



2018 Annual Report



Fracturing Systems

Tracer Diagnostics

Reservoir Strategies

Well Construction



Dear Fellow Stockholders:

Although market conditions were challenging in 2018, especially in the second half of the year, our company achieved overall revenue growth and our employees advanced a number of important projects and initiatives, many of which are described in this letter and annual report. First, I will review our overall full-year results, then each of our geographical markets. After that, I will discuss how we have transformed our company over the past several years and also our transition to a new ERP System, which we implemented in early 2019 after extensive planning and preparation. Finally, I will re-emphasize our commitment to capital discipline and our efforts to continually improve return on invested capital and increase stockholder value.

2018 FULL-YEAR FINANCIAL HIGHLIGHTS

- Revenue of \$227.0 million representing a 13% increase compared to 2017.
- Adjusted EBITDA of \$49.7 million reflecting a 21.9% adjusted EBITDA margin.*
- Adjusted earnings of \$0.20 per diluted share.*
- At December 31, we had \$25.1 million in cash and total debt of \$25.7 million, which included \$20.0 million that was drawn under our U.S. revolving credit facility. We also had up to \$55.0 million in total availability under our revolving credit facilities, bringing our total potential liquidity at December 31 to \$80.1 million.

U.S. HIGHLIGHTS

- Revenue in 2018 of \$103.4 million, a 62% increase over 2017.
- Sequential revenue growth in product sales in each quarter in 2018.
- Over the last 12 months we had 25-30 U.S. customers using our pinpoint fracturing systems with the majority of activity and revenue coming from repeat customers.
- U.S. services revenue grew by 59% compared to 2017, reflecting the investment in our Tracer Diagnostics business.

In the U.S., we continue to pursue market-share growth across our product and service lines, executing our targeted sales initiatives within Fracturing Systems, leveraging the success of the AirLock casing buoyancy system within Well Construction, offering Tracer Diagnostics solutions to help our customers optimize well spacing and control frac hits, and delivering the operational and safety benefits of our exclusive PurpleSeal Express system, which integrates our composite frac plug with the disposable setting tool.

CANADA HIGHLIGHTS

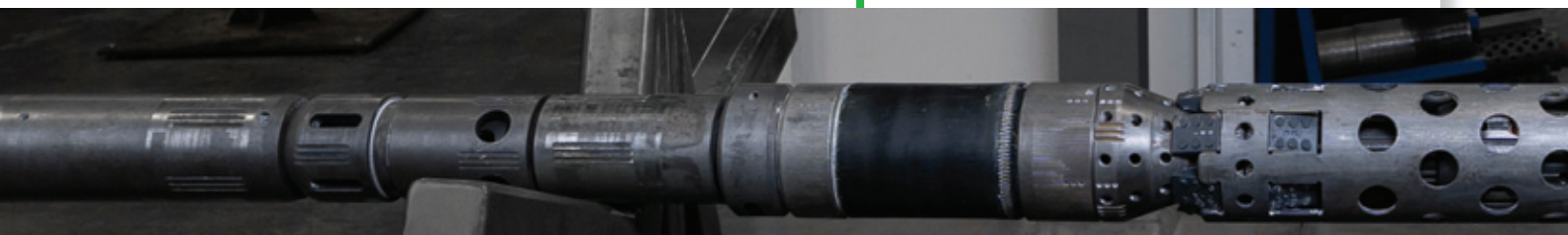
Revenue for the year of \$109.5 million was 14% lower than in 2017, as a result of a challenging Canadian market environment. Despite the challenging environment, we remain committed to growing our presence in Canada over the long-term. During 2018, we invested in our Canadian business by opening a new tracer laboratory in Calgary, enabling our Tracer Diagnostics business to win additional work, including the largest, multi-well pad tracing job in our history. We also completed the build-out of our new Technology Center, and our engineering staff and support personnel moved in on January 2, 2019.

In response to the current market conditions in Canada, we are pursuing the following initiatives, which we believe will allow us to maintain our market share and leverage our market presence.

- Within Fracturing Systems, pricing initiatives, along with our strong track record and operational excellence have enabled us to win back business from customers that have trialed competing systems.
- Within Well Construction, our new, dedicated sales effort is resulting in higher sales of our AirLock casing buoyancy system and liner hangers.
- We successfully introduced our PurpleSeal composite frac plugs to the Canadian market in 2019.
- We also began field trials of our new, lower cost sleeves for high-pressure markets. We are on track to have the sleeves and isolation assemblies for this family of products ready for commercialization in the second half of 2019.

World Record Completion

In September 2018, this NCS Multistage frac-isolation assembly successfully located and shifted all 227 sleeves in a well in the Montney formation with a single coiled-tubing trip, breaking our previous world record of 168 sleeves. After placing 18.1 million lb of sand, the multi-set bridge plug, slips, and sleeve locator looked almost new at the end of the job, a testament to the robustness and durability of our industry-leading technology.



INTERNATIONAL HIGHLIGHTS

- Year-over-year revenue growth of 43%.
- In the North Sea, we installed sleeves and completed wells offshore for the first time in our company's history.
- We introduced our Tracer Diagnostics services into Argentina and expect to expand into other countries in 2019.
- We began working with a dedicated sales representative in the Middle East and expect to gain our first work in that region in 2019.

A MORE BALANCED BUSINESS

I want to emphasize that we have transformed the company over the last two years. In addition to growing our Fracturing Systems business, we established Repeat Precision and acquired Spectrum Tracer Services, both of which expanded our addressable market, more than doubled our customer base, and reduced our exposure to any single product, service, or geographic market. More than 50% of our revenue in 2018 came from the U.S. and from markets outside of North America, reducing our historical dependence on the Canadian market.

NCS is positioned to leverage our portfolio of products and services to help customers reduce costs and improve their well productivity and return on capital.

- Within Fracturing Systems, we continue to be the worldwide leader in pinpoint completions, having surpassed 10,000 cumulative wells completed through the end of 2018.
- We are the second-largest provider of chemical and radioactive Tracer Diagnostics services in North America, and we are continuing to enter select international markets.
- Our Well Construction offering is anchored by our AirLock casing buoyancy system. We surpassed 6,500 cumulative successful AirLock system installations through the end of

2018 and are leveraging that success to pursue additional revenue opportunities for our liner hanger system, toe sleeves, and other Well Construction products.

- Repeat Precision continues to grow as we demonstrate the performance of our composite plug and as customers experience the operational and safety benefits of the PurpleSeal Express system.

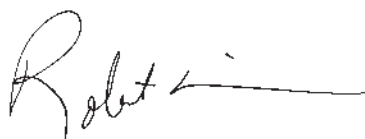
A NEW ERP SYSTEM

A major internal project throughout 2018 was the preparation for transitioning to a new ERP system, with the full changeover occurring at the beginning of 2019. A broad-based team at NCS worked tirelessly to prepare for the implementation. We believe the new ERP system will give our managers better and more timely views into financial and operational metrics, which will support decision-making, improve our working capital management, and better facilitate future development of our business.

FOCUS ON FREE CASH FLOW AND RETURNS

We strive to balance the investments required to drive revenue growth with a capital light business model that can generate free cash flow. The investments that we have made over the past several years, including our Repeat Precision joint venture and Spectrum acquisition provide us with multiple long-term opportunities for capital-efficient growth across our global footprint. We expect to significantly reduce our capital expenditures in 2019 as compared to 2018, which will allow us to generate more free cash flow*, further enhancing our strong balance sheet. Through disciplined growth and free cash flow* generation, we strive to continue to improve our return on invested capital and create value for our stockholders.

On behalf of our entire management team and board of directors, I would like to personally thank our stockholders, customers, and vendors, as well as our 400-plus employees around the globe, whose steady focus and diligent efforts allowed us to achieve amazing results in spite of the challenging market in the past year.



