of goodwill, and, if the implied carrying value of goodwill is less than the carrying value of goodwill, an impairment loss is recorded equal to the difference. See further discussion below at Footnote 9 "*Goodwill*."

The intangible assets, other than goodwill, relate to customer relationships. The Company amortizes its customer relationship intangible assets on an accelerated basis over a 10- to 15-year period, using the undiscounted cash flows of the initial valuation models. The Company uses an accelerated basis as these intangible assets were initially valued using an income approach, with an attrition rate that resulted in a pattern of declining cash flows over a 10- to 15-year period.

Following the guidance of ASC 360 "*Impairment and Disposal of Long-Lived Assets*," the Company reviews the carrying values of these intangible assets for impairment if events or changes in the facts and circumstances indicate that their carrying value may not be recoverable. Any impairment determined is recorded in the current period and is measured by comparing the fair value of the related asset to its carrying value. See further discussion below at Footnote 8 "*Details of Selected Balance Sheet Accounts—Intangible Assets*."

Fair Value of Financial Instruments

The Company's financial instruments include cash and cash equivalents, short-term investments, accounts and unbilled receivables, accounts payable, accrued multi-client data library royalties and long-term debt. The carrying amounts of cash and cash equivalents, short-term investments, accounts and unbilled receivables, accounts payable and accrued multi-client data library royalties approximate fair value due to the highly liquid nature of these instruments. The fair value of the long-term debt is calculated using a market approach based upon Level 1 inputs, including an active market price.

Revenue Recognition

The Company derives revenue from the sale of (i) multi-client and proprietary surveys, licenses of "on-the-shelf" data libraries and imaging services within its E&P Technology & Services segment; (ii) seismic data acquisition systems and other seismic equipment; (iii) seismic command and control software systems and software solutions for operations management within its E&P Operations

Optimization segment; and (iv) fully-integrated Ocean Bottom Seismic Services ("OBS") solutions that include survey design and planning and data acquisition within its Ocean Bottom Seismic Services segment. All revenues of the E&P Technology & Services and Ocean Bottom Seismic Services segments and the services component of revenues for the Optimization Software & Services group within the E&P Operations Optimization segment are classified as services revenues. All other revenues are classified as product revenues.

Multi-Client and Proprietary Surveys, and Imaging Services—As multi-client surveys are being designed, acquired and/or processed, the New Venture phase, the Company enters into non-exclusive licensing arrangements with its customers. License revenues from these New Venture survey projects are recognized during the New Venture phase as the seismic data is acquired and/or processed on a proportionate basis as work is performed. Under this method, the Company recognizes revenues based upon quantifiable measures of progress, such as kilometers acquired or days processed. Upon completion of a multi-client seismic survey, the seismic survey is considered "on-the-shelf," and licenses to the survey data are granted to customers on a non-exclusive basis. Revenues on licenses of completed multi-client data surveys are recognized when (a) a signed final master geophysical data license agreement and accompanying supplemental license agreement are returned by the customer; (b) the purchase price for the license is fixed or determinable; (c) delivery or performance has occurred; (d) and no significant uncertainty exists as to the customer's obligation, willingness or ability to pay. In limited situations, the Company has provided the customer with a right to exchange seismic data for another specific seismic data set. In these limited situations, the Company recognizes revenue at the earlier of the customer exercising its exchange right or the expiration of the customer's exchange right.

The Company also performs seismic surveys under contracts to specific customers, whereby the seismic data is owned by those customers. Revenue is recognized as the seismic data is acquired and/or processed on a proportionate basis as work is performed. The Company uses quantifiable measures of progress consistent with its multi-client surveys.

Revenues from all imaging and other services are recognized when (a) persuasive evidence of an arrangement exists, (b) the price is fixed or determinable, and (c) collectability is reasonably assured. Revenues from contract services performed on a dayrate basis are recognized as the service is performed.

Acquisition Systems and Other Seismic Equipment—For the sales of acquisition systems and other seismic equipment, the Company follows the requirements of ASC 605-10 "*Revenue Recognition*" and recognizes revenue when (a) evidence of an arrangement exists; (b) the price to the customer is fixed and determinable; (c) collectability is reasonably assured; and (d) the acquisition system or other seismic equipment is delivered to the customer and risk of ownership has passed to the customer, or, in the case in which a substantive customer-specified acceptance clause exists in the contract, the later of delivery or when the customer-specified acceptance is obtained.

Software—For the sales of navigation, survey and quality control software systems, the Company follows the requirements of ASC 985-605 "*Software Revenue Recognition*" ("ASC 985-605"). The Company recognizes revenue from sales of these software systems when (a) evidence of an arrangement exists; (b) the price to the customer is fixed and determinable; (c) collectability is reasonably assured; and (d) the software is delivered to the customer and risk of ownership has passed to the customer, or, in the limited case in which a substantive customer-specified acceptance clause exists, the later of delivery or when the customer-specified acceptance is obtained. These arrangements generally include the Company providing related services, such as training courses, engineering services and annual software maintenance. The Company allocates revenue to each element of the arrangement based upon vendor-specific objective evidence ("VSOE") of fair value of the element or, if VSOE is not available for the delivered element, the residual method is used.

In addition to perpetual software licenses, the Company offers time-based software licenses. For time-based licenses, the Company recognizes revenue ratably over the contract term, which is generally two to five years.

Ocean Bottom Seismic Services—The Company recognizes revenues as they are realized and earned and can be reasonably measured, based on contractual day rates or on a fixed-price basis, and when collectability is reasonably assured. In connection with acquisition contracts, the Company may receive revenues for preparation and mobilization of equipment and personnel or for capital improvements to vessels. The Company defers the revenues earned and incremental costs incurred that are directly related to contract preparation and mobilization and recognizes such revenues and costs over the primary contract term of the acquisition project. The Company uses the ratio of square kilometers acquired as a percentage of the total square kilometers expected to be acquired over the primary term of the contract to recognize deferred revenues and amortize, in cost of services, the costs related to contract preparation and mobilization. The Company recognizes the costs of relocating vessels without contracts to more promising market sectors as such costs are incurred. Upon completion of acquisition contracts, the Company recognizes in earnings any demobilization fees received and expenses incurred.

Multiple-element Arrangements—When separate elements (such as an acquisition system, other seismic equipment and/or imaging and acquisition services) are contained in a single sales arrangement, or in related arrangements with the same customer, the Company follows the requirements of ASC 605-25 "*Accounting for Multiple-Element Revenue Arrangement*" ("ASC 605-25").

This guidance requires that arrangement consideration be allocated at the inception of an arrangement to all deliverables using the relative selling price method. The Company allocates arrangement consideration to each deliverable qualifying as a separate unit of accounting in an arrangement based on its relative selling price. The Company determines its selling price using VSOE, if it exists, or otherwise third-party evidence ("TPE"). If neither VSOE nor TPE of selling price exists for a unit of accounting, the Company uses estimated selling price ("ESP"). The Company generally expects that it will not be able to establish TPE due to the nature of the markets in which the Company competes, and, as such, the Company typically will determine its selling price using VSOE or, if not available, ESP. VSOE is generally limited to the price charged when the same or similar product is sold on a standalone basis. If a product is seldom sold on a standalone basis, it is unlikely that the Company can determine VSOE for the product.

The objective of ESP is to determine the price at which the Company would transact if the product were sold by the Company on a standalone basis. The Company's determination of ESP involves a weighting of several factors based on the specific facts and circumstances of the arrangement. Specifically, the Company considers the anticipated margin on the particular deliverable, the selling price and profit margin for similar products and the Company's ongoing pricing strategy and policies.

Product Warranty—The Company generally warrants that its manufactured equipment will be free from defects in workmanship, materials and parts. Warranty periods generally range from 30 days to three years from the date of original purchase, depending on the product. The Company provides for estimated warranty as a charge to costs of sales at the time of sale. However, new information may become available, or circumstances (such as applicable laws and regulations) may change, thereby resulting in an increase or decrease in the amount required to be accrued for such matters (and therefore a decrease or increase in reported net income in the period of such change). In limited cases, the Company has provided indemnification of customers for potential intellectual property infringement claims relating to products sold.

Research, Development and Engineering

Research, development and engineering costs primarily relate to activities that are designed to improve the quality of the subsurface image and overall acquisition economics of the Company's customers. The costs associated with these activities are expensed as incurred. These costs include prototype material and field testing expenses, along with the related salaries and stock-based compensation, facility costs, consulting fees, tools and equipment usage and other miscellaneous expenses associated with these activities.

Stock-Based Compensation

The Company accounts for stock-based compensation under the provisions of ASC 718, *"Compensation—Stock Compensation"* ("ASC 718"). The Company estimates the value of stock option awards on the date of grant using the Black-Scholes option pricing model. The determination of the fair value of stock-based payment awards on the date of grant using an option-pricing model is affected by the Company's stock price as well as assumptions regarding a number of subjective variables. These variables include, but are not limited to, expected stock price volatility over the term of the awards, actual and projected employee stock option exercise behaviors, risk-free interest rate and expected dividends. The Company recognizes stock-based compensation on the straight-line basis over the service period of each award (generally the award's vesting period).

Income Taxes

Income taxes are accounted for under the liability method. Deferred income tax assets and liabilities are recognized for the future tax consequences attributable to differences between the financial statement carrying amounts of existing assets and liabilities and their respective tax bases, including operating loss and tax credit carryforwards. Deferred income tax assets and liabilities are measured using enacted tax rates expected to apply in the years in which those temporary differences are expected to be recovered or settled. The Company records a valuation allowance when it is more likely than not that all or a portion of deferred tax assets will not be realized (see Footnote 5 "*Income Taxes*"). The effect on deferred income tax assets and liabilities of a change in tax rates is recognized in income in the period that includes the enactment date.

Debt Issuance Costs

In the first quarter of 2016, the Company adopted Accounting Standards Update (ASU) 2015-03, which requires entities to present debt issuance costs related to a debt liability as a direct deduction from the carrying amount of that debt liability on the balance sheet as opposed to being presented as a deferred charge, and ASU 2015-15, which adds paragraphs to ASU 2015-03 indicating that the SEC staff would not object to an entity deferring and presenting debt issuance costs related to line of credit arrangements as an asset and subsequently amortizing the deferred debt issuance costs ratably over the term of the line of credit arrangement, regardless of whether there are any outstanding borrowings on the line of credit arrangement.

For the years ended December 31, 2017 and 2016, unamortized debt issuance costs related to the Company's long-term debt are reported on the Consolidated Balance Sheets as a reduction of the carrying value of the related debt, except for the unamortized debt issuance costs related to the Company's Credit Facility which are reported in "Other Assets" on the Consolidated Balance Sheets ($0.2 million for 2017 and $1.2 million for 2016). Prior to adoption, the Company reported all unamortized debt issuance costs in "Other Assets" on the Consolidated Balance Sheets.

Comprehensive Net Loss

Comprehensive net loss as shown in the Consolidated Statements of Comprehensive Loss and the balance in Accumulated Other Comprehensive Loss as shown in the Consolidated Balance Sheets as of December 31, 2017 and 2016, consist of foreign currency translation adjustments.

Foreign Currency Gains and Losses

Assets and liabilities of the Company's subsidiaries operating outside the United States that have a functional currency other than the U.S. dollar have been translated to U.S. dollars using the exchange rate in effect at the balance sheet date. Results of foreign operations have been translated using the average exchange rate during the periods of operation. Resulting translation adjustments have been recorded as a component of Accumulated Other Comprehensive Loss. Foreign currency transaction gains and losses are included in the Consolidated Statements of Operations in Other income as they occur. Total foreign currency transaction losses were $1.6 million, $3.3 million and $2.1 million for 2017, 2016 and 2015, respectively.

Concentration of Foreign Sales Risk

The majority of the Company's foreign sales are denominated in U.S. dollars. For 2017, 2016 and 2015, international sales comprised 76%, 78% and 66%, respectively, of total net revenues. The significant decline in oil prices that began in the fourth quarter of 2014 have continued to impact the global market throughout 2015 and 2016. Since 2008, global economic problems and uncertainties have generally increased in scope and nature. To the extent that world events or economic conditions negatively affect the Company's future sales to customers in many regions of the world, as well as the collectability of the Company's existing receivables, the Company's future results of operations, liquidity and financial condition would be adversely affected.

(2) Segment and Geographic Information

The Company evaluates and reviews its results based on three business segments: E&P Technology & Services, E&P Operations Optimization, and Ocean Bottom Seismic Services. The Company measures segment operating results based on income (loss) from operations.

A summary of segment information follows (in thousands):

	Years Ended December 31,		
	2017	2016	2015
Net revenues:			
E&P Technology & Services:			
New Venture	$100,824	$ 27,362	$ 48,294
Data Library	40,016	39,989	63,326
Total multi-client revenues	140,840	67,351	111,620
Imaging Services	16,409	25,538	45,630
Total	$157,249	$ 92,889	$ 157,250
E&P Operations Optimization:			
Devices	$ 23,610	$ 26,746	$ 36,269
Optimization Software & Services	16,695	16,756	27,994
Total	$ 40,305	$ 43,502	$ 64,263
Ocean Bottom Seismic Services	$ —	$ 36,417	$ —
Total	$197,554	$172,808	$ 221,513
Gross profit (loss):			
E&P Technology & Services	$ 65,196	$ 4,708	$ 13,508
E&P Operations Optimization	20,076	21,745	33,995
Ocean Bottom Seismic Services	(9,633)	9,579	(39,500)
Total	$ 75,639	$ 36,032	$ 8,003
Gross margin:			
E&P Technology & Services	41%	5%	9%
E&P Operations Optimization	50%	50%	53%
Ocean Bottom Seismic Services	—%	26%	—%
Total	38%	21%	4%
Loss from operations:			
E&P Technology & Services	$ 42,505	$ (16,446)	$ (24,941)
E&P Operations Optimization	8,022	9,652	20,131
Ocean Bottom Seismic Services	(16,259)	(1,756)	(55,080)
Support and other	(42,967)	(34,621)	(40,742)
Loss from operations	(8,699)	(43,171)	(100,632)
Interest expense, net	(16,709)	(18,485)	(18,753)
Other income (expense)	(3,945)	1,350	98,275
Loss before income taxes	$ (29,353)	$ (60,306)	$ (21,110)

	Years Ended December 31,		
	2017	2016	2015
Depreciation and amortization (including multi-client data library):			
E&P Technology & Services	$53,663	$44,100	$51,014
E&P Operations Optimization	1,349	1,780	2,869
Ocean Bottom Seismic Services	7,001	7,511	6,158
Support and other	1,681	1,919	2,270
Total	$63,694	$55,310	$62,311

	December 31,	
	2017	2016
Total assets:		
E&P Technology & Services	$156,555	$159,965
E&P Operations Optimization	74,361	76,992
Ocean Bottom Seismic Services	20,828	29,908
Support and other	49,325	46,351
Total	$301,069	$313,216

A summary of total assets by geographic area follows (in thousands):

	December 31,	
	2017	2016
Total assets by geographic area:		
North America	$116,598	$145,013
Europe	51,876	61,329
Middle East	70,308	72,984
Latin America	55,661	23,891
Other	6,626	9,999
Total	$301,069	$313,216

A summary of fixed assets less accumulated depreciation by geographic area as follows (in thousands):

	December 31,	
	2017	2016
Total fixed assets less accumulated deprecation by geographic area:		
North America	$10,609	$17,637
Europe	20,725	27,714
Middle East	20,543	21,370
Latin America	170	202
Other	106	565
Total	$52,153	$67,488

Intersegment sales are insignificant for all periods presented. Support and other assets include all assets specifically related to support personnel and operation and a majority of cash and cash equivalents. Depreciation and amortization expense is allocated to segments based upon use of the underlying assets.

A summary of net revenues by geographic area follows (in thousands):

	Years Ended December 31,		
	2017	2016	2015
Net revenues by geographic area:			
Latin America	$ 68,241	$ 24,090	$ 16,406
North America	48,120	38,005	74,634
Europe	44,930	41,674	72,577
Asia Pacific	18,896	16,226	19,135
Commonwealth of Independent States	8,222	1,929	11,008
Africa	6,837	41,417	13,182
Middle East	2,308	9,467	14,571
Total	$197,554	$172,808	$221,513

Net revenues are attributed to geographic areas on the basis of the ultimate destination of the equipment or service, if known, or the geographic area imaging services are provided. If the ultimate destination of such equipment is not known, net revenues are attributed to the geographic area of initial shipment.

(3) Long-term Debt and Lease Obligations

	December 31,	
Obligations (in thousands)	2017	2016
Senior secured second-priority lien notes (maturing December 15, 2021)	$120,569	$120,569
Senior secured third-priority lien notes (maturing May 15, 2018)	28,497	28,497
Revolving credit facility (maturing August 22, 2019)	10,000	10,000
Equipment capital leases	279	3,446
Other debt	1,382	1,415
Costs associated with issuances of debt[1]	(3,983)	(5,137)
Total	156,744	158,790
Current portion of long-term debt and lease obligations	(40,024)	(14,581)
Non-current portion of long-term debt and lease obligations	$116,720	$144,209

[1] Represents debt issuance costs presented as a direct deduction from the carrying amount of the associated debt liability.

Revolving Credit Facility

In August 2014, ION and its material U.S. subsidiaries, GX Technology Corporation, ION Exploration Products (U.S.A.), Inc. and I/O Marine Systems, Inc. (collectively, the "Subsidiary Borrowers"), and together with the Company, collectively, the "Borrowers") entered into a Revolving Credit and Security Agreement with PNC Bank, National Association ("PNC"), as agent (the "Original Credit Agreement"), which was amended by the First Amendment to Revolving Credit and Security Agreement in August 2015 (the "First Amendment") and the Second Amendment (as defined below) (the Original Credit Agreement, as amended by the First Amendment, and the Second Amendment, the "Credit Facility").

The Credit Facility is available to provide for the Borrowers' general corporate needs, including working capital requirements, capital expenditures, surety deposits and acquisition financing. The

maximum amount of the revolving line of credit under the Credit Facility is the lesser of $40.0 million or a monthly borrowing base.

On April 28, 2016, the Borrowers and PNC entered into a second amendment (the "Second Amendment") to the Credit Facility. The Second Amendment, among other things:

- increased the applicable margin for loans by 0.50% per annum (from 2.50% per annum to 3.00% per annum for alternate base rate loans and from 3.50% per annum to 4.00% per annum for LIBOR-based loans);
- increased the minimum excess availability threshold to avoid triggering the agent's rights to exercise dominion over cash and deposit accounts and increases certain of the thresholds upon which such dominion ceases;
- increased the minimum liquidity threshold to avoid triggering the Company's obligation to calculate and comply with the existing fixed charge coverage ratio and increased certain of the thresholds upon which such required calculation and compliance cease;
- established a reserve that reduced the amount available to be borrowed by the aggregate amount owing under all Third Lien Notes that remain outstanding (if any) on or after February 14, 2018 (i.e., 90 days prior to the stated maturity of the Third Lien Notes);
- increased the maximum amount of certain permitted junior indebtedness to $200.0 million (from $175.0 million);
- incorporated technical and conforming changes to reflect that the Second Lien Notes and the remaining Third Lien Notes (and any permitted refinancing thereof or subsequently incurred replacement indebtedness meeting certain requirements) constitute permitted indebtedness;
- clarified the circumstances and mechanics under which the Company may prepay, repurchase or redeem the Second Lien Notes, the remaining Third Lien Notes and certain other junior indebtedness;
- modified the cross-default provisions to incorporated defaults under the Second Lien Notes, the remaining Third Lien Notes and certain other junior indebtedness; and
- eliminated the potential early commitment termination date and early maturity date that would otherwise have occurred ninety (90) days prior the maturity date of the Third Lien Notes if any of the Third Lien Notes then remained outstanding.

The borrowing base under the Credit Facility will increase or decrease monthly using a formula based on certain eligible receivables, eligible inventory and other amounts, including a percentage of the net orderly liquidation value of the Borrowers' multi-client data library (not to exceed $15.0 million for the multi-client data library data component). As of December 31, 2017, the borrowing base under the Credit Facility was $25.5 million and there was $10.0 million of indebtedness resulting in $15.5 million of undrawn borrowing base availability under the Credit Facility. The Credit Facility is scheduled to mature on August 22, 2019.

The obligations of Borrowers under the Credit Facility are secured by a first-priority security interest in 100% of the stock of the Subsidiary Borrowers and 65% of the equity interest in ION International Holdings L.P. and by substantially all other assets of the Borrowers.

The Credit Facility contains covenants that, among other things, limit or prohibit the Borrowers, subject to certain exceptions and qualifications, from incurring additional indebtedness (including capital lease obligations), repurchasing equity, paying dividends or distributions, granting or incurring additional liens on the Borrowers' properties, pledging shares of the Borrowers' subsidiaries, entering into certain merger transactions, entering into transactions with the Company's affiliates, making

certain sales or other dispositions of the Borrowers' assets, making certain investments, acquiring other businesses and entering into sale-leaseback transactions with respect to the Borrowers' property.

The Credit Facility, requires that ION and the Subsidiary Borrowers maintain a minimum fixed charge coverage ratio of 1.1 to 1.0 as of the end of each fiscal quarter during the existence of a covenant testing trigger event. The fixed charge coverage ratio is defined as the ratio of (i) ION's EBITDA, minus unfunded capital expenditures made during the relevant period, minus distributions (including tax distributions) and dividends made during the relevant period, minus cash taxes paid during the relevant period, to (ii) certain debt payments made during the relevant period. A covenant testing trigger event occurs upon (a) the occurrence and continuance of an event of default under the Credit Facility or (b) the failure to maintain a measure of liquidity greater than (i) $7.5 million for five consecutive business days or (ii) $6.5 million on any given business day. Liquidity, as defined in the Credit Facility, is the Company's excess availability to borrow ($15.5 million at December 31, 2017) plus the aggregate amount of unrestricted cash held by ION, the Subsidiary Borrowers and their domestic subsidiaries. At December 31, 2017, ION, the Subsidiary Borrowers and their domestic subsidiaries had unrestricted cash totaling $39.3 million and non-domestic subsidiaries had unrestricted cash totaling $12.7 million.

At December 31, 2017, the Company was in compliance with all of the covenants under the Credit Facility.

The Credit Facility, as amended, contains customary event of default provisions (including a "change of control" event affecting ION), the occurrence of which could lead to an acceleration of the Company's obligations under the Credit Facility as amended.

Senior Secured Notes

In May 2013, the Company sold $175.0 million aggregate principal amount of 8.125% Senior Secured Second-Priority Notes due 2018 (the "Third Lien Notes") in a private offering pursuant to an Indenture dated as of May 13, 2013 (the Third Lien Notes Indenture"). Prior to the completion of the Exchange Offer (as defined below) and Consent Solicitation (as defined below) on April 28, 2016, the Third Lien Notes were senior secured second-priority obligations of the Company. After giving effect to the Exchange Offer and Consent Solicitation, the remaining aggregate principal amount of approximately $28.5 million of outstanding Third Lien Notes became senior secured third-priority obligations of the Company subordinated to the liens securing all senior and second priority indebtedness of the Company, including under the Credit Facility and Second-Priority Lien Notes (defined below).

Pursuant to the Exchange Offer and Consent Solicitation, the Company (i) issued approximately $120.6 million in aggregate principal amount of the Company's new 9.125% Senior Secured Second Priority Notes due 2021 (the "Second Lien Notes," and collectively with the Third Lien Notes, the "Notes") and 1,205,477 shares of the Company's common stock in exchange for approximately $120.6 million in aggregate principal amount of Third Lien Notes, and (ii) purchased approximately $25.9 million in aggregate principal amount of Third Lien Notes in exchange for aggregate cash consideration totaling approximately $15.0 million, plus accrued and unpaid interest on the Third Lien Notes from the applicable last interest payment date to, but not including, April 28, 2016.

After giving effect to the Exchange Offer and Consent Solicitation, the aggregate principal amount of the Third Lien Notes remaining outstanding was approximately $28.5 million and the aggregate principal amount of Second Lien Notes outstanding was approximately $120.6 million.

The Third Lien Notes are guaranteed by the Company's material U.S. subsidiaries, GX Technology Corporation, ION Exploration Products (U.S.A.), Inc. and I/O Marine Systems, Inc. (the "Guarantors"), and mature on May 15, 2018. Interest on the Third Lien Notes accrues at the rate of

8.125% per annum and will be payable semiannually in arrears on May 15 and November 15 of each year during their term.