Robert Nipper
Chief Executive Officer

*Adjusted EBITDA, adjusted earnings per diluted share and free cash flow are "non-GAAP financial measures." For an explanation of why we believe these financial measures are meaningful and reconciliations of these measures to net loss, (which was (203.6) million in 2018, or \$(4.51) per diluted share), the most directly comparable measures under generally accepted accounting principles, see the press release announcing our fourth quarter results filed as an exhibit to the Form 8-K on March 7, 2019 and "Item 6. Selected Financial Data" on page 38 and "Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations—Liquidity and Capital Resources—Cash Flows and Free Cash Flow" on page 49 of the Form 10-K included herewith.



NEW TECHNOLOGY CENTER

A World-Class Technology Resource

A major accomplishment in 2018 was completing the build-out of our world-class NCS Multistage Technology Center (front cover). Shown here is a portion of the 15,000-sq-ft test shop. The five custom-engineered, reinforced test cells have an energy-containment rating of 150 kilojoules and safely accommodate tests involving pressures to 20,000 psi. All cells are 12 ft wide by 10 ft high and vary in depth from 4 ft to 32 ft. Advanced data acquisition systems and video networks allow tests to be controlled and monitored remotely by our engineers and customer personnel. The Technology Center also has offices and facilities for our entire product engineering group and support staff.



Setting up in a Test Cell

This 20-ft by 12-ft test cell accommodates a test fixture that will be used to study the performance of dissolvable materials in various fluid environments under tightly controlled pressures and temperatures.



UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 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, 2018

or

TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934
For the transition period from _____ to _____

Commission file number: 001-38071

NCS Multistage Holdings, Inc.

(Exact name of registrant as specified in its charter)

Delaware

(State or other jurisdiction of
incorporation or organization)

46-1527455

(IRS Employer
Identification number)

19450 State Highway 249, Suite 200

Houston, Texas

(Address of principal executive offices)

77070

(Zip Code)

Registrant's telephone number, including area code: (281) 453-2222

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

Title of each class

Common Stock, \$0.01 par value

Name of each exchange on which registered

NASDAQ Global Select Market

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 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 every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes No

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K (§ 229.405 of this chapter) 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.

Large accelerated filer

Non-accelerated filer

Accelerated filer

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, 2018, the aggregate market value of the common stock of the registrant held by non-affiliates of the registrant was approximately \$173.2 million (based on the closing sale price of the registrant's common stock on that date).

As of March 6, 2019, there were 46,669,205 shares of common stock outstanding.

Portions of the definitive proxy statement for the registrant's 2019 Annual Meeting of Stockholders are incorporated by reference in Part III of this Form 10-K. Such proxy statement will be filed with the Securities and Exchange Commission not later than 120 days after December 31, 2018.

TABLE OF CONTENTS

	Page
<u>PART I</u>	
Item 1. <u>Business</u>	5
Item 1A. <u>Risk Factors</u>	12
Item 1B. <u>Unresolved Staff Comments</u>	31
Item 2. <u>Properties</u>	31
Item 3. <u>Legal Proceedings</u>	32
Item 4. <u>Mine Safety Disclosures</u>	32
<u>PART II</u>	
Item 5. <u>Market for Registrant’s Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities</u>	33
Item 6. <u>Selected Financial Data</u>	35
Item 7. <u>Management’s Discussion and Analysis of Financial Condition and Results of Operations</u>	37
Item 7A. <u>Quantitative and Qualitative Disclosures About Market Risk</u>	55
Item 8. <u>Financial Statements and Supplementary Data</u>	56
Item 9. <u>Changes in and Disagreements With Accountants on Accounting and Financial Disclosure</u>	88
Item 9A. <u>Controls and Procedures</u>	88
Item 9B. <u>Other Information</u>	88
<u>PART III</u>	
Item 10. <u>Directors, Executive Officers and Corporate Governance</u>	89
Item 11. <u>Executive Compensation</u>	89
Item 12. <u>Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters</u>	89
Item 13. <u>Certain Relationships and Related Transactions, and Director Independence</u>	89
Item 14. <u>Principal Accounting Fees and Services</u>	89
<u>PART IV</u>	
Item 15. <u>Exhibits, Financial Statement Schedules</u>	90
Item 16. <u>Form 10-K Summary</u>	92
<u>Signatures</u>	93

CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

This Annual Report on Form 10-K (this “Form 10-K”) includes certain forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. Forward-looking statements can be identified by words such as “anticipates,” “intends,” “plans,” “seeks,” “believes,” “estimates,” “expects” and similar references to future periods, or by the inclusion of forecasts or projections. Examples of forward-looking statements include, but are not limited to, statements we make regarding the outlook for our future business and financial performance, such as those contained in Item 7. “Management’s Discussion and Analysis of Financial Condition and Results of Operations.”

Forward-looking statements are based on our current expectations and assumptions regarding our business, the economy and other future conditions. Because forward-looking statements relate to the future, by their nature, they are subject to inherent uncertainties, risks and changes in circumstances that are difficult to predict. As a result, our actual results may differ materially from those contemplated by the forward-looking statements. Important factors that could cause our actual results to differ materially from those in the forward-looking statements include regional, national or global political, economic, business, competitive, market and regulatory conditions and the following:

- declines in the level of oil and natural gas exploration and production (“E&P”) activity within Canada and the United States;
- oil and natural gas price fluctuations;
- loss of significant customers;
- inability to successfully implement our strategy of increasing sales of products and services into the United States;
- significant competition for our products and services;
- our inability to accurately predict customer demand;
- impairment in the carrying value of long-lived assets and goodwill;
- our inability to successfully develop and implement new technologies, products and services;
- our inability to protect and maintain critical intellectual property assets;
- currency exchange rate fluctuations;
- losses and liabilities from uninsured or underinsured business activities;
- our failure to identify and consummate potential acquisitions;
- our inability to integrate or realize the expected benefits from acquisitions;
- impact of severe weather conditions;
- restrictions on the availability of our customers to obtain water essential to the drilling and hydraulic fracturing processes;
- our inability to meet regulatory requirements for use of certain chemicals by our tracer diagnostics business;
- change in trade policy, including the impact of additional tariffs;
- changes in legislation or regulation governing the oil and natural gas industry, including restrictions on emissions of greenhouse gases (“GHGs”);
- failure to comply with or changes to federal, state and local and non-U.S. laws and other regulations, including environmental regulations and the U.S. Tax Cuts and Jobs Act of 2017 (the “2017 Tax Act”);
- loss of our information and computer systems;
- system interruptions or failures, including cyber-security breaches, identity theft or other disruptions that could compromise our information;
- our failure to establish and maintain effective internal control over financial reporting;
- complications with the design and implementation of our new enterprise resource planning system;
- our success in attracting and retaining qualified employees and key personnel; and
- our inability to satisfy technical requirements and other specifications under contracts and contract tenders.

See Item 1A. “Risk Factors” and Item 7. “Management’s Discussion and Analysis of Financial Condition and Results of Operations” of this Form 10-K for a further description of these and other factors that could cause actual results to differ materially from those in the forward-looking statements. For the reasons described above, we caution you against relying on any forward-looking

statements, which should also be read in conjunction with the other cautionary statements that are included elsewhere in this Form 10-K. Any forward-looking statement made by us in this Form 10-K speaks only as of the date on which we make it. Factors or events that could cause our actual results to differ may emerge from time to time, and it is not possible for us to predict all of them. We undertake no obligation to publicly update or revise any forward-looking statement, whether as a result of new information, future developments or otherwise, except as may be required by law.