Prior to the completion of the Exchange Offer and Consent Solicitation, the Third Lien Notes Indenture contained certain covenants that, among other things, limited or prohibited the Company's ability and the ability of its restricted subsidiaries to take certain actions or permit certain conditions to exist during the term of the Third Lien Notes, including among other things, incurring additional indebtedness, creating liens, paying dividends and making other distributions in respect of the Company's capital stock, redeeming the Company's capital stock, making investments or certain other restricted payments, selling certain kinds of assets, entering into transactions with affiliates, and effecting mergers or consolidations. These and other restrictive covenants contained in the Third Lien Notes Indenture are subject to certain exceptions and qualifications. After giving effect to the Exchange Offer and Consent Solicitation, the Third Lien Notes Indenture was amended to, among other things, provide for the release of the second priority security interest in the collateral securing the remaining Third Lien Notes and the grant of a third priority security interest in the collateral, subordinate to liens securing all senior and second priority indebtedness of the Company, including the Credit Facility and the Second Lien Notes, and eliminate substantially all of the restrictive covenants and certain events of default pertaining to the remaining Third Lien Notes.

As of December 31, 2017, the Company was in compliance with the covenants with respect to the Third Lien Notes.

The Second Lien Notes are senior secured second-priority obligations guaranteed by the Guarantors. The Second Lien Notes mature on December 15, 2021. Interest on the Second Lien Notes accrues at the rate of 9.125% per annum and is payable semiannually in arrears on June 15 and December 15 of each year during their term, beginning June 15, 2016, except that the interest payment otherwise payable on June 15, 2021 will be payable on December 15, 2021.

The indenture dated April 28, 2016 governing the Second Lien Notes (the "Second Lien Notes Indenture") contains certain covenants that, among other things, limit or prohibit the Company's ability and the ability of its restricted subsidiaries to take certain actions or permit certain conditions to exist during the term of the Second Lien Notes, including among other things, incurring additional indebtedness, creating liens, paying dividends and making other distributions in respect of the Company's capital stock, redeeming the Company's capital stock, making investments or certain other restricted payments, selling certain kinds of assets, entering into transactions with affiliates, and effecting mergers or consolidations. These and other restrictive covenants contained in the Second Lien Notes Indenture are subject to certain exceptions and qualifications. All of the Company's subsidiaries are currently restricted subsidiaries.

As of December 31, 2017, the Company was in compliance with the covenants with respect to the Second Lien Notes.

On or after December 15, 2019, the Company may on one or more occasions redeem all or a part of the Second Lien Notes at the redemption prices set forth below, plus accrued and unpaid interest and special interest, if any, on the Second Lien Notes redeemed during the twelve-month period beginning on December 15th of the years indicated below:

Date	Percentage
2019	105.500%
2020	103.500%
2021 and thereafter	100.000%

Equipment Capital Leases

The Company has entered into capital leases that are due in installments for the purpose of financing the purchase of computer equipment through 2019. Interest accrues under these leases at rates of up to 4.3% per annum, and the leases are collateralized by liens on the computer equipment. The assets are amortized over the lesser of their related lease terms or their estimated productive lives and such charges are reflected within depreciation expense.

A summary of future principal obligations under long-term debt and equipment capital lease obligations follows (in thousands):

Years Ended December 31,	Short-Term and Long-Term Debt	Capital Lease Obligations	Other Financing	Total
2018	$ 38,497	$250	$1,382	$ 40,129
2019	—	29	—	29
2020	—	—	—	—
2021	—	—	—	—
2022	120,569	—	—	120,569
Total	$159,066	$279	$1,382	$160,727

(4) Net Income (Loss) per Common Share

Basic net income (loss) per common share is computed by dividing net income (loss) applicable to common shares by the weighted average number of common shares outstanding during the period. Diluted net income (loss) per common share is determined based on the assumption that dilutive restricted stock and restricted stock unit awards have vested and outstanding dilutive stock options have been exercised and the aggregate proceeds were used to reacquire common stock using the average price of such common stock for the period. The total number of shares issuable under anti-dilutive options at December 31, 2017, 2016 and 2015 were 890,341, 847,635 and 560,797, respectively. All outstanding stock options for the twelve months ended December 31, 2017, 2016 and 2015 were anti-dilutive.

(5) Income Taxes

The sources of income (loss) before income taxes are as follows (in thousands):

	Years Ended December 31,		
	2017	2016	2015
Domestic	$(12,487)	$(41,246)	$ 21,065
Foreign	(16,866)	(19,060)	(42,175)
Total	$(29,353)	$(60,306)	$(21,110)

Components of income taxes are as follows (in thousands):

	Years Ended December 31,		
	2017	2016	2015
Current:			
Federal	$ (166)	$ —	$(4,715)
State and local	116	28	41
Foreign	5,494	5,574	1,274
Deferred:			
Federal	(1,263)	—	2,726
Foreign	(4,157)	(1,181)	4,718
Total income tax expense	$ 24	$ 4,421	$ 4,044

A reconciliation of the expected income tax expense on income (loss) before income taxes using the statutory federal income tax rate of 35% for 2017, 2016 and 2015 to income tax expense follows (in thousands):

	Years Ended December 31,		
	2017	2016	2015
Expected income tax expense at 35%	$(10,274)	$(21,107)	$ (7,389)
Foreign tax rate differential	(2,914)	5,932	1,769
Foreign tax differences	(5,610)	(4,828)	4,104
State and local taxes	116	28	41
Nondeductible expenses	4,308	(259)	578
Change in U.S. tax rate	77,410	—	—
Expired Capital Loss	1,114	1,321	15,950
Valuation allowance:			
Valuation allowance on expiring capital losses	(1,114)	(1,321)	(15,950)
Valuation allowance on operations	(63,012)	24,655	4,941
Total income tax expense	$ 24	$ 4,421	$ 4,044

As a result of passage of the Tax Cut and Jobs Act (the "Act") on December 22, 2017, the Company's U.S. deferred tax assets, liabilities, and associated valuation allowance as of December 31, 2017 have been re-measured at the new U.S. federal tax rate of 21%. The tax effects of the cumulative

temporary differences resulting in the net deferred income tax asset (liability) are as follows (in thousands):

	December 31,	
	2017	2016
Non-current deferred:		
Deferred income tax assets:		
Accrued expenses	$ 1,976	$ 2,994
Allowance Accounts	2,960	4,861
Net operating loss carryforward	87,705	98,896
Capital loss carryforward	—	1,114
Equity method investment	35,292	58,820
Original issue discount	9,624	17,924
Basis in identified intangibles	9,408	15,286
Tax credit carryforwards	6,929	7,051
Contingency accrual	788	—
Other	4,035	10,755
Total non-current deferred income tax asset	158,717	217,701
Valuation allowance	(153,463)	(217,589)
Net non-current deferred income tax asset	5,254	112
Deferred income tax liabilities:		
Other	—	(1,240)
Unbilled receivables	(3,501)	(1,908)
Basis in property, plant and equipment	—	(531)
Total net non-current deferred income tax asset (liability)	$ 1,753	$ (3,567)

During 2013, the Company established a valuation allowance on the substantial majority of U.S. net deferred tax assets due to the significant charges taken during the year and the related inability to rely on projections of future income. As of December 31, 2017, the Company has a valuation allowance on substantially all net U.S. deferred tax assets. The valuation allowance was released in 2017 with respect to refundable U.S. alternative minimum tax ("AMT") credits that will be realized as a result of provisions in the Act. The valuation allowance was calculated in accordance with the provisions of ASC 740-10, "*Accounting for Income Taxes,*" which requires that a valuation allowance be established or maintained when it is "more likely than not" that all or a portion of deferred tax assets will not be realized. The Company will continue to record a valuation allowance for the substantial majority of its deferred tax assets until there is sufficient evidence to warrant reversal.

At December 31, 2017, the Company had U.S. net operating loss carryforwards of approximately $238.0 million, expiring in 2034, and net operating loss carryforwards outside of the U.S. of approximately $134.7 million, the majority of which expire beyond 2025.

As of December 31, 2017, the Company has approximately $0.4 million of unrecognized tax benefits and does not expect to recognize any significant increases in unrecognized tax benefits during the next twelve-month period. Interest and penalties, if any, related to unrecognized tax benefits are

recorded in income tax expense. During 2017, 2016 and 2015, the aggregate changes in the Company's total gross amount of unrecognized tax benefits are summarized as follows (in thousands):

	Years Ended December 31,		
	2017	2016	2015
Beginning balance	$1,299	$1,250	$1,957
Increases in unrecognized tax benefits—current year positions	59	49	75
Decreases in unrecognized tax benefits—prior year position	(911)	—	(782)
Ending balance	$ 447	$1,299	$1,250

The Company's U.S. federal tax returns for 2014 and subsequent years remain subject to examination by tax authorities. In the Company's foreign tax jurisdictions, tax returns for 2013 and subsequent years generally remain open to examination.

As of December 31, 2017, the Company considered the outside book-over-tax basis difference in its foreign subsidiaries to be in the amount of approximately $92.2 million. United States income taxes have not been provided on this basis difference as it is the Company's intention to reinvest the undistributed earnings of its foreign subsidiaries to the extent they cannot be remitted to the United States without incurring incremental tax as provided in the Act. Additionally, the Company had no impact in the U.S. with respect to the one-time deemed repatriation of net foreign subsidiary earnings under the Act, as a result of the allocation of foreign subsidiary deficits against positive earnings.

(6) Legal Matters

WesternGeco

In June 2009, WesternGeco L.L.C. ("WesternGeco") filed a lawsuit against the Company in the United States District Court for the Southern District of Texas, Houston Division. In the lawsuit, styled *WesternGeco L.L.C. v. ION Geophysical Corporation*, WesternGeco alleged that the Company had infringed several method and apparatus claims contained in four of its United States patents regarding marine seismic streamer steering devices.

The trial began in July 2012. A verdict was returned by the jury in August 2012, finding that the Company infringed the claims contained in the four patents by supplying its DigiFIN, lateral streamer control units and the related software from the United States and awarded WesternGeco the sum of $105.9 million in damages, consisting of $12.5 million in reasonable royalty and $93.4 million in lost profits.

In June 2013, the presiding judge entered a Memorandum and Order, denying the Company's post-verdict motions that challenged the jury's infringement findings and the damages amount. In the Memorandum and Order, the judge also stated that WesternGeco was entitled to be awarded supplemental damages for the additional DigiFIN units that were supplied from the United States before and after trial that were not included in the jury verdict due to the timing of the trial. In October 2013, the judge entered another Memorandum and Order, ruling on the number of DigiFIN units that were subject to supplemental damages and also ruling that the supplemental damages applicable to the additional units were to be calculated by adding together the jury's previous reasonable royalty and lost profits damages awards per unit, resulting in supplemental damages of $73.1 million.

In April 2014, the judge entered another Order, ruling that lost profits should not have been included in the calculation of supplemental damages in the October 2013 Memorandum and Order and reducing the supplemental damages award in the case from $73.1 million to $9.4 million. In the Order, the judge also further reduced the damages awarded in the case by $3.0 million to reflect a settlement

and license that WesternGeco entered into with a customer of the Company that had purchased and used DigiFIN units that were also included in the damage amounts awarded against the Company.

In May 2014, the judge signed and entered a Final Judgment in the amount of $123.8 million. The Final Judgment also included an injunction that enjoins the Company, its agents and anyone acting in concert with it, from supplying in or from the United States the DigiFIN product or any parts unique to the DigiFIN product, or any instrumentality no more than colorably different from any of these products or parts, for combination outside of the United States. The Company has conducted its business in compliance with the District Court's orders in the case, and the Company has reorganized its operations such that it no longer supplies the DigiFIN product or any parts unique to the DigiFIN product in or from the United States.

The Company and WesternGeco each appealed the Final Judgment to the United States Court of Appeals for the Federal Circuit in Washington, D.C. (the "Court of Appeals"). On July 2, 2015, the Court of Appeals reversed in part the Final Judgment of the District Court, holding the District Court erred by including lost profits in the Final Judgment. Lost profits were $93.4 million and prejudgment interest on the lost profits was approximately $10.9 million of the $123.8 million Final Judgment. Pre-judgment interest on the lost profits portion will be treated in the same way as the lost profits. Post-judgment interest will likewise be treated in the same fashion. On July 29, 2015, WesternGeco filed a petition for rehearing en banc before the Court of Appeals. On October 30, 2015, the Court of Appeals denied WesternGeco's petition for rehearing en banc.

As previously disclosed, we had previously taken a loss contingency accrual of $123.8 million. As a result of the reversal by the Court of Appeals, as of June 30, 2015, we reduced our loss contingency accrual to $22.0 million.

On February 26, 2016, WesternGeco filed a petition for writ of certiorari by the Supreme Court. The Company filed its response on April 27, 2016. Subsequently, on June 20, 2016, the Supreme Court vacated the Court of Appeals' ruling although it did not address the lost profits question at that time. Rather, in light of the changes in case law regarding the standard of proof for willfulness in the Halo and Stryker cases, the Supreme Court indicated that the case should be remanded to the Court of Appeals for a determination of whether or not the willfulness determination by the District Court was appropriate.

On October 14, 2016, the Court of Appeals issued a mandate returning the case to the District Court for consideration of whether or not additional damages for willfulness we appropriate. On March 14, 2017, the District Court held a hearing on whether or not additional damages for willfulness would be payable. The Judge found that ION's infringement was willful, based on his perception that ION did not adequately investigate the scope of the patent, and ION's conduct during trial. However, in his ruling at the hearing, he limited enhanced damages to $5.0 million because it was a "close case," there was no evidence of copying, and ION was simply acting as a competitor in a capitalist marketplace. The District Court also ordered the appeal bond to be released and discharged. The Court's findings and ruling were memorialized in an order issued on May 16, 2017. On June 30, 2017, WesternGeco and the Company jointly agreed that neither party would appeal the District Court's award of $5.0 million in enhanced damages. The parties also agreed that the $5.0 million would be paid over the course of 12 months with $1.25 million being paid in two installments of $0.625 million in 2017 and the remaining $3.75 million being paid in three quarterly payments of $1.25 million beginning January 1, 2018. This agreement was memorialized by the court in an order issued on July 26, 2017.

WesternGeco filed a second petition for writ of certiorari in the U.S. Supreme Court on February 17, 2017, appealing the lost profits issue again. The Company filed its response to WesternGeco's second attempt to appeal to the Supreme Court the lost profits issue, raising both the substantive matters the Company addressed by opposing WesternGeco's first petition, and also raising a procedural argument that WesternGeco cannot raise the same issue for a second time in a second

petition for certiorari. On May 30, 2017, the Supreme Court called for the views of the U.S. Solicitor General regarding whether or not to grant certiorari. The Company and WesternGeco each met with the Solicitor General's office in late July, 2017. On December 6, 2017, the Solicitor General filed its brief, and took the position that the Supreme Court ought to grant certiorari. On January 12, 2018, the Supreme Court granted certiorari as to whether the Court of Appeals erred in holding that lost profits arising from use of prohibited combinations occurring outside of the United States are categorically unavailable in cases where patent infringement is proven under 35 U.S.C. § 271(f)(2) (the specific statute under which the Company was ultimately held to have infringed WesternGeco's patents and which the District Court and the Federal Circuit relied in entering their final rulings). The Company will argue to the Supreme Court that the decision of the Court of Appeals that eliminated lost profits ought to be upheld. We anticipate oral arguments will take place in April of 2018 and that the Supreme Court will issue a decision by the end of June of 2018.

At the Court of Appeals the Company presented multiple arguments as to why the District Court's award of lost profits was improper. The lost profits damages awarded by the District Court were based on the use of the Company's products by our customers outside of the United States. The Company argued at the Court of Appeals that, as a matter of law, WesternGeco cannot recoup lost profits for the overseas use of our products. The Company also argued that, under the jury instructions given in our case, WesternGeco would need to have been a direct competitor of the Company's in the survey markets to recoup lost profits, and that the jury was required to find that WesternGeco and ION were direct competitors. Because the Court of Appeals ruled in our favor on the first argument, and overturned the award of lost profits on that basis, the Court of Appeals did not rule on our "direct competitor" argument. If the Supreme Court overturns the Court of Appeals' decision that lost profits cannot be awarded to WesternGeco because the subsequent use of the apparatus was overseas, the case will be remanded back to the Court of Appeals, at which time the Company will present our second argument (that lost profits should not be awarded to WesternGeco because they were not our direct competitor).

Other proceedings may have an impact on WesternGeco's ability to recover lost profits damages even if WesternGeco prevails in the Supreme Court, and even if the Company does not prevail on the "direct competitor" argument in the Court of Appeals. The Company was a party to a challenge to the validity of several of WesternGeco's patent claims by means of an Inter Partes Review ("IPR") with the Patent Trial and Appeal Board ("PTAB"). While the above-described lawsuit was pending on appeal, the PTAB invalidated four of the six patent claims that formed the basis for the jury verdict in the lawsuit. WesternGeco appealed that decision to the Court of Appeals, which heard our and WesternGeco's arguments on January 23, 2018. If the Court of Appeals affirms the PTAB's invalidation of the patents, that may provide a separate ground for reducing or vacating any lost-profits award in the lawsuit. We expect the Court of Appeals to rule on the PTAB issue late in first quarter of 2018 or in the second quarter of 2018.

The Company may not ultimately prevail in any of the appeals processes noted above and we could be required to pay some or all of the lost profits that were awarded by the District Court. Our assessment that we do not have a loss contingency may change in the future due to developments at the Supreme Court, Court of Appeals, or District Court, and other events, such as changes in applicable law, and such reassessment could lead to the determination that a loss contingency is probable, which could have a material effect on our business, financial condition and results of operations. The Company's assessments disclosed in this Annual Report on Form 10-K or elsewhere are based on currently available information and involve elements of judgment and significant uncertainties. Actual losses may equal or be considerably less than the lost profits awarded by the District Court. The Company does not anticipate that any losses from the date hereof would exceed the lost profits awarded by the District Court (except for the potential imposition of pre and post-judgment interest).

Other

The Company has been named in various other lawsuits or threatened actions that are incidental to its ordinary business. Litigation is inherently unpredictable. Any claims against the Company, whether meritorious or not, could be time-consuming, cause the Company to incur costs and expenses, require significant amounts of management time and result in the diversion of significant operational resources. The results of these lawsuits and actions cannot be predicted with certainty. Management currently believes that the ultimate resolution of these matters will not have a material adverse impact on the financial condition, results of operations or liquidity of the Company.

(7) Other Income

A summary of other income follows (in thousands):

	Years Ended December 31,		
	2017	2016	2015
Reduction of (accrual for) loss contingency related to legal proceedings (Footnote 6)	$(5,000)	$ 1,168	$101,978
Recovery of INOVA bad debts	844	3,983	—
Loss on bond exchange	—	(2,182)	—
Other income	211	(1,619)	(3,703)
Total other income (loss)	$(3,945)	$ 1,350	$ 98,275

(8) Details of Selected Balance Sheet Accounts

Accounts Receivable

A summary of accounts receivable follows (in thousands):

	December 31,	
	2017	2016
Accounts receivable, principally trade	$20,050	$22,214
Less allowance for doubtful accounts	(572)	(1,444)
Accounts receivable, net	$19,478	$20,770

Inventories

A summary of inventories follows (in thousands):

	December 31,	
	2017	2016
Raw materials and purchased subassemblies	$ 20,448	$ 21,454
Work-in-process	1,146	2,255
Finished goods	7,953	6,581
Reserve for excess and obsolete inventories	(15,039)	(15,049)
Total	$ 14,508	$ 15,241

Property, Plant, Equipment and Seismic Rental Equipment

A summary of property, plant, equipment and seismic rental equipment follows (in thousands):

	December 31,	
	2017	2016
Buildings	$ 15,822	$ 17,424
Machinery and equipment	145,654	157,618
Seismic rental equipment	1,677	1,557
Furniture and fixtures	3,869	3,905
Other	28,965	30,049
Total	195,987	210,553
Less accumulated depreciation	(143,834)	(143,065)
Property, plant, equipment and seismic rental equipment, net	$ 52,153	$ 67,488

Total depreciation expense, including amortization of assets recorded under capital leases, for 2017, 2016 and 2015 was $15.2 million, $20.3 million and $24.6 million, respectively.

Intangible Assets

A summary of intangible assets, net, follows (in thousands):

	December 31, 2017		
	Gross Amount	Accumulated Amortization	Net
Customer relationships	$34,400	$(32,734)	$1,666
Total	$34,400	$(32,734)	$1,666

	December 31, 2016		
	Gross Amount	Accumulated Amortization	Net
Customer relationships	$36,934	$(33,831)	$3,103
Total	$36,934	$(33,831)	$3,103

Total amortization expense for intangible assets for 2017, 2016 and 2015 was $1.4 million, $1.7 million and $1.9 million, respectively. A summary of the estimated amortization expense for the next three years follows (in thousands):

Years Ended December 31,	
2018	$1,169
2019	$ 497

Accrued Expenses

A summary of accrued expenses follows (in thousands):

	December 31,	
	2017	2016
Compensation, including compensation-related taxes and commissions	$19,809	$14,935
Accrued multi-client data library acquisition costs	5,104	567
Income tax payable	1,868	1,306
Accrual for legal proceedings (Footnote 6)	3,750	—
Other	8,166	9,432
Total	$38,697	$26,240

Other Long-term Liabilities

A summary of other long-term liabilities follows (in thousands):

	December 31,	
	2017	2016
Deferred lease liabilities	12,811	13,955
Facility restructuring accrual	—	1,765
Deferred income tax liability	—	3,679
Other	1,115	1,128
Total	$13,926	$20,527

(9) Goodwill

On December 31, 2017, the Company completed the annual reviews of the carrying value of goodwill in its E&P Technology & Services and Optimization Software & Services reporting units and noted no impairments. The qualitative assessment concluded it was more likely than not that the fair values of the Company's E&P Technology & Services, and Optimization Software & Services reporting units exceeded their carrying values.

The following is a summary of the changes in the carrying amount of goodwill for the years ended December 31, 2017 and 2016 (in thousands):

	E&P Technology & Services	Optimization Software & Services	Total
Balance at January 1, 2016	$2,943	$23,331	$26,274
Impact of foreign currency translation adjustments	—	(4,066)	(4,066)
Balance at December 31, 2016	2,943	19,265	22,208
Impact of foreign currency translation adjustments	—	1,881	1,881
Balance at December 31, 2017	$2,943	$21,146	$24,089

(10) Stockholders' Equity and Stock-based Compensation

Stock Option Plans

The Company has adopted stock option plans for eligible employees, directors and consultants, which provide for the granting of options to purchase shares of common stock. The options under these plans generally vest in equal annual installments over a four-year period and have a term of ten years. These options are typically granted with an exercise price per share equal to or greater than the current market price and, upon exercise, are issued from the Company's unissued common shares. In August 2006, the Compensation Committee ("Committee") of the Board of Directors ("Board") of the Company approved fixed pre-established quarterly grant dates for all future grants of options.

At-The-Market Equity Offering Program

On December 22, 2016 the Company announced that it had filed a prospectus supplement under which it may sell up to $20.0 million of its common stock through an "at-the-market" equity offering program (the "ATM Program"). The Company intended to use the net proceeds from sales under the ATM Program for general corporate purposes. The timing of any sales depended on a variety of factors to be determined by the Company. Effective May 2, 2017, the Company terminated and canceled the ATM Program. No shares were sold pursuant to the ATM Program and the Company has no further obligations thereunder.

Stock Repurchase Program

On November 4, 2015, the Company's board of directors approved a stock repurchase program authorizing a Company stock repurchase, from time to time from November 10, 2015 through November 10, 2017, up to $25 million in shares of the Company's outstanding common stock. The stock repurchase program was implemented through open market repurchases or privately negotiated transactions, at management's discretion. The actual timing, number and value of shares repurchased under the program was determined by management at its discretion and depended on a number of factors including the market price of the shares of our common stock and general market and economic conditions, applicable legal requirements and compliance with the terms of the Company's outstanding indebtedness. The repurchase program did not obligate the Company to acquire any particular amount of common stock and could be modified or suspended at any time and could be terminated prior to completion. As of December 31, 2016, the Company was authorized to repurchase up to $25 million through November 10, 2017 and had repurchased $3 million or 451,792 shares of its common stock under the repurchase program at an average price per share of $6.41. The program expired November 10, 2017.