Trademarks and Trade Names

We own or have the rights to use various trademarks, service marks and trade names referred to in this Form 10-K, including, among others, AirLock, GripShift, MultiCycle, OST and NCS Multistage and NCS and their respective logos. Solely for convenience, we refer to trademarks, service marks and trade names in this Form 10-K without the TM, SM and ® symbols. Such references are not intended to indicate, in any way, that we will not assert, to the fullest extent permitted by law, our rights to our trademarks, service marks and trade names. Other trademarks, service marks or trade names appearing in this Form 10-K are the property of their respective owners.

Available information

Our website address is www.ncsmultistage.com. Information that we furnish to or file with the Securities and Exchange Commission (the “SEC”), including our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K, proxy statements, and any amendments to, or exhibits included in, those reports or statements are available for download, free of charge, on our website as soon as reasonably practicable after such materials are filed with or furnished to the SEC. From time to time, we also post announcements, updates, events, investor information and presentations on our website at <http://ir.ncsmultistage.com> in addition to copies of all recent press releases as means of disclosing material non-public information and for complying with our disclosure obligations under Regulation FD. Reports and statements that we file with or furnish to the SEC, including related exhibits, are also available on the SEC’s website at www.sec.gov. The contents of the websites referred to above are not incorporated into this filing. References to the URLs for these websites are intended to be inactive textual references only.

PART I

Item 1. Business

Overview

NCS Multistage Holdings, Inc. (“NCS,” the “Company,” “we,” “our” or “us”) is a leading provider of highly engineered products and support services that facilitate the optimization of oil and natural gas well completions and field development strategies. We provide our products and services primarily to E&P companies for use in onshore wells, predominantly wells that have been drilled with horizontal laterals in unconventional oil and natural gas formations. Our products and services are utilized in oil and natural gas basins throughout North America and in selected international markets, including Argentina, China, Russia and the North Sea. Our extensive research and development efforts are influenced and driven by the needs of our customers, allowing us to introduce innovative and commercial solutions that improve customer efficiency and profitability. We provided our products and services to over 310 customers in 2018, including leading large independent oil and natural gas companies and major oil companies.

Our primary offering is our fracturing systems products and services, which enable efficient pinpoint stimulation: the process of individually stimulating each entry point into a formation targeted by an oil or natural gas well. Our fracturing systems products and services are typically utilized in cemented wellbores and enable our customers to precisely place stimulation treatments in a more controlled and repeatable manner as compared with traditional completion techniques. Fracturing systems products and services include our casing-installed sliding sleeves and downhole frac isolation assembly. Customers typically purchase our casing-installed sliding sleeves, a consumable product that is cemented at intervals into the casing of the wellbore, and can also utilize services associated with our downhole frac isolation assembly, where our personnel supervise the use of the downhole frac isolation assembly during completion operations. We began providing pinpoint stimulation products and services in 2006, and since then our technology has been used in the completion of more than 10,000 wells comprising over 230,000 individual frac stages. Our fracturing systems products and services are utilized in conjunction with third-party providers of pressure pumping, coiled tubing and other services.

In addition to fracturing systems, we sell products for well construction, including our AirLock casing buoyancy system, liner hanger systems and toe initiation sleeves. Our customers utilize these products to safely and efficiently install casing and production liners, facilitate cementing operations and initiate a flow path into the formation at the commencement of stimulation operations.

We also provide tracer diagnostics services for well completion and reservoir characterization that utilize downhole chemical and radioactive tracers. Our customers utilize these services to better characterize their assets and to optimize completion designs. Chemical and radioactive tracer studies may provide a cost-effective and reliable means to determine the production profile along a lateral, assess fluid and proppant communication between wells during completions and determine stage and cluster level efficiency of completion designs.

We complement our proprietary products and services with our in-house reservoir strategies expertise, encompassing completions engineering, reservoir engineering and geology. These capabilities allow us to engage with our customers on well completion design and well spacing decisions, thereby supporting our customers’ completion optimization strategies and building lasting relationships.

We own a 50% controlling interest in a joint venture, Repeat Precision, LLC (“Repeat Precision”), which provides high-quality machining services for NCS products and markets composite frac plugs and related products directly to customers.

Our revenue for the years ended December 31, 2018, 2017 and 2016, was \$227.0 million, \$201.6 million and \$98.5 million, respectively. Our net income (loss) attributable to NCS Multistage Holdings, Inc. for the years ended December 31, 2018, 2017 and 2016, was \$(190.3) million, \$2.1 million and \$(17.9) million, respectively. Our total assets for the years ended December 31, 2018, 2017 and 2016, were \$229.7 million, \$463.9 million and \$326.8 million, respectively. For additional financial information by geographic area, see “Note 16. Segment and Geographic Information” of our consolidated financial statements.

Business Strategy

Our business strategy is to increase the adoption of our products and services in all geographies, continue to be an innovator of technology and create value for our stockholders. We intend to achieve these objectives by (i) pursuing disciplined organic growth through increasing market adoption of our products and services in the United States, Canada and in select international markets, (ii) developing and introducing innovative technologies that are aligned with customer needs, (iii) maintaining financial strength and flexibility and (iv) selectively pursuing complementary acquisitions and joint ventures.

Through implementing this strategy, including the investment in Repeat Precision and the acquisition of Spectrum Tracer Services, LLC (“Spectrum”) in 2017, we have diversified our revenue base, which has in part contributed to a reduction in the percentage of revenue derived from the Canadian market from 71% in 2016 to 48% in 2018. In addition, in 2018 approximately 60%

of our revenue was derived from fracturing systems products and services and more than 10% of our revenue was derived from each of our well construction products, tracer diagnostics services and Repeat Precision. This represents a more balanced portfolio, serving a larger addressable market than in 2016, when over 90% of our revenue was derived from fracturing services products and services, with the remainder from well construction products.

Products and Services

We provide highly engineered products and support services that facilitate the optimization of oil and natural gas well completions and field development strategies. Our key products and services include:

- **Fracturing Systems.** Our fracturing systems products and services encompasses our technology developed to enable efficient pinpoint stimulation and re-stimulation strategies. Pinpoint stimulation is the process of individually stimulating each entry point into a formation targeted by an oil or natural gas well, a process that we believe improves on traditional completion techniques. Our pinpoint stimulation solutions and refined field processes are designed to enable efficient, controlled, verifiable and repeatable completions.

Our fracturing systems products and services are comprised of our casing-installed sliding sleeves and our downhole frac isolation assemblies, which are deployed using coiled tubing. Our services include advising customers on optimizing completion designs and operating the downhole frac isolation assemblies.