Transactions under the stock option plans are summarized as follows:

	Option Price per Share	Outstanding	Vested	Available for Grant
January 1, 2015	$37.05 - 245.85	599,069	358,390	183,468
Granted	34.20	53,328	—	(53,328)
Vested	—	—	79,779	—
Cancelled/forfeited	37.05 - 231.45	(91,600)	(53,864)	12,358
Restricted stock granted out of option plans	—	—	—	(45,652)
Restricted stock forfeited or cancelled for employee minimum income taxes and returned to the plans	—	—	—	157
December 31, 2015	34.20 - 245.85	560,797	384,305	97,003
Increase in shares authorized	—	—	—	1,150,940
Granted	3.10	415,000	—	(415,000)
Vested	—	—	67,480	—
Cancelled/forfeited	3.10 - 245.85	(128,162)	(103,432)	18,895
Restricted stock granted out of option plans	—	—	—	(259,300)
Restricted stock forfeited or cancelled for employee minimum income taxes and returned to the plans	—	—	—	7,182
December 31, 2016	3.10 - 245.85	847,635	348,353	599,720
Granted	13.15	156,000	—	(156,000)
Vested	—	—	149,537	—
Exercised	3.10	(15,000)	(15,000)	—
Cancelled/forfeited	3.10 - 245.85	(98,294)	(47,612)	82,118
Restricted stock granted out of option plans	—	—	—	(59,500)
Restricted stock forfeited or cancelled for employee minimum income taxes and returned to the plans	—	—	—	22,065
December 31, 2017	$3.10 - $245.85	890,341	435,278	488,403

Stock options outstanding at December 31, 2017 are summarized as follows:

Option Price per Share	Outstanding	Weighted Average Exercise Price of Outstanding Options	Weighted Average Remaining Contract Life	Vested	Weighted Average Exercise Price of Vested Options
$3.10 - $57.90	641,030	$ 15.17	7.1 years	202,312	$ 29.89
$61.05 - $71.85	76,963	$ 62.14	5.8 years	60,618	$ 62.43
$81.60 - $99.60	115,742	$ 88.79	4.4 years	115,742	$ 88.79
$106.05 - $245.85	56,606	$131.16	2.7 years	56,606	$131.16
Totals	890,341	$ 36.17	6.4 years	435,278	$ 63.25

Additional information related to the Company's stock options follows:

	Number of Shares	Weighted Average Exercise Price	Weighted Average Grant Date Fair Value	Weighted Average Remaining Contractual Life	Aggregate Intrinsic Value (000's)
Total outstanding at January 1, 2017	847,635	$ 46.21		6.1 years	$1,175
Options granted	156,000	$ 13.15	$8.10		
Options exercised	(15,000)	$ 3.10			
Options cancelled	(50,682)	$ 7.32			
Options forfeited	(47,612)	$180.52			
Total outstanding at December 31, 2017	890,341	$ 36.17		6.4 years	$6,774
Options exercisable and vested at December 31, 2017	435,278	$ 63.25		5.4 years	$1,436

The total intrinsic value of options exercised during 2017, 2016 and 2015 was less than $0.1 million, $0.1 million and $0.1 million, respectively. Cash received from option exercises under all share-based payment arrangements for 2017 was less than $0.1 million and during 2016 and 2015 there was no cash received. The weighted average grant date fair value for stock option awards granted during 2017, 2016 and 2015 was $8.10, $2.04 and $16.65 per share, respectively.

Restricted Stock and Restricted Stock Unit Plans

The Company has issued restricted stock and restricted stock units under the Company's 2013 Long-Term Incentive Plan and other applicable plans. Restricted stock units are awards that obligate the Company to issue a specific number of shares of common stock in the future if continued service vesting requirements are met. Non-forfeitable ownership of the common stock will vest over a period as determined by the Company in its sole discretion, generally in equal annual installments over a three-year period. Shares of restricted stock awarded may not be sold, assigned, transferred, pledged or otherwise encumbered by the grantee during the vesting period.

The status of the Company's restricted stock and restricted stock unit awards for 2017 follows:

	Number of Shares/Units
Total nonvested at January 1, 2017	285,308
Granted	59,500
Vested	(115,577)
Forfeited	(27,529)
Total nonvested at December 31, 2017	201,702

At December 31, 2017, the intrinsic value of restricted stock and restricted stock unit awards was approximately $4.0 million. The weighted average grant date fair value for restricted stock and restricted stock unit awards granted during 2017, 2016 and 2015 was $11.36, $3.81 and $34.20 per share, respectively. The total fair value of shares vested during 2017, 2016 and 2015 was $0.6 million, $0.2 million and $0.6 million, respectively.

Employee Stock Purchase Plan

Effective February, 2016, the Company suspended its Employee Stock Purchase Plan ("ESPP") that had been in place since June 2010. The ESPP allowed all eligible employees to authorize payroll deductions at a rate of 1% to 10% of base compensation (or a fixed amount per pay period) for the

purchase of the Company's common stock. Each participant was limited to purchase no more than 33 shares per offering period or 66 shares annually. Additionally, no participant could purchase shares in any calendar year that exceeded $10,000 in fair market value based on the fair market value of the stock on the offering commencement date. The purchase price of the common stock was the lesser of 85% of the closing price on the first day of the applicable offering period (or most recently preceding trading day) or 85% of the closing price on the last day of the offering period (or most recently preceding trading day). Each offering period was six months and commenced on February 1 and August 1 of each year. The ESPP was considered a compensatory plan under ASC 718, and the Company recorded compensation expense of approximately $0.1 million and $0.2 million during 2016 and 2015, respectively. The expense represents the estimated fair value of the look-back purchase option. The fair value was determined using the Black-Scholes option pricing model and was recognized over the purchase period.

Stock Appreciation Rights Plan

The Company has adopted a stock appreciation rights plan which provides for the award of stock appreciation rights ("SARs") to directors and selected key employees and consultants. The awards under this plan are subject to the terms and conditions set forth in agreements between the Company and the holders. The exercise price per SAR is not to be less than one hundred percent of the fair market value of a share of common stock on the date of grant of the SAR. The term of each SAR shall not exceed ten years from the grant date. Upon exercise of a SAR, the holder shall receive a cash payment in an amount equal to the spread specified in the SAR agreement for which the SAR is being exercised. In no event will any shares of common stock be issued, transferred or otherwise distributed under the plan.

On March 1, 2016, the Company issued 1,210,000 Stock Appreciation Rights ("SARs") awards to 15 selected key employees with an exercise price of $3.10. None of these SARs were awarded to non-employee directors. The vesting of these SARs is achieved through both a market condition and a service condition. The market condition is achieved, in part or in full, in the event that during the four-year period beginning on the date of grant the 20-day trailing volume-weighted average price of a share of common stock is (i) greater than 120% of the exercise price for the first 1/3 of the awards, (ii) greater than 125% of the exercise price for the second 1/3 of the awards and (iii) greater than 130% of the exercise price for the final 1/3 of the awards. The exercise condition restricts the ability of the holders to exercise awards until certain service milestones have been reached such that (i) no more than 1/3 of the awards may be exercised, if vested, on and after the first anniversary of the date of grant, (ii) no more than 2/3 of the awards may be exercised, if vested, on and after the second anniversary of the date of grant and (iii) all of the awards may be exercised, if vested, on and after the third anniversary of the date of grant.

On December 13, 2017, the Compensation Committee (the "Committee") of the Board of Directors (the "Board") of the Company authorized and approved the acceleration of the vesting date to December 13, 2017 for the second tranche of the Company's outstanding SARs, which were issued on March 1, 2016. The second tranche of the SARs awards was originally scheduled to vest on March 1, 2018. The vesting of the second tranche of the SARs awards was accelerated to facilitate the exercise by the SARs participants, if they so choose, of a larger portion of the SARs awards prior to year-end, as such an exercise would minimize the potential cash flow impact of any such exercise in the first quarter of 2018, would mitigate the ongoing mark to market accounting requirements for cash-settled SARs, and would afford the SARs participants liquidity to invest in common stock of the Company to further align their interests with those of the Company's stockholders. Participants exercised 663,330 SARs awards at a $9.95 gain per share.

Pursuant to ASC 718, the SARs are considered liability awards and as such, these amounts are accrued in the liability section of the balance sheet. The Company calculated the fair value of each

SAR award as of December 31, 2017 using a Monte Carlo simulation model. The following assumptions were used:

	December 31, 2017
Risk-free interest rates	2.36%
Expected lives (in years)	1.25
Expected dividend yield	—%
Expected volatility	77.8%

On March 1, 2015, the Company issued 207,207 SAR awards to 16 selected key employees with an exercise price of $34.20. None of these SARs were awarded to non-employee directors. The SAR awards number and exercise price have been retroactively adjusted to reflect the one-for-fifteen reverse stock split completed on February 4, 2016. The vesting of these SARs is achieved through both a market condition and a service condition. The market condition is achieved, in part or in full, in the event that during the four-year period beginning on the date of grant the 20-day trailing volume-weighted average price of a share of common stock is (i) greater than 120% of the exercise price for the first 1/3 of the awards, (ii) greater than 125% of the exercise price for the second 1/3 of the awards and (iii) greater than 130% of the exercise price for the final 1/3 of the awards. The exercise condition restricts the ability of the holders to exercise awards until certain service milestones have been reached such that (i) no more than 1/3 of the awards may be exercised, if vested, on and after the first anniversary of the date of grant, (ii) no more than 2/3 of the awards may be exercised, if vested, on and after the second anniversary of the date of grant and (iii) all of the awards may be exercised, if vested, on and after the third anniversary of the date of grant.

Pursuant to ASC 718, "*Compensation—Stock Compensation*," the SARs are considered liability awards and as such, these amounts are accrued in the liability section of the balance sheet. The Company calculated the fair value of each SAR award on the date of grant using a Monte Carlo simulation model. The following assumptions were used:

	December 31, 2015
Risk-free interest rates	2.19%
Expected lives (in years)	3.3
Expected dividend yield	—%
Expected volatility	69.38%

Additionally, as of December 31, 2017, the Company had 9,333 SAR awards outstanding to one individual with an exercise price of $45.00.

The Company recorded $6.6 million of share-based compensation expense during 2017, $0.5 million during 2016 and less than $0.1 million in 2015, related to employee SARs.

Additional information related to the Company's SARs follows:

	Number of Shares	Weighted Average Exercise Price	Weighted Average Grant Date Fair Value	Weighted Average Remaining Contractual Life	Aggregate Intrinsic Value (000's)
Total outstanding at January 1, 2015	9,333	$45.00		2.9 years	$ —
SARs granted	207,199	$34.20	$ 9.94		
Total outstanding at December 31, 2015	216,532	$34.67			
SARs granted	1,210,000	$ 3.10	$17.55		
SARs cancelled	(10,399)	$34.20			
Total outstanding at December 31, 2016	1,416,133	$ 7.70			
SARs exercised	(713,330)	$ 3.10			
SARs cancelled	(136,939)	$ 7.70			
Total outstanding at December 31, 2017	565,864	$13.49		7.2 years	$6,327
SARs exercisable and vested at December 31, 2017	44,332	$11.92		7.2 years	$ 583

Valuation Assumptions

The Company calculated the fair value of each stock option on the date of grant using the Black-Scholes option pricing model. The following assumptions were used for each respective period:

	Years Ended December 31,		
	2017	2016	2015
Risk-free interest rates	2.14%	1.3%	1.38%
Expected lives (in years)	5.0	5.5	4.5
Expected dividend yield	—%	—%	—%
Expected volatility	74.41%	78.76%	59.32%

The computation of expected volatility during 2017, 2016 and 2015 was based on an equally weighted combination of historical volatility and market-based implied volatility. Historical volatility was calculated from historical data for a period of time approximately equal to the expected term of the option award, starting from the date of grant. Market-based implied volatility was derived from traded options on the Company's common stock having a term of six months. The Company's computation of expected life in 2017, 2016 and 2015 was determined based on historical experience of similar awards, giving consideration to the contractual terms of the stock-based awards, vesting schedules and expectations of future employee behavior. The risk-free interest rate assumption is based upon the U.S. Treasury yield curve in effect at the time of grant for periods corresponding with the expected life of the option.

Stock-based Compensation Expense

The following tables summarizes stock-based compensation expense for the years ended December 31, 2017, 2016 and 2015 as follows (in thousands):

	Years Ended December 31,		
	2017	2016	2015
Stock-based compensation expense	$2,552	$ 3,267	$ 5,486
Tax benefit related thereto	(862)	(1,168)	(1,826)
Stock-based compensation expense, net of tax	$1,690	$ 2,099	$ 3,660

	Years Ended December 31,		
	2017	2016	2015
Stock appreciation rights expense	$ 6,611	$ 547	$(54)
Tax benefit related thereto	(2,314)	(191)	19
Stock appreciation rights expense, net of tax	$ 4,297	$ 356	$(35)

Equity Investment Program

To encourage the Company's executive officers and other key employees to purchase common stock of the Company and further align their interests with those of the Company's stockholders, the Board authorized and approved an equity investment program (the "Program") pursuant to which certain of the executive officers and other key employees of the Company are permitted, but not obligated, to purchase unregistered shares of common stock of the Company directly from the Company at market prices. In connection with any such purchases, the Committee authorized and approved, on December 13, 2017, a grant by the Company to such purchasing executive officers and key employees of a certain number of shares of restricted stock. On December 13, 2017, the Committee also authorized and approved to grant to certain executive officers and key employees a certain number of shares of restricted stock in connection with certain purchases of shares of the Company's common stock in the open market.

Specifically, for each five (5) shares directly purchased from the Company or in the open market during a defined period (to expire no later than December 31, 2017), the Company will issue one (1) share of restricted stock, subject to certain limitations as to the total number of restricted shares to be issued by the Company. Provided that an executive officer or key employee remains employed with the Company until March 1, 2018, the restricted stock will be granted as of March 1, 2018, will vest in full on the date that is 90 days after the grant date and will be subject to the other terms and conditions of the Company's form of restricted stock agreement and the Company's 2013 Long-Term Incentive Plan. The Company sold, in a private placement under Section 4(a)(2) of the Securities Act of 1933, as amended on December 14, 2017, 120,567 shares of Company common stock at $13.05 per share (the closing price of the Company's common stock on the NYSE on such date) and executive officers and other key employees purchased 219,346 shares in the open market.

(11) Supplemental Cash Flow Information and Non-Cash Activity

Supplemental disclosure of cash flow information follows (in thousands):

	Years Ended December 31,		
	2017	2016	2015
Cash paid during the period for:			
Interest	$14,181	$15,691	$15,441
Income taxes	7,030	4,474	8,163
Non-cash items from investing and financing activities:			
Purchase of computer equipment financed through capital leases	—	—	1,178
Leasehold improvement paid by landlord	—	955	—
Issuance of stock in bond exchange	—	10,741	—
Transfer of inventory to property, plant and equipment	—	17,662[a]	15,936[b]
Investment in multi-client data library financed through trade payables	9,059	—	8,939

[a] This transfer of $17.7 million of inventory to property, plant, equipment and seismic rental equipment in December 2016, relates to ocean bottom seismic equipment manufactured by the Company to be deployed in the acquisition of ocean bottom seismic data.

[b] This transfer of inventory to property, plant, equipment and seismic rental equipment relates to ocean bottom seismic equipment manufactured by the Company to be deployed in the acquisition of ocean bottom seismic data. During the twelve months ended December 31, 2015, the Company purchased approximately $19.2 million of property, plant, equipment and seismic rental equipment, including approximately $15.3 million related to the manufacture of ocean bottom seismic equipment that will be used by the Ocean Bottom Seismic Services segment.

(12) Operating Leases

Lessee. The Company leases certain equipment, offices and warehouse space under non-cancelable operating leases. Rental expense was $11.4 million, $11.3 million and $11.8 million for 2017, 2016 and 2015, respectively.

A summary of future rental commitments over the next five years under non-cancelable operating leases follows (in thousands):

Years Ending December 31,	
2018	$10,334
2019	9,812
2020	9,480
2021	9,435
2022	9,251
Total	$48,312

(13) Fair Value of Financial Instruments

Authoritative guidance on fair value measurements defines fair value, establishes a framework for measuring fair value and stipulates the related disclosure requirements. The Company follows a three-level hierarchy, prioritizing and defining the types of inputs used to measure fair value.

Due to their highly liquid nature, the amount of the Company's other financial instruments, including cash and cash equivalents, accounts and unbilled receivables, short term investments, accounts payable and accrued multi-client data library royalties, represent their approximate fair value.

The carrying amounts of the Company's long-term debt as of December 31, 2017 and 2016 were $160.7 million and $163.9 million, respectively, compared to its fair values of $158.2 million and $114.8 million as of December 31, 2017 and 2016, respectively. The fair value of the long-term debt was calculated using Level 1 inputs, including an active market price.

(14) Benefit Plans

The Company has a 401(k) retirement savings plan, which covers substantially all employees. Employees may voluntarily contribute up to 60% of their compensation, as defined, to the plan. Effective June 1, 2000, the Company adopted a company matching contribution to the 401(k) plan. The Company matched the employee contribution at a rate of 50% of the first 6% of compensation contributed to the plan. Company contributions to the plans were $0.8 million, $0.8 million and $1.4 million, during 2017, 2016 and 2015, respectively.

(15) Selected Quarterly Information—(Unaudited)

A summary of selected quarterly information follows (in thousands, except per share amounts):

Year Ended December 31, 2017	Three Months Ended			
	March 31	June 30	September 30	December 31
Service revenues	$ 23,828	$ 34,454	$52,615	$48,513
Product revenues	8,728	11,547	8,480	9,389
Total net revenues	32,556	46,001	61,095	57,902
Gross profit	6,101	15,618	30,109	23,811
Income (loss) from operations	(13,912)	(3,572)	9,936	(1,151)
Interest expense, net	(4,464)	(4,241)	(3,959)	(4,045)
Other income (expense)	(5,068)	192	722	209
Income tax expense (benefit)	(418)	2,402	1,686	(3,646)
Net (income) loss attributable to noncontrolling interests	(316)	(418)	(78)	(53)
Net income (loss) applicable to ION	$(23,342)	$(10,441)	$ 4,935	$ (1,394)
Net income (loss) per share:				
Basic	$ (1.98)	$ (0.88)	$ 0.42	$ (0.12)
Diluted	$ (1.98)	$ (0.88)	$ 0.41	$ (0.12)

Year Ended December 31, 2016	Three Months Ended March 31	June 30	September 30	December 31
Service revenues	$ 13,156	$ 25,430	$65,914	$26,140
Product revenues	9,509	10,722	12,708	9,229
Total net revenues	22,665	36,152	78,622	35,369
Gross profit (loss)	(8,930)	4,853	31,765	8,344
Income (loss) from operations	(30,129)	(16,588)	11,864	(8,318)
Interest expense, net	(4,734)	(4,702)	(4,607)	(4,442)
Other income (expense)	120	(1,717)	(2,027)	4,974
Income tax expense (benefit)	293	2,256	3,316	(1,444)
Net (income) loss attributable to noncontrolling interests	22	(79)	(215)	(149)
Net income (loss) applicable to ION	$(35,014)	$(25,342)	$ 1,699	$ (6,491)
Net income (loss) per share:				
Basic	$ (3.30)	$ (2.22)	$ 0.14	$ (0.55)
Diluted	$ (3.30)	$ (2.22)	$ 0.14	$ (0.55)

(16) Certain Relationships and Related Party Transactions

For 2017, 2016 and 2015, the Company recorded revenues from BGP of $4.4 million, $3.6 million and $6.3 million, respectively. Receivables due from BGP were $0.6 million and $0.4 million at December 31, 2017 and 2016, respectively. BGP owned approximately 13.0% of the Company's outstanding common stock as of December 31, 2017.

Mr. James M. Lapeyre, Jr. is the Chairman of the Board on ION's board of directors and a significant equity owner of Laitram, L.L.C. (Laitram), and he has served as president of Laitram and its predecessors since 1989. Laitram is a privately-owned, New Orleans-based manufacturer of food processing equipment and modular conveyor belts. Mr. Lapeyre and Laitram together owned approximately 10.2% of the Company's outstanding common stock as of December 31, 2017.

The Company acquired DigiCourse, Inc., the Company's marine positioning products business, from Laitram in 1998. In connection with that acquisition, the Company entered into a Continued Services Agreement with Laitram under which Laitram agreed to provide the Company certain bookkeeping, software, manufacturing and maintenance services. Manufacturing services consist primarily of machining of parts for the Company's marine positioning systems. The term of this agreement expired in September 2001 but the Company continues to operate under its terms. In addition, from time to time, when the Company has requested, the legal staff of Laitram has advised the Company on certain intellectual property matters with regard to the Company's marine positioning systems. During 2017, the Company paid Laitram and its affiliates $0.2 million which consisted of manufacturing services and reimbursement of costs. During 2016 and 2015 the Company paid less than $0.1 million in each year for reimbursement for costs related to providing administrative and other back-office support services in connection with the Company's Louisiana marine operations. In addition, the Company is currently subleasing approximately 4,100 square feet of office space to Laitram. In the opinion of the Company's management, the terms of these services are fair and reasonable and as favorable to the Company as those that could have been obtained from unrelated third parties at the time of their performance.

In July 2013, the Company agreed to lend up to $10.0 million to INOVA Geophysical, and received a promissory note issued by INOVA Geophysical to the order of the Company, which was scheduled to mature on September 30, 2013. INOVA Geophysical has repaid a total of $6.0 million, of which $4.0 million remained outstanding at December 31, 2017. INOVA has advised the Company that

it is not currently able to repay the outstanding amount. In December 2014, the Company wrote down the book value of this receivable to zero.

(17) Cost Reduction Initiatives and Other Charges

2016 Cost Reduction Initiatives and Other Charges

In April 2016, the Company implemented additional cost saving initiatives by reducing its current workforce by approximately 12%. Additional reductions were needed to further streamline the organization and bring it in line with the Company's current revenue stream, while maintaining the necessary core capabilities to continue our operations and strategic initiatives. In addition, the Company incurred losses in association with the exchange of a portion of its bonds during the second quarter 2016. During the twelve months ended December 31, 2016, the Company recognized the following pre-tax charges (in thousands):

	Severance charges[(a)]	Loss on bond exchange[(b)]	Total
Cost of goods sold	$1,077	$ —	$1,077
Operating expenses	932	—	932
Other expense	—	2,182	2,182
Consolidated total	$2,009	$2,182	$4,191

(a) Represents severance charges related to the second quarter 2016 restructurings.

(b) Represents a loss on exchange of bonds during the second quarter 2016.

2015 Cost Reduction Initiatives

During 2015, the Company implemented additional savings initiatives by (i) centralizing the Company's global data processing capabilities to two core geographical hubs in the U.S. and the U.K., (ii) reducing the Company's marine repair infrastructure to two locations in the U.S. and U.A.E., (iii) making further reductions in personnel across all of the Company's segments that, combined with reductions starting in December 2014 and reduced the Company's full-time employee base by approximately 50%. During 2015, the Company recognized the following pre-tax charges and credits (in thousands):

	Severance charges[(a)]	Facility charges[(b)]	Total
Cost of goods sold	$3,981	$ —	$3,981
Operating expenses	1,910	1,323	3,233
Other (income) expense	—	1,618	1,618
Income tax benefit	(119)	(150)	(269)
Net income attributable to noncontrolling interest	(172)	—	(172)
Consolidated total	$5,600	$2,791	$8,391

(a) Represents severance charges related to 2015 restructurings, a portion of which relates to a noncontrolling interest.

(b) Represents facility charges related to 2015 restructurings.

(18) Recent Accounting Pronouncements

Revenue Recognition—In May 2014, the FASB and the International Accounting Standards Board ("IASB") jointly issued new accounting guidance for recognition of revenue. In August 2015, the FASB issued guidance deferring the effective date to years beginning after December 15, 2017, and interim periods within those years. This new guidance replaces virtually all existing U.S. GAAP and IFRS guidance on revenue recognition. The underlying principle is that the entity will recognize revenue to depict the transfer of goods and services to customers at an amount that the entity expects to be entitled to in the exchange of goods and services. The guidance provides a five-step analysis of transactions to determine when and how revenue is recognized. Other major provisions include capitalization of certain contract costs, consideration of time value of money in the transaction price, and allowing estimates of variable consideration to be recognized before contingencies are resolved in certain circumstances. The guidance also requires enhanced disclosures regarding the nature, amount, timing and uncertainty of revenue and cash flows arising from an entity's contracts with customers.

In December 2016, the FASB issued amendments to ASC 606, "*Revenue from Contracts with Customers*". The amendments allow entities not to make quantitative disclosures about remaining performance obligations in certain cases and require entities that use any of the new or previously existing optional exemptions to expand their qualitative disclosures. It also makes additional technical corrections and improvements to the new revenue standard. The guidance will be effective with the same date and transition requirements as those in ASC 606.

The Company will use the modified retrospective adoption method and has concluded that the adoption of ASC 606 will not have a material impact on its consolidated balance sheets or consolidated statement of operations for any of its reporting segments. The Company adopted this ASU on January 1, 2018, and will disclose additional quantitative and qualitative information regarding revenue and cash flows generated from its contracts with customers.