- **Casing-installed sliding sleeves.** Our casing-installed sliding sleeves are a consumable product, sold to our customers and cemented in place in a well's casing. Over 175,000 of our casing-installed sliding sleeves have been installed. We produce two primary models of sliding sleeves: our GripShift sliding sleeves, which can be opened only once, and our MultiCycle sliding sleeves, introduced in late 2013, which can be opened and closed multiple times throughout the life of a well giving our customers the benefit of additional completion options and the ability to better optimize a well's production phase. Our casing-installed sliding sleeves can be utilized in both cemented and open-hole wellbores, with no practical limitation on the number of stages that can be installed in a well, and feature an inner-diameter which is the same as the casing in the wellbore. During completion operations, the downhole frac isolation assembly is placed in the sleeve and the inner barrel of the sleeve is shifted down, exposing the frac ports to the formation, allowing the completion of that stage to begin.
- **Downhole frac isolation assembly.** Our proprietary downhole frac isolation assembly is comprised of several subcomponents, including a resettable bridge plug for stage isolation, a sleeve locator to efficiently locate our sliding sleeves in the wellbore, an abrasive perforating sub that can perforate the casing where our sliding sleeves are not installed and gauge packages that can measure and record downhole data. The assembly, which is attached to a third-party's coiled tubing reel, is primarily used to locate our sliding sleeves, to establish wellbore isolation and to shift our sliding sleeves open or closed. In addition, gauges within the downhole frac isolation assembly record downhole pressure and temperature data, which can be utilized to optimize the design of future completions. Further, because our downhole frac isolation assembly is deployed on coiled tubing, our customers have access to real-time downhole pressure measurements which can be used to adjust strategies during a well completion. We typically own the assemblies and utilize them in our service to our customers. Our personnel operate the assemblies during completion operations in coordination with other on-site service providers.
- **Sand jet perforating.** Our sand jet perforating technology uses a variation of the downhole frac isolation assembly utilized for shifting sleeves. Sand jet perforating is typically used with cemented wellbores. To cut access points into the formation, sand-laden fluid is pumped down the coiled tubing and through tungsten-carbide nozzles. The high-velocity slurry cuts through the casing and cement and into the formation. The tunnels created through this process serve as initiation points for stimulation. Stimulation treatments are pumped down the annulus between the coiled tubing and the casing. Although the sand jet perforating process requires more time per stage than using sliding sleeves, it provides a practical option for pinpoint stimulation in wells that are already cased, as in the case of drilled, but uncompleted wells.
- **SpotFrac system.** Our SpotFrac system provides a means to straddle and mechanically isolate producing zones for targeted refracturing applications. The system includes a sand jet perforating assembly, enabling additional stages to be added if desired, and can perforate, isolate and stimulate multiple stages in a single trip.
- **BallShift sleeves.** Our BallShift sliding sleeves can be cemented in place and are activated by pumping a ball from surface that lands on seats in the sleeves, providing pinpoint stimulation. In some instances, the BallShift sleeves will be utilized together with our coiled-tubing deployed technology in a hybrid application to increase the amount of stages that can be run in extended reach applications, with the BallShift sleeves installed at the toe of such wells.

- **Well Construction.** Our well construction products are designed to allow our customers to safely and efficiently install casing and production liners, facilitate cementing operations and initiate a flow path into the formation at the commencement of stimulation operations. Our well construction products include:
 - **AirLock casing buoyancy system.** Our AirLock casing buoyancy system facilitates landing casing strings in horizontal wells without altering a customer's preferred casing and cementing operations. The AirLock system, which is installed with a well's casing, allows the vertical casing section to be filled with fluid, while the lateral section remains air-filled and buoyant. The enhanced buoyancy significantly reduces sliding friction, while the enhanced weight of the vertical section provides the force needed to push the casing to the toe of the well, ensuring the casing reaches the desired depth and reducing casing running time and cost. Our AirLock system consists of two components that are made up in the casing string during run-in: a debris-trap and a seal collar. The debris-trap is installed in a casing connection just above the float shoe and the seal collar is installed at the bottom-most point of the vertical portion of the wellbore. The seal collar contains a breakable seal that locks air in the lower section of casing while the upper section is run and filled with fluid. After the casing is landed, surface pressure is increased to fragment the seal at a predetermined pressure, leaving an unrestricted casing bore, while seal fragments are collected by the debris trap, facilitating cementing operations.
 - **Liner hanger systems.** Introduced in late 2014, our proprietary liner hanger systems are specifically designed to perform in complex horizontal wells and are fully compatible with our fracturing systems products. The liner hanger is used to distribute the loads and weight of the liner to the supporting casing.
 - **Toe initiation sleeves.** Our toe initiation sleeves are designed to provide initial formation access for multistage completions. After shifting open the toe initiation sleeve, a customer can perform a casing integrity test, a pre-frac injection fall-off test, flush the wellbore to facilitate the pumping of completion tools to the toe of the well or execute the first fracturing stage for the well.
- **Reservoir Strategies.** Our specialized team of engineering consultants advises customers on optimized completion designs and field development strategies and evaluates well performance. Our in-house engineers help us strengthen our relationships with our customers and demonstrate the benefits of our fracturing systems products and services as compared to traditional completion techniques.
- **Tracer Services.** We provide chemical and radioactive tracer diagnostics technologies used by E&P companies to assess completion performance, evaluate well production, and optimize field development strategies. Our fracture fluid identifier tracers, oil-soluble tracers ("OSTs") and natural gas tracers enable efficient, cost-effective downhole diagnostics, providing E&P companies with critical data to better optimize reservoir development and production.
- **Repeat Precision.** We own a 50% interest in Repeat Precision. Repeat Precision provides high-quality machining services for certain NCS products and markets high-performance composite plugs and related products directly to customers.

Business History

We were incorporated in Delaware on November 28, 2012, under the name "Pioneer Super Holdings, Inc." On December 13, 2016, we changed our name to "NCS Multistage Holdings, Inc." On May 3, 2017, we completed the initial public offering ("IPO") of our common stock.

Intellectual Property and Patent Protection

We have dedicated resources toward the development of new technology and products designed to enhance the safety and efficiency of well construction and completions processes. Our sales and earnings are influenced by our ability to successfully introduce new or improved products to the market. Our MultiCycle sliding sleeves, downhole frac isolation assembly and other equipment involve a high degree of proprietary technology developed over several years, some of which is protected by patents.

We hold 20 U.S. utility patents and 20 related international utility patents that relate to our Airlock casing buoyancy system, OSTs, casing installed sliding sleeves, frac isolation assemblies, and the methods utilized in the provision of our services. Our U.S. utility patents expire between 2030 and 2036. Our international utility patents expire between 2025 and 2036.

We also have a number of U.S. and international patent applications pending. Some of these patent applications cover equipment and methods which are currently in development. The applications are in various stages of the patent prosecution process and patents may not issue on such applications in any jurisdiction for some time, if they issue at all.

We believe that our patents have historically been important in enabling us to compete in the market to supply our customers with our products and services. We intend to enforce, and have in the past vigorously enforced, our patents. We may from time to time in the future be involved in litigation to determine the enforceability, scope and validity of our patent rights. In addition to patent rights, we use a significant amount of trade secrets, or "know-how," and other proprietary information and technology.

Customers

Our customer base primarily consists of oil and natural gas producers in North America and in certain international markets as well as oilfield service companies. For the years ended December 31, 2018, 2017 and 2016, we had over 310, 240 and 140 customers, respectively. Our top five customers accounted for approximately 24%, 30% and 49% of our revenue for the years ended December 31, 2018, 2017 and 2016, respectively. No customer represented more than 10% of our revenue for the year ended December 31, 2018. Crescent Point Energy (“Crescent Point”) accounted for 14% and 26% of our revenue during the years ended December 31, 2017 and 2016, respectively. No other customer accounted for more than 10% of our revenue during those years. Although we believe we have a broad customer base and wide geographic coverage of operations, the loss of one or more of our significant customers could have a material adverse effect on our results of operations.

Sales and Marketing

Our sales and marketing activities are performed through a technically-trained direct sales force. We recognize the importance of a technical marketing program in demonstrating the advantages of new technologies that offer benefits relative to established industry methodologies. Our technical sales force advises customers on the benefits of pinpoint stimulation, MultiCycle sliding sleeves, well construction products, tracer diagnostics services and our technical engineering resources.

In the U.S. and Canada, sales of our fracturing systems products and services, liner hangers, tracer diagnostics services and engineering services are made directly to E&P companies. Our customers also hire the coiled tubing companies and pressure pumping services companies that work alongside us during the completion of a well. We provide our AirLock casing buoyancy system, liner hanger products and toe initiation sleeves directly to E&P companies as well as to oilfield services companies that act as distributors for those products. Although we do not typically maintain supply or service contracts with our customers, a significant portion of our sales represent repeat business. Repeat Precision, which maintains a sales force separate from NCS, sells its products directly to E&P companies as well as to oilfield services companies that act as distributors.