In February 2016, the FASB issued ASU 2016-2, "*Leases (Topic 842)*" which introduces the recognition of lease assets and lease liabilities by lessees for those leases classified as operating leases under previous guidance. The guidance will be effective for annual reporting periods beginning after December 15, 2018 and interim periods within those fiscal years with early adoption permitted. The Company will adopt ASU 2016-2 on January 1, 2019, and estimates this ASU will have a material impact related to its facility operating leases on its consolidated balance sheet.

In November 2016 the FASB issued ASU 2016-18, *"Statement of Cash Flows (Topic 230), Restricted Cash (a consensus of the FASB Emerging Issues Task Force) (ASU 2016-18)"*, that will require entities to show changes in the total of cash, cash equivalents, restricted cash and restricted cash equivalents in the statement of cash flows. As a result, entities will no longer present transfers between cash and cash equivalents and restricted cash and restricted cash equivalents in the statement of cash flows. When cash, cash equivalents, restricted cash and restricted cash equivalents are presented in more than one-line item on the balance sheet, a reconciliation of the totals in the statement of cash flows to the related captions in the balance sheet is required. The guidance will be effective for annual periods beginning after December 15, 2017 and interim periods within those annual periods. Early adoption is permitted. The Company adopted ASU 2016-18 on January 1, 2018 and has concluded that this ASU will not have a material impact its consolidated balance sheet or consolidated statement of operations.

(19) Condensed Consolidating Financial Information

The notes were issued by ION Geophysical Corporation, and are guaranteed by the Company's current material U.S. subsidiaries: GX Technology Corporation, ION Exploration Products (U.S.A.), Inc. and I/O Marine Systems, Inc. ("the Guarantors"), which are 100-percent-owned subsidiaries. The Guarantors have fully and unconditionally guaranteed the payment obligations of ION Geophysical Corporation with respect to these debt securities. The following condensed consolidating financial information presents the results of operations, financial position and cash flows for:

- ION Geophysical Corporation and the guarantor subsidiaries (in each case, reflecting investments in subsidiaries utilizing the equity method of accounting).
- All other nonguarantor subsidiaries.
- The consolidating adjustments necessary to present ION Geophysical Corporation's results on a consolidated basis.

This condensed consolidating financial information should be read in conjunction with the accompanying consolidated financial statements and notes.

Balance Sheet	ION Geophysical Corporation	The Guarantors	All Other Subsidiaries	Consolidating Adjustments	Total Consolidated
	December 31, 2017				
			(In thousands)		
ASSETS					
Current assets:					
Cash and cash equivalents	$ 39,344	$ —	$ 12,712	$ —	$ 52,056
Accounts receivable, net	50	9,374	10,054	—	19,478
Unbilled receivables	—	16,666	20,638	—	37,304
Inventories	—	8,686	5,822	—	14,508
Prepaid expenses and other current assets	2,427	769	4,447	—	7,643
Total current assets	41,821	35,495	53,673	—	130,989
Deferred income tax asset	1,264	—	489	—	1,753
Property, plant, equipment and seismic rental equipment, net	511	7,170	44,472	—	52,153
Multi-client data library, net	—	62,438	26,862	—	89,300
Investment in subsidiaries	693,679	321,934	—	(1,015,613)	—
Goodwill	—	—	24,089	—	24,089
Intangible assets, net	—	1,666	—	—	1,666
Intercompany receivables	—	132,184	90,227	(222,411)	—
Other assets	686	145	288	—	1,119
Total assets	$ 737,961	$ 561,032	$240,100	$(1,238,024)	$ 301,069
LIABILITIES AND EQUITY					
Current liabilities:					
Current maturities of long-term debt	$ 39,774	$ 250	$ —	$ —	$ 40,024
Accounts payable	1,774	20,982	2,195	—	24,951
Accrued expenses	12,284	15,601	10,812	—	38,697
Accrued multi-client data library royalties	—	26,824	211	—	27,035
Deferred revenue	—	3,201	5,709	—	8,910
Total current liabilities	53,832	66,858	18,927	—	139,617
Long-term debt, net of current maturities	116,691	29	—	—	116,720
Intercompany payables	537,417	—	—	(537,417)	—
Other long-term liabilities	454	6,084	7,388	—	13,926
Total liabilities	708,394	72,971	26,315	(537,417)	270,263
Equity:					
Common stock	120	290,460	49,394	(339,854)	120
Additional paid-in capital	903,247	180,701	202,290	(382,991)	903,247
Accumulated earnings (deficit)	(854,921)	248,770	59,307	(308,077)	(854,921)
Accumulated other comprehensive income (loss)	(18,879)	4,372	(19,681)	15,309	(18,879)
Due from ION Geophysical Corporation	—	(236,242)	(78,764)	315,006	—
Total stockholders' equity	29,567	488,061	212,546	(700,607)	29,567
Noncontrolling interests	—	—	1,239	—	1,239
Total equity	29,567	488,061	213,785	(700,607)	30,806
Total liabilities and equity	$ 737,961	$ 561,032	$240,100	$(1,238,024)	$ 301,069

Balance Sheet	December 31, 2016				
	ION Geophysical Corporation	The Guarantors	All Other Subsidiaries	Consolidating Adjustments	Total Consolidated
			(In thousands)		
ASSETS					
Current assets:					
Cash and cash equivalents	$ 23,042	$ —	$ 29,610	$ —	$ 52,652
Accounts receivable, net	—	12,775	7,995	—	20,770
Unbilled receivables	—	5,275	8,140	—	13,415
Inventories	—	8,610	6,631	—	15,241
Prepaid expenses and other current assets	3,387	4,624	1,548	—	9,559
Total current assets	26,429	31,284	53,924	—	111,637
Property, plant, equipment and seismic rental equipment, net	1,745	12,369	53,374	—	67,488
Multi-client data library, net	—	97,369	8,566	—	105,935
Investment in subsidiaries	660,880	257,732	—	(918,612)	—
Goodwill	—	—	22,208	—	22,208
Intangible assets, net	—	3,008	95	—	3,103
Intercompany receivables	—	—	32,174	(32,174)	—
Other assets	2,469	145	231	—	2,845
Total assets	$ 691,523	$ 401,907	$170,572	$(950,786)	$ 313,216
LIABILITIES AND EQUITY					
Current liabilities:					
Current maturities of long-term debt	$ 11,281	$ 3,166	$ 134	$ —	$ 14,581
Accounts payable	2,101	19,720	5,068	—	26,889
Accrued expenses	8,579	10,016	7,645	—	26,240
Accrued multi-client data library royalties	—	23,663	—	—	23,663
Deferred revenue	—	2,667	1,042	—	3,709
Total current liabilities	21,961	59,232	13,889	—	95,082
Long-term debt, net of current maturities	143,930	279	—	—	144,209
Intercompany payables	472,276	10,155	—	(482,431)	—
Other long-term liabilities	467	12,117	7,943	—	20,527
Total liabilities	638,634	81,783	21,832	(482,431)	259,818
Equity:					
Common stock	118	290,460	19,138	(309,598)	118
Additional paid-in capital	899,198	180,700	232,590	(413,290)	899,198
Accumulated earnings (deficit)	(824,679)	216,730	(3,639)	(213,091)	(824,679)
Accumulated other comprehensive income (loss)	(21,748)	4,420	(21,787)	17,367	(21,748)
Due from ION Geophysical Corporation	—	(372,186)	(78,071)	450,257	—
Treasury stock	—				—
Total stockholders' equity	52,889	320,124	148,231	(468,355)	52,889
Noncontrolling interests	—	—	509	—	509
Total equity	52,889	320,124	148,740	(468,355)	53,398
Total liabilities and equity	$ 691,523	$ 401,907	$170,572	$(950,786)	$ 313,216

Income Statement	Year Ended December 31, 2017				
	ION Geophysical Corporation	The Guarantors	All Other Subsidiaries	Consolidating Adjustments	Total Consolidated
			(In thousands)		
Total net revenues	$ —	$ 77,054	$120,500	$ —	$197,554
Cost of goods sold	—	80,427	41,488	—	121,915
Gross profit (loss)	—	(3,373)	79,012	—	75,639
Total operating expenses	39,000	27,950	17,388	—	84,338
Income (loss) from operations	(39,000)	(31,323)	61,624	—	(8,699)
Interest expense, net	(16,729)	(107)	127	—	(16,709)
Intercompany interest, net	1,084	(6,613)	5,529	—	—
Equity in earnings (losses) of investments	27,696	67,290	—	(94,986)	—
Other income (expense)	(4,610)	(382)	1,047	—	(3,945)
Income (loss) before income taxes	(31,559)	28,865	68,327	(94,986)	(29,353)
Income tax expense (benefit)	(1,317)	(3,175)	4,516	—	24
Net income (loss)	(30,242)	32,040	63,811	(94,986)	(29,377)
Net income attributable to noncontrolling interests	—	—	(865)	—	(865)
Net income (loss) attributable to ION	$(30,242)	$ 32,040	$ 62,946	$(94,986)	$(30,242)
Comprehensive net income (loss)	$(27,373)	$ 31,992	$ 65,916	$(97,043)	$(26,508)
Comprehensive income attributable to noncontrolling interest	—	—	(865)	—	(865)
Comprehensive net income (loss) attributable to ION	$(27,373)	$ 31,992	$ 65,051	$(97,043)	$(27,373)

Income Statement	Year Ended December 31, 2016				
	ION Geophysical Corporation	The Guarantors	All Other Subsidiaries	Consolidating Adjustments	Total Consolidated
			(In thousands)		
Total net revenues	$ —	$ 79,006	$93,802	$ —	$172,808
Cost of goods sold	—	84,373	52,403	—	136,776
Gross profit (loss)	—	(5,367)	41,399	—	36,032
Total operating expenses	31,438	27,274	20,491	—	79,203
Income (loss) from operations	(31,438)	(32,641)	20,908	—	(43,171)
Interest expense, net	(18,406)	(173)	94	—	(18,485)
Intercompany interest, net	978	(4,397)	3,419	—	—
Equity in earnings (losses) of investments	(19,756)	23,368	—	(3,612)	—
Other income (expense)	3,528	702	(2,880)	—	1,350
Income (loss) before income taxes	(65,094)	(13,141)	21,541	(3,612)	(60,306)
Income tax expense	54	1,337	3,030	—	4,421
Net income (loss)	(65,148)	(14,478)	18,511	(3,612)	(64,727)
Net income attributable to noncontrolling interests	—	—	(421)	—	(421)
Net income (loss) attributable to ION	$(65,148)	$(14,478)	$18,090	$(3,612)	$(65,148)
Comprehensive net income (loss)	$(72,331)	$(14,478)	$10,907	$ 4,208	$(71,694)
Comprehensive loss attributable to noncontrolling interest	—	—	(421)	—	(421)
Comprehensive net income (loss) attributable to ION	$(72,331)	$(14,478)	$10,486	$ 4,208	$(72,115)

Income Statement	ION Geophysical Corporation	The Guarantors	All Other Subsidiaries	Consolidating Adjustments	Total Consolidated
	Year Ended December 31, 2015				
			(In thousands)		
Total net revenues	$ —	$145,615	$ 76,954	$ (1,056)	$ 221,513
Cost of goods sold	—	126,176	88,390	(1,056)	213,510
Gross profit (loss)	—	19,439	(11,436)	—	8,003
Total operating expenses	26,091	47,579	34,965	—	108,635
Loss from operations	(26,091)	(28,140)	(46,401)	—	(100,632)
Interest expense, net	(18,434)	(351)	32	—	(18,753)
Intercompany interest, net	697	(3,140)	2,443	—	—
Equity in earnings (losses) of investments	16,604	(42,953)	—	26,349	—
Other income (expense)	192	101,978	(3,895)	—	98,275
Income (loss) before income taxes	(27,032)	27,394	(47,821)	26,349	(21,110)
Income tax expense (benefit)	(1,910)	5,031	923	—	4,044
Net income (loss)	(25,122)	22,363	(48,744)	26,349	(25,154)
Net loss attributable to noncontrolling interests	—	—	32	—	32
Net income (loss) attributable to ION	$(25,122)	$ 22,363	$(48,712)	$26,349	$ (25,122)
Comprehensive net income (loss)	$(27,096)	$ 20,553	$(50,551)	$29,966	$ (27,128)
Comprehensive income attributable to noncontrolling interest	—	—	32	—	32
Comprehensive net income (loss) attributable to ION	$(27,096)	$ 20,553	$(50,519)	$29,966	$ (27,096)

Statement of Cash Flows	Year Ended December 31, 2017			
	ION Geophysical Corporation	The Guarantors	All Other Subsidiaries	Total Consolidated
	(In thousands)			
Cash flows from operating activities:				
Net cash provided by (used in) operating activities	$(21,897)	$ 61,390	$(11,463)	$ 28,030
Cash flows from investing activities:				
Investment in multi-client data library	—	(11,797)	(11,913)	(23,710)
Purchase of property, plant, equipment and seismic rental equipment	(165)	(817)	(81)	(1,063)
Net cash used in investing activities	(165)	(12,614)	(11,994)	(24,773)
Cash flows from financing activities:				
Payments on notes payable and long-term debt	(1,591)	(3,167)	(58)	(4,816)
Cost associated with issuance of debt	(53)	—	—	(53)
Intercompany lending	38,732	(45,609)	6,877	—
Proceeds from employee stock purchases and exercise of stock options	1,619	—	—	1,619
Dividend payment to non-controlling interest	(100)	—	—	(100)
Other financing activities	(243)	—	—	(243)
Net cash provided by (used in) financing activities	38,364	(48,776)	6,819	(3,593)
Effect of change in foreign currency exchange rates on cash and cash equivalents	—	—	(260)	(260)
Net increase (decrease) in cash and cash equivalents	16,302	—	(16,898)	(596)
Cash and cash equivalents at beginning of period	23,042	—	29,610	52,652
Cash and cash equivalents at end of period	$ 39,344	$ —	$ 12,712	$ 52,056

Statement of Cash Flows	ION Geophysical Corporation	The Guarantors	All Other Subsidiaries	Total Consolidated
	Year Ended December 31, 2016			
	(In thousands)			
Cash flows from operating activities:				
Net cash provided by (used in) operating activities	$(30,154)	$ 52,385	$(20,660)	$ 1,571
Cash flows from investing activities:				
Investment in multi-client data library	—	(10,985)	(3,899)	(14,884)
Purchase of property, plant, equipment and seismic rental equipment	(73)	(343)	(1,072)	(1,488)
Proceeds from sale of a cost-method investment	2,698	—	—	2,698
Other investing activities	—	30	—	30
Net cash provided by (used in) investing activities	2,625	(11,298)	(4,971)	(13,644)
Cash flows from financing activities:				
Borrowings under revolving line of credit	15,000	—	—	15,000
Repayments under revolving line of credit	(5,000)	—	—	(5,000)
Payments on notes payable and long-term debt	(2,070)	(6,316)	(248)	(8,634)
Cost associated with issuance of debt	(6,744)	—	—	(6,744)
Repurchase of common stock	(964)	—	—	(964)
Intercompany lending	31,867	(34,771)	2,904	—
Payments to repurchase bonds	(15,000)	—	—	(15,000)
Other financing activities	(252)	—	—	(252)
Net cash provided by (used in) financing activities	16,837	(41,087)	2,656	(21,594)
Effect of change in foreign currency exchange rates on cash and cash equivalents	—	—	1,386	1,386
Net decrease in cash and cash equivalents	(10,692)	—	(21,589)	(32,281)
Cash and cash equivalents at beginning of period	33,734	—	51,199	84,933
Cash and cash equivalents at end of period	$ 23,042	$ —	$ 29,610	$ 52,652

Statement of Cash Flows	ION Geophysical Corporation	The Guarantors	All Other Subsidiaries	Total Consolidated
	Year Ended December 31, 2015			
	(In thousands)			
Cash flows from operating activities:				
Net cash provided by (used in) operating activities	$(425,310)	$ 225,581	$ 183,205	$ (16,524)
Cash flows from investing activities:				
Investment in multi-client data library	—	(44,687)	(871)	(45,558)
Purchase of property, plant and equipment	(347)	(3,945)	(14,949)	(19,241)
Other investing activities	—	1,263	—	1,263
Net cash used in investing activities	(347)	(47,369)	(15,820)	(63,536)
Cash flows from financing activities:				
Payments on notes payable and long-term debt	(153)	(6,467)	(832)	(7,452)
Cost associated with issuance of debt	(145)	—	—	(145)
Repurchase of common stock	(1,989)	—	—	(1,989)
Intercompany lending	352,091	(171,745)	(180,346)	—
Other financing activities	73	—	—	73
Net cash provided by (used in) financing activities	349,877	(178,212)	(181,178)	(9,513)
Effect of change in foreign currency exchange rates on cash and cash equivalents	—	—	898	898
Net decrease in cash and cash equivalents	(75,780)	—	(12,895)	(88,675)
Cash and cash equivalents at beginning of period	109,514	—	64,094	173,608
Cash and cash equivalents at end of period	$ 33,734	$ —	$ 51,199	$ 84,933

SCHEDULE II

ION GEOPHYSICAL CORPORATION AND SUBSIDIARIES

VALUATION AND QUALIFYING ACCOUNTS

Year Ended December 31, 2015	Balance at Beginning of Year	Charged (Credited) to Costs and Expenses	Deductions	Balance at End of Year
		(In thousands)		
Allowances for doubtful accounts	$ 7,633	$ 1,841	$(4,555)	$ 4,919
Allowances for doubtful notes receivable	4,000	—	—	4,000
Valuation allowance on deferred tax assets	205,264	(11,009)	—	194,255
Excess and obsolete inventory	29,804	151	(5,480)	24,475

Year Ended December 31, 2016	Balance at Beginning of Year	Charged (Credited) to Costs and Expenses	Deductions	Balance at End of Year
		(In thousands)		
Allowances for doubtful accounts	$ 4,919	$ 1,834	$(5,310)	$ 1,443
Allowances for doubtful notes receivable	4,000	—	—	4,000
Valuation allowance on deferred tax assets	194,255	23,334	—	217,589
Excess and obsolete inventory	24,475	429	(9,855)	15,049

Year Ended December 31, 2017	Balance at Beginning of Year	Charged (Credited) to Costs and Expenses	Deductions	Balance at End of Year
		(In thousands)		
Allowances for doubtful accounts	$ 1,443	$ 949	$(1,820)	$ 572
Allowances for doubtful notes receivable	4,000	—	—	4,000
Valuation allowance on deferred tax assets	217,589	(64,126)	—	153,463
Excess and obsolete inventory	15,049	398	(408)	15,039

CORPORATE INFORMATION

EXECUTIVE OFFICERS

R. Brian Hanson
President and Chief Executive Officer

Steven A. Bate
Executive Vice President
and Chief Financial Officer

Matthew Powers
Executive Vice President, General Counsel
and Corporate Secretary

Colin T. Hulme
Executive Vice President,
Strategic Marketing and New Technologies,
Chief Executive Officer, OceanGeo B.V.

Christopher T. Usher
Executive Vice President and Chief Operating
Officer, Operations Optimization

Kenneth G. Williamson
Executive Vice President and Chief Operating
Officer, E&P Technology & Services

Lawrence T. Burke
Executive Vice President,
Global Human Resources

BOARD OF DIRECTORS

James M. Lapeyre, Jr.
Chairman of the Board
President, Laitram, L.L.C.

David H. Barr
Former President and Chief Executive Officer,
Logan International Inc.

R. Brian Hanson
President and Chief Executive Officer,
ION Geophysical Corporation

Zheng HuaSheng
Executive Vice President, BGP Inc.,
China National Petroleum Corporation

Michael C. Jennings
Chairman of the Board
HollyFrontier Corporation

Franklin Myers
Senior Advisor
Quantum Energy Partners

S. James Nelson, Jr.
Former Vice Chairman,
Cal Dive International, Inc.
(now Helix Energy Solutions Group, Inc.)

John N. Seitz
Chairman and Chief Executive Officer,
GulfSlope Energy, Inc.

INVESTOR RELATIONS

Stockholders, securities analysts, portfolio managers, or brokers seeking information about the Company are welcome to call Investor Relations at +1 281 933 3339. If you prefer, you may send your requests to the Investor Relations e-mail address: ir@iongeo.com. Recent news releases, financial information, and SEC filings can be downloaded from the Company's website at iongeo.com.

ANNUAL REPORT ON FORM 10-K

ION Geophysical Corporation's Annual Report on Form 10-K for the fiscal year ended December 31, 2017, as amended, which is furnished as part of this Annual Report to Shareholders, is also available upon request without charge from: ION Geophysical Corporation, Attn: Investor Relations, 2105 CityWest Blvd., Suite 100, Houston, Texas 77042-2855.

ANNUAL MEETING

The Annual Meeting of Stockholders of ION Geophysical Corporation will be held at the offices of the Company located at 2105 CityWest Blvd., Suite 100, Houston, Texas, on May 16, 2018, at 10:30 AM CST.

STOCK TRANSFER AGENT

Computershare Investor Services
462 South 4th Street, Suite 1600
Louisville, KY 40202

INDEPENDENT AUDITORS

Grant Thornton LLP
700 Milam St., Suite 300
Houston, TX 77002
832 476 3600

CEO AND CFO CERTIFICATES

The Company has included as Exhibits 31.1 and 31.2 to its Annual Report on Form 10-K/A for the fiscal year ended December 31, 2017, filed with the Securities and Exchange Commission, certificates of the Chief Executive Officer and Chief Financial Officer of the Company certifying the quality of the Company's public disclosure and the Company has submitted to the New York Stock Exchange a certificate of the Chief Executive Officer of the Company certifying that he is not aware of any violation by the Company of the New York Stock Exchange corporate governance listing standards.

FORWARD-LOOKING STATEMENTS

This Annual Report to Stockholders contains or incorporates by reference statements concerning our future results and performance and other matters that are "forward-looking" statements within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. These statements involve known and unknown risks, uncertainties and other factors that may cause our or our industry's results, levels of activity, performance, or achievements to be materially different from any future results, levels of activity, performance, or achievements expressed or implied by such forward-looking statements. In some cases, you can identify forward-looking statements by terminology such as "may," "will," "would," "should," "intend," "expect," "plan," "anticipate," "believe," "estimate," "predict," "potential," or "continue" or the negative of such terms or other comparable terminology. Examples of other forward-looking statements contained or incorporated by reference in this Annual Report to Stockholders include statements regarding any additional damages or adverse rulings in the WesternGeco litigation and future potential adverse effects on our financial results and liquidity; future levels of capital expenditures of our customers for seismic activities; future oil and gas commodity prices; the effects of current and future worldwide economic conditions (particularly in developing countries) and demand for oil and natural gas and seismic equipment and services; future cash needs and availability of cash to fund our operations and pay our obligations; the effects of current and future unrest in the Middle East, North Africa and other regions; the timing of anticipated revenues and the recognition of those revenues for financial accounting purposes; the effects of ongoing and future industry consolidation, including, in particular, the effects of consolidation and vertical integration in the marine towed streamer market; the timing of future revenue realization of anticipated orders for multi-client survey projects and data processing work in our E&P Technology & Services segment; future levels of our capital expenditures; future government regulations, pertaining to the oil and gas industry; expected net revenues, income from operations and net income; expected gross margins for our services and products; future benefits to be derived from our OceanGeo subsidiary; future seismic industry fundamentals, including future demand for seismic services and equipment; future benefits to our customers to be derived from new services and products; future benefits to be derived from our investments in technologies, joint ventures and acquired companies; future growth rates for our services and products; the degree and rate of future market acceptance of our new services and products; expectations regarding E&P companies and seismic contractor end-users purchasing our more technologically-advanced services and products; anticipated timing and success of commercialization and capabilities of services and products under development and start-up costs associated with their development; future opportunities for new products and projected research and development expenses; expected continued compliance with our debt financial covenants; expectations regarding realization of deferred tax assets; expectations regarding the impact of the U.S. Tax Cuts and Jobs Act; anticipated results with respect to certain estimates we make for financial accounting purposes; and compliance with the U.S. Foreign Corrupt Practices Act and other applicable U.S. and foreign laws prohibiting corrupt payments to government officials and other third parties. These forward-looking statements reflect our best judgment about future events and trends based on the information currently available to us. Our results of operations can be affected by inaccurate assumptions we make or by risks and uncertainties known or unknown to us. Therefore, we cannot guarantee the accuracy of the forward-looking statements. Actual events and results of operations may vary materially from our current expectations and assumptions. Information regarding factors that may cause actual results to vary from our expectations, referred to as "risk factors," appears in our Annual Report on Form 10-K , as amended, for the fiscal year ended December 31, 2017 in Part I, Item 1A. "Risk Factors" and in other documents that we file from time to time with the Securities and Exchange Commission.

ION Geophysical Corporation
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Houston, TX 77042 USA
+1 281 933 3339
iongeo.com