International sales are made through local NCS entities or to our local operating partners on a free on board or free carrier basis with a point of sale in the United States. Some of the locations in which we have operating partners or sales representatives include China and the Middle East. Our operating partners and representatives do not have authority to contractually bind our company, but market our products in their respective territories as part of their product or service offering.

We provide extensive support services and have developed proprietary methodologies for assessing and reporting the information that is collected on our downhole gauges and through tracer diagnostics evaluations. In addition, we provide engineering services to work with customers to evaluate post-completion well performance and on a pre-job basis to simulate the production and economic outcomes from pinpoint stimulation strategies relative to traditional completion techniques. We also provide technical education to the coiled tubing services companies and pressure pumping services companies, explaining the benefits of utilizing our technology for their operations and our customers.

In addition to the technical marketing effort, we occasionally engage in field trials to demonstrate the economic benefits of our products and services. Periodically, we will provide engineering services to E&P companies on a discounted basis, in exchange for their agreement to provide production data for direct comparison of the results of pinpoint stimulation to traditional completion techniques.

Seasonality

A substantial portion of our business is subject to quarterly variability. In Canada, we typically experience higher activity levels in the first quarter of each year, as our customers take advantage of the winter freeze to gain access to remote drilling and production areas. In the past, our revenue in Canada has declined during the second quarter due to warming weather conditions that result in thawing, softer ground, difficulty accessing drill sites and road bans that curtail drilling and completion activity. Access to well sites typically improves throughout the third and fourth quarters in Canada, leading to activity levels that are higher than in the second quarter, but lower than activity in the first quarter. Our business can also be impacted by a reduction in customer activity during the winter holidays in late December and early January.

Suppliers and Raw Materials

We acquire component parts and raw materials from suppliers, including machine shops. The prices we pay for our raw materials may be affected by, among other things, energy, steel and other commodity prices, tariffs and duties on imported materials and foreign currency exchange rates. Most of the raw materials we use in our operations, such as steel in various forms, electronic components, chemicals and elastomers are available from many sources.

We generally try to purchase our raw materials from multiple suppliers, so we are not dependent on any one supplier. We will generally utilize multiple machine shops for the manufacturing of our component parts so that we are not dependent on any one machine shop. Our suppliers are also active in multiple regions which allows us to react to changes in foreign currency exchange rates and tariffs and duties. For example, we have made changes to the raw materials purchased from suppliers based on the imposition of tariffs. See Item 7. “Management’s Discussion and Analysis of Financial Condition and Results of Operations” for more information.

During 2017, we added suppliers to increase third-party component part supply capacity. In addition, Repeat Precision allows us to reduce our costs for certain product categories.

Operating Risks and Insurance

We currently carry a variety of insurance for our operations. Although we believe we currently maintain insurance coverage adequate for the risks involved, there is a risk our insurance may not be sufficient to cover any particular loss or that our insurance may not cover all losses.

Competition

The markets in which we operate are highly competitive. To be successful, we must provide services and products that meet the specific needs of E&P companies at competitive prices. We compete in all areas of our operations with a number of companies, some of which have financial and other resources greater than or comparable to ours.

We believe that we compete not only against other providers of pinpoint stimulation equipment and services, but also with companies that support the other primary means of hydraulically fracturing a horizontal well, including plug and perf and ball drop completions. We also compete with other suppliers of well construction products and tracer diagnostics services.

Our major competitors for our completion products and services include Baker Hughes, a GE company (“Baker Hughes”), Core Laboratories N.V., Forum Energy Technologies, Inc., Halliburton Company, Innovex Downhole Solutions, Nine Energy Service, Inc., Oil States International, Inc., Packers Plus Energy Services, Schlumberger Limited, Schoeller-Bleckmann Oilfield Equipment AG and Weatherford International public limited company as well as a number of smaller or regional competitors.

We believe that the most significant factors influencing a customer’s decision to utilize our equipment and services are technology, service quality, safety track record and price. While we must be competitive in our pricing, we believe our customers select our products and services based on the technical attributes of our products and equipment, the level of technical and operational service we provide before, during and after the job, and the know-how derived from our extensive operational track record.

Environmental and Occupational Health and Safety Matters

We are subject to stringent and complex federal, state, provincial and local laws and regulations governing the discharge of materials into the environment or otherwise relating to protection of worker health, safety and the environment. Compliance with these laws and regulations may require the acquisition of permits to conduct regulated activities, capital expenditures to prevent, limit or address emissions and discharges, and stringent practices to handle, recycle and dispose of certain wastes and materials. Failure to comply with these laws and regulations may result in the assessment of administrative, civil and criminal penalties, the imposition of remedial or corrective obligations, and the issuance of injunctive relief.

We believe that we are in substantial compliance with applicable environmental, health and safety laws and regulations. Further, we do not anticipate that compliance with existing environmental, health and safety laws and regulations will have a material effect on our consolidated financial statements. However, laws and regulations protecting the environment generally have become more stringent in recent years and are expected to continue to do so. It is possible, that substantial costs for compliance with applicable environmental, health and safety laws and regulations may be incurred in the future. Moreover, it is possible that other developments, such as the adoption of stricter environmental laws, regulations, and enforcement policies, could result in additional costs or liabilities that we cannot currently quantify.

While we do not anticipate that compliance with existing environmental, health and safety laws and regulations will have a direct adverse effect on our operations, our customers are subject to a wide range of such laws and regulations, which could materially and adversely affect their businesses and indirectly, through reduced demand for our products and services, have a material adverse effect on our business, financial condition and results of operations, including with respect to the following:

- ***Air Emissions.*** The Federal Clean Air Act (the “CAA”) and comparable state laws regulate emissions of various air pollutants through air emissions permitting programs and the imposition of other emission control requirements. In addition, the Environmental Protection Agency (“EPA”) has developed, and continues to develop, stringent regulations governing emissions of toxic air pollutants at specified sources. Non-compliance with air permits or other requirements of the CAA and associated state laws and regulations can result in the imposition of administrative, civil and criminal penalties, as well as the issuance of orders or injunctions limiting or prohibiting non-compliant operations.
- ***Water Discharges.*** The Federal Clean Water Act (the “CWA”), and analogous state laws impose restrictions and strict controls with respect to the discharge of pollutants, including spills and leaks of oil and other substances, into state waters or waters of the United States. The discharge of pollutants into regulated waters is prohibited, except in accordance with the terms of a permit issued by the EPA or an analogous state agency. Federal and state regulatory agencies can impose administrative, civil and criminal penalties as well as other enforcement mechanisms for non-compliance with discharge permits or other requirements of the CWA and analogous state laws and regulations.
- ***Climate Change.*** Our customers are or may become subject to statutes or regulations aiming to reduce emissions of GHGs. In December 2009, the EPA determined that emissions of carbon dioxide, methane and other GHGs present an endangerment to public health and the environment because emissions of such gases are, according to the EPA, contributing to warming of the earth’s atmosphere and other climatic changes. Based on these findings, the EPA has begun adopting and implementing regulations to restrict emissions of GHGs under existing provisions of the CAA. For example, in June 2016, the EPA published final rules under the CAA that establish new and more stringent emission control standards for methane and volatile organic compounds (“VOCs”) released from new and modified oil and natural gas development and production operations. These rules could have an adverse effect on our customers and result in an indirect material adverse effect on our business. However, the EPA has taken action to stay final implementation of the rules and has proposed certain modifications. The rules also have been the subject of litigation. As a result, the future implementation of these rules remains uncertain. In addition, the United States and Canada are among almost 200 nations that, in December 2015, agreed to the Paris Agreement, an international climate change agreement that calls for countries to set their own GHG emissions targets and be transparent about the measures each country will use to achieve its GHG emissions targets. The agreement entered into force on November 4, 2016. On June 1, 2017, the current United States administration announced that the United States would be pulling out of the Paris Agreement. Although it is not possible at this time to predict how any legal requirements imposed following the implementation of the Paris Agreement that may be adopted or issued to address GHG emissions would impact our business or that of our customers, any such future laws, regulations or legal requirements imposing reporting or permitting obligations on, or limiting emissions of GHGs from, oil and natural gas exploration activities could require our customers to incur costs to reduce emissions of GHGs associated with their operations. In addition, substantial limitations on GHG emissions could adversely affect demand for the oil and natural gas our customers produce.
- ***Non-Hazardous and Hazardous Wastes.*** The Resource Conservation and Recovery Act (“RCRA”) and comparable state laws control the management and disposal of hazardous and non-hazardous waste. These laws and regulations govern the generation, storage, treatment, transfer and disposal of wastes that our customers generate. Drilling fluids, produced waters, and most of the other wastes associated with the exploration, development, and production of oil or natural gas, if properly handled, are currently exempt from regulation as hazardous waste under RCRA and, instead, are regulated under RCRA’s less stringent non-hazardous waste provisions, state laws or other federal laws. It is possible, however, that certain oil and natural gas drilling and production wastes now classified as non-hazardous could be classified as hazardous wastes in the future. For example, in May 2016, several non-governmental environmental groups filed suit against the EPA in the U.S. District Court for the District of Columbia for failing to timely assess its RCRA Subtitle D criteria regulations for oil and natural gas wastes, asserting that the agency is required to review its Subtitle D regulations every three years but has not conducted an assessment on those oil and natural gas waste regulations since July 1988. That suit resulted in a consent decree whereby the EPA agreed to propose no later than March 15, 2019, a rulemaking for revision of the Subtitle D regulations pertaining to oil and gas wastes or sign a determination that revision of the regulations is not necessary. A loss of the RCRA exclusion for drilling fluids, produced waters and related wastes could result in an increase in our customers’ costs to manage and dispose of generated wastes and a corresponding decrease in their drilling operations, which developments could have a material adverse effect on our business.

The Comprehensive Environmental Response, Compensation, and Liability Act, and comparable state laws, impose joint and several liability, without regard to fault or legality of conduct, on classes of persons who are considered to be responsible for the release of a hazardous substance into the environment. These persons include the owner or operator of the site where the release occurred, and anyone who disposed or arranged for the disposal of a hazardous substance released at the site. In addition, it is not

uncommon for neighboring landowners and other third-parties to file claims for personal injury and property damage allegedly caused by hazardous substances released into the environment.

The oil and natural gas industry is extensively regulated by numerous federal, state and local authorities. Legislation affecting the oil and natural gas industry is under constant review for amendment or expansion, frequently increasing the regulatory burden. Also, numerous departments and agencies, at the federal, state and local level, are authorized to issue rules and regulations that are binding on the oil and natural gas industry and its individual members, some of which carry substantial penalties for failure to comply. Although changes to the regulatory burden on the oil and natural gas industry could affect the demand for our services, we would not expect to be affected any differently or to any greater or lesser extent than other companies in the industry with similar operations.

Our customers' operations are subject to various types of regulation at the federal, state and local level. These types of regulation include requiring permits for the drilling of wells, drilling bonds and reports concerning operations. The effect of these regulations may be to limit or increase the cost of oil and natural gas E&P, which could have a material adverse effect on our customers and indirectly materially and adversely affect our business.

We supply equipment and services to customers in the oil and natural gas industry conducting hydraulic fracturing operations. Although we do not directly engage in hydraulic fracturing activities, our customers purchase our products and services for use in their hydraulic fracturing activities. Hydraulic fracturing is typically regulated by state oil and natural gas commissions and similar agencies. Some states have adopted, and other states are considering adopting, regulations that could impose new or more stringent permitting, disclosure or well construction requirements on hydraulic fracturing operations. States could also elect to prohibit high volume hydraulic fracturing altogether, following the approach taken by the State of New York in 2015. Aside from state laws, local land use restrictions may restrict drilling in general or hydraulic fracturing in particular. Municipalities may adopt local ordinances attempting to prohibit hydraulic fracturing altogether or, at a minimum, allow such fracturing processes within their jurisdictions to proceed but regulating the time, place and manner of those processes. In addition, federal agencies have asserted regulatory authority over the process and various studies have also been conducted or are currently underway by the EPA, and other federal agencies concerning the potential environmental impacts of hydraulic fracturing activities. State and federal regulatory agencies have recently focused on a possible connection between the operation of injection wells used for oil and natural gas waste disposal and seismic activity. Similar concerns have been raised that hydraulic fracturing may also contribute to seismic activity. At the same time, certain environmental groups have suggested that additional laws may be needed to more closely and uniformly limit or otherwise regulate the hydraulic fracturing process, and legislation has been proposed by some members of Congress to provide for such regulation.

The adoption of new laws or regulations at the federal or state levels prohibiting, limiting or otherwise regulating the hydraulic fracturing process could make it more difficult, or even impossible, to complete oil and natural gas wells, increase our customers' costs of compliance and doing business, and otherwise adversely affect the hydraulic fracturing services they perform, which could negatively impact demand for our products and services. In addition, heightened political, regulatory, and public scrutiny of hydraulic fracturing practices could expose us or our customers to increased legal and regulatory proceedings, which could be time-consuming, costly, or result in substantial legal liability or significant reputational harm. We could be directly affected by adverse litigation involving us, or indirectly affected if the cost of compliance limits the ability of our customers to operate. Such costs and scrutiny could directly or indirectly, through reduced demand for our products and services, have a material adverse effect on our business, financial condition and results of operations.

We are subject to a number of federal and state laws and regulations, including the federal Occupational Safety and Health Act and comparable state statutes, establishing requirements to protect the health and safety of workers. Substantial fines and penalties can be imposed and orders or injunctions limiting or prohibiting certain operations may be issued in connection with any failure to comply with laws and regulations relating to worker health and safety.

Part of our business involves the use of radioactive tracers, typically consisting of three standard isotopes (Iridium 192, Scandium 46 and Antimony 124), to help determine the existence of fractures within a well formation. The use of these materials requires us to obtain and comply with radioactive materials licenses issued by the U.S. Nuclear Regulatory Commission ("NRC") or its counterparts in the states where we perform these services if they are among the states to which the NRC has delegated its regulatory authority pursuant to the Atomic Energy Act (so-called "Agreement States"). Under the terms of these licenses, we are required to train designated personnel, maintain records, submit periodic reports, ensure the safety and reliability of related equipment and storage facilities, conduct radiation safety monitoring, and ensure the proper disposal of materials and equipment at the end of their useful lives. In the event we fail to adequately comply with these requirements, we could be subject to enforcement action, which could include fines, injunctive relief, or the revocation of our licenses.

Employees

As of December 31, 2018, we had 418 employees of which 414 are full-time employees. 291 of our employees as of such date were based in the United States, 124 were based in Canada and three were based outside of North America. Our international

operations are currently serviced by employees operating out of the United States and Canada. We are not a party to any collective bargaining agreements, and we consider our relations with our employees to be good.

Item 1A. Risk Factors

Described below are certain risks that we believe apply to our business and the industry in which we operate. You should carefully consider each of the following risk factors in conjunction with other information provided in this Form 10-K and in our other public disclosures. The risks described below highlight potential events, trends or other circumstances that could adversely affect our business, financial condition, results of operations, cash flows, liquidity or access to sources of financing, and consequently, the market value of our common stock. Additional risks and uncertainties not currently known to us or that we currently deem immaterial may also materially adversely affect our business, financial condition and results of operations. All forward-looking statements made by us or on our behalf are qualified by the risks described below.

Risks Related to Our Business and the Oil and Natural Gas Industry

Our business depends on the levels of expenditures by companies in the oil and natural gas industry and particularly on the level of E&P activity within Canada and the United States. A substantial or extended decline in the prices for oil and natural gas could result in lower expenditures by our customers, which has had, and may continue to have, a material adverse effect on our business, financial condition and results of operations.

Demand for our products and services depends substantially on the level of expenditures by companies in the oil and natural gas industry. These expenditures are generally dependent on our customers' views of future oil and natural gas prices and are sensitive to our customers' views of future economic growth and the resulting impact on demand for oil and natural gas. Declines, as well as anticipated declines, in oil and gas prices could result in project modifications, delays or cancellations, general business disruptions, and delays in payment of, or nonpayment of, amounts that are owed to us. For example, between the third quarter of 2014 and the first quarter of 2016, oil and natural gas commodity prices declined significantly. The low commodity price environment resulted in a reduction in the drilling, completion and other production activities of most of our customers and a reduction in their spending on our products and services. The reduction in demand from our customers reduced the prices we were able to charge our customers for our products and services. Although oil pricing has improved since mid-2016, oil and natural gas prices remain volatile, and prolonged reductions in oil and natural gas prices have had and may continue to have a material adverse effect on our business, financial condition and results of operations.

Many factors over which we have no control affect the supply of and demand for, and our customers' willingness to explore, develop and produce oil and natural gas, and therefore, influence demand levels and prices for our products and services, including:

- the domestic and foreign supply of and demand for oil and natural gas;
- the level of prices, and expectations about future prices, of oil and natural gas;
- the level of global oil and natural gas E&P;
- the cost of exploring for, developing, producing and delivering oil and natural gas;
- the expected decline rates of current production;
- the price and quantity of foreign imports;
- political and economic conditions in oil producing countries, including the Middle East, Africa, South America and Russia;
- the ability of members of the Organization of Petroleum Exporting Countries ("OPEC") to agree to and maintain oil price and production controls;
- speculative trading in crude oil and natural gas derivative contracts;
- the level of consumer product demand;
- the discovery rates of new oil and natural gas reserves;
- contractions in the credit market;
- the strength or weakness of the U.S. dollar;
- available pipeline and other transportation capacity;
- the levels of oil and natural gas storage;
- weather conditions and other natural disasters;

- political instability in oil and natural gas producing countries;
- domestic and foreign tax policy;
- domestic and foreign governmental approvals and regulatory requirements and conditions;
- the continued threat of terrorism and the impact of military and other action, including military action in the Middle East;
- technical advances affecting energy demand, generation and consumption;
- the proximity and capacity of oil and natural gas pipelines and other transportation facilities;
- alternative fuel requirements or technological advances and the demand and availability of alternative fuel sources;
- fuel conservation measures;
- the ability of oil and natural gas producers to raise equity capital and debt financing;
- merger and divestiture activity among oil and natural gas producers; and
- overall domestic and global economic conditions.

These factors and the volatility of the energy markets make it difficult to predict future oil and natural gas price movements with any certainty. Any of the above factors could impact the level of oil and natural gas E&P activity and could have a material adverse effect on our business, financial condition and results of operations. In addition, regardless of the macro commodity price environment, our current or prospective customers may experience certain constraints that disproportionately impact their business and reduce their expenditures. During the second half of 2018 our Canadian customers experienced a widening of oil price differentials due to pipeline constraints which are expected to continue well into the future. In addition, oil prices fell sharply in late 2018, impacting the budgeting process for E&P companies. This has resulted in a decline in customer activity, significantly reducing demand for oilfield services in Canada and, to a lesser extent, the U.S., and has adversely impacted the announced 2019 expenditure plan of E&P companies and the prices oilfield services companies can charge for their services. Further, should a low commodity price environment impact our customers' expenditures, we could encounter difficulties such as an inability to access needed capital on attractive terms or at all, the incurrence of further impairment charges, an inability to meet the financial ratios contained in our debt agreements, a need to reduce our capital spending and other similar impacts any of which could have a material adverse effect on our business, financial condition and results of operations.

The cyclicity of the oil and natural gas industry may cause our results of operations to fluctuate.

We derive our revenues from companies in the oil and natural gas E&P industry, a historically cyclical industry with levels of activity that are significantly affected by the levels and volatility of oil and natural gas prices. Prices for oil and natural gas historically have been extremely volatile and are expected to continue to be volatile. During the past five years, the posted West Texas Intermediate ("WTI") price for oil has ranged from a low of \$26.21 per barrel, or Bbl, in February 2016 to a high of \$107.95 per Bbl in June 2014. Over the same period, the Henry Hub spot market price of natural gas has ranged from a low of \$1.49 per million British thermal units, or MMBtu, in March 2016 to a high of \$7.92 per MMBtu in March 2014. During 2017, WTI prices ranged from \$42.48 to \$60.46 per Bbl and during 2018, WTI prices ranged from \$44.48 to \$77.41 per Bbl. During 2017, the Henry Hub spot market price of natural gas ranged from \$2.44 to \$3.71 per MMBtu and during 2018, the Henry Hub spot market price of natural gas ranged from \$2.49 to \$6.24 per MMBtu. We have, and may in the future, experience significant fluctuations in operating results as a result of the reactions of our customers to changes in oil and natural gas prices. For example, prolonged low commodity prices experienced by the oil and natural gas industry during 2015 and 2016, combined with adverse changes in the capital and credit markets, caused many E&P companies to reduce their capital budgets and drilling activity. This resulted in a significant decline in demand for oilfield services and adversely impacted the prices oilfield services companies could charge for their services. We have master services agreements ("MSAs") with most of our customers which have no minimum purchase requirements. As a result, most of our customers are not obligated to buy our products or utilize our services for an extended period or at all.

Low commodity price environments can negatively impact oil and natural gas E&P companies and, in some cases, impair their ability to timely pay for products or services provided or can result in their insolvency or bankruptcy, any of which exposes us to credit risk of our oil and natural gas E&P customers.

We are subject to the risk of loss resulting from nonpayment or nonperformance by our customers, many of whose operations may be concentrated in certain markets which, as described above, are subject to volatility and, therefore, credit risk. Our credit procedures and policies may not be adequate to fully reduce customer credit risk. If we are unable to adequately assess the creditworthiness of existing or future customers or unanticipated deterioration in their creditworthiness, any resulting increase in nonpayment or nonperformance by them could have a material adverse effect on our business, financial condition and results of operations. Further, in weak economic and commodity price environments, we may experience difficulties, delays or failures in collecting outstanding receivables from many customers, due to, among other reasons, a reduction in their cash flow from operations,

their inability to access the credit markets and, in certain cases, their insolvencies. Such collection issues could have a material adverse effect on our business, financial condition and results of operations.

To the extent one or more of our key customers commences bankruptcy proceedings, our contracts with these customers may be subject to rejection under applicable provisions of the United States Bankruptcy Code, or may be renegotiated. Further, during any such bankruptcy proceeding, prior to assumption, rejection or renegotiation of such contracts, the bankruptcy court may temporarily authorize the payment of value for our services less than contractually required, which could also have a material adverse effect on our business, financial condition and results of operations.

We may not be able to successfully implement our strategy of increasing sales of our products and services for use in basins located in the United States.

A key component of our growth strategy is to increase our market share in the United States. Our fracturing systems products and services enable pinpoint stimulation of an oil or natural gas well. Currently, most E&P companies in the United States rely on traditional well completion techniques and do not utilize pinpoint stimulation. We may not be successful in convincing potential customers of the benefits of our technologies relative to traditional well completion techniques. If we are unable to convince potential customers in the United States of the benefits of our pinpoint stimulation, our strategy to increase the level of sales of our products and services in the United States would be negatively impacted, harming our growth prospects. Additionally, the sales of our products and services depend in large part on the perception of pinpoint stimulation in the oil and natural gas industry. Unfavorable industry reports or poor well performance for wells that were completed using pinpoint stimulation would harm the perception of pinpoint stimulation and technological advances in traditional well completion techniques could make it more difficult to convince potential customers to adopt pinpoint stimulation, which could impact our ability to grow our U.S. sales and harm our growth prospects.

Competition within our industry may adversely affect our ability to market our services.

The markets in which we operate are generally highly competitive. The principal competitive factors in our market are technology, service quality, safety track record and price. We compete with large national and multi-national companies that have substantially longer operating histories, greater financial, technical and other resources and greater name recognition than we do. Several of our competitors provide a broader array of services and have a stronger presence in more geographic markets. In addition, we compete with several smaller companies capable of competing effectively on a regional or local basis. These companies may be able to charge lower prices for competing products and services, particularly if a company maintains a lower cost structure by investing in less research and development activities. These products and services offered by lower-priced competitors may be more attractive to our customers in lower commodity price environments, even if the products or services offered are inferior. Also, our competitors may be able to respond more quickly to new or emerging technologies, products and services and changes in customer requirements. These responses may come from direct competitors who offer similar products or services or competitors who offer substitutes. In certain circumstances, work is awarded on a bid basis, which further increases competition based on price. Pricing is often the primary factor in determining which qualified contractor is awarded the work. The competitive environment may be further intensified by mergers and acquisitions among oil and natural gas companies or other events that have the effect of reducing the number of available customers. As a result of competition, we may lose market share or be unable to maintain or increase prices for our present products or services or to acquire additional business opportunities, which could have a material adverse effect on our business, financial condition and results of operations.

A single customer constituted 8%, 14% and 26% of our revenue for the years ended December 31, 2018, 2017 and 2016, respectively, and the loss of that customer or any other of our significant customers, or their failure to pay the amounts they owe us, could cause our revenue to decline substantially.

Our largest customer is Crescent Point which accounted for approximately 8%, 14% and 26% of our revenue for the years ended December 31, 2018, 2017 and 2016, respectively. Additionally, our top five customers accounted for approximately 24%, 30% and 49% of our revenue for the years ended December 31, 2018, 2017 and 2016, respectively. It is likely that we will continue to derive a significant portion of our revenue from these customers in the near future. If any of these customers decided not to continue to use our products and services, our revenue would decline, which could have a material adverse effect on our business, financial condition and results of operations. In addition, we are subject to credit risk due to the concentration of our customer base. Any nonperformance by these customers, including their failure to pay the amounts they owe us, either as a result of changes in general financial and economic conditions, conditions in the oil and natural gas industry or otherwise, could have a material adverse effect on our business, financial condition and results of operations.

Impairment in the carrying value of long-lived assets and goodwill could negatively affect our operating results

We evaluate our property and equipment and finite-lived intangible assets for impairment whenever changes in circumstances indicate that the carrying amount of an asset group may not be recoverable. We assess recoverability based on undiscounted future net cash flows. Should the review indicate that the carrying value is not fully recoverable, the amount of the impairment loss is

determined by comparing the carrying value to the estimated fair value. Estimating future net cash flows requires us to make judgements regarding long-term forecasts of future revenues and costs related to the assets subject to review. These forecasts are uncertain in that they require assumptions about our revenue growth, operating margins, capital expenditures, future market conditions and technological developments. If changes in these assumptions occur, our expectations regarding future net cash flows may change such that a material impairment could result. As a result of unfavorable oil and gas industry market conditions in late 2018 that have continued to persist into early 2019 and the related impact on expected customer activity levels, particularly in Canada, as well as a decline in the quoted price of our common stock, we determined that the carrying values of certain long-lived assets in one of our asset groups were no longer recoverable, which resulted in an impairment charge of \$73.5 million related to identifiable intangible assets, which we recorded in the fourth quarter of 2018. There was no impairment related to fixed assets in 2018. No fixed asset or finite-lived intangible impairments were recorded in 2017 or 2016.

An assessment for goodwill impairment is performed annually or when there is an indication an impairment may have occurred. We typically complete our annual impairment test for goodwill using an assessment date in the fourth quarter of each fiscal year. Goodwill is reviewed for impairment by comparing the carrying value of the reporting unit's net assets (including allocated goodwill) to the fair value of the reporting unit. The fair value of the reporting unit is determined using a combination of a market multiple and a discounted cash flow approach. Determining the fair value of a reporting unit requires the use of estimates, assumptions and judgement. The principal estimates and assumptions that we use include revenue growth, operating margins, capital expenditures, future market conditions, weighted average costs of capital, a terminal growth rate, the set of comparable companies utilized, and the earnings metrics and multiples utilized. We believe that the estimates and assumptions used in impairment assessments are reasonable. If the reporting unit's carrying value is greater than its calculated fair value, we recognize a goodwill impairment charge for the amount by which the carrying value of goodwill exceeds its calculated fair value. At December 31, 2018, we performed our annual goodwill impairment test on each of our three reporting units and as a result of unfavorable oil and gas industry market conditions in late 2018 that have continued to persist into early 2019 and the related impact on expected customer activity levels, particularly in Canada, as well as a decline in the quoted price of our common stock, we concluded that there had been an impairment because the carrying value exceeded the estimated fair values for two reporting units, which resulted in an impairment charge of \$154.0 million. No impairments were recorded in 2017 or 2016.

We are unable to predict whether further impairments of one or more of our long-lived assets or investments may occur in the future. A determination that goodwill, a long-lived asset, or other investments are impaired would result in additional non-cash charges that could materially adversely affect our business, financial condition and results of operations.

Our success depends on our ability to develop and implement new technologies, products and services.

Our success depends on the ongoing development and implementation of new product designs and improvements, and on our ability to protect and maintain critical intellectual property assets related to these developments. If we are unable to continue to develop and produce competitive technology or deliver it to our clients in a timely and cost-competitive manner in the various markets we serve, it could have a material adverse effect on our business, financial condition and results of operations. Also, if we are not able to obtain patent or other intellectual property protection of our technology, we may not be able to recoup development costs or fully exploit systems, services and technologies in a manner that allows us to meet evolving industry requirements at prices acceptable to our customers. In addition, some of our competitors are large national and multinational companies that may be able to devote greater financial, technical, manufacturing and marketing resources to research and development of new systems, services and technologies than we are able to do.

Investments in new technologies involve uncertainties and risk. Commercial success depends on many factors, including the levels of innovation, the development costs and the availability of capital resources to fund those costs, the levels of competition from others developing similar or other competing technologies, our ability to obtain or maintain government permits or certifications, the effectiveness of production, distribution and marketing efforts, and the costs to customers to deploy and provide support for the new technologies. We may not achieve significant revenues from new product and service investments for a number of years, if at all, which could have a material adverse effect on our business, financial condition and results of operations.

Advancements in drilling and well completion technologies could have a material adverse effect on our business, financial condition, results of operations and cash flows.

Our industry is characterized by rapid and significant technological advancements and introductions of new products and services using new technologies. As new well completion technologies develop, we may be placed at a competitive disadvantage, and competitive pressure may force us to implement new technologies at a substantial cost. We may not be able to successfully acquire or use new technologies. New technologies, services or standards, including improvements to existing competing technologies, could render our technologies, products or services obsolete, which could have a material adverse effect on our business, financial condition and results of operations. In addition, the development of new processes to replace hydraulic fracturing altogether or that replace our technologies, could cause a decline in the demand for the products and services that we provide and could result in a material adverse effect on our business, financial condition and results of operations.

We often have long sales cycles, which can result in significant time between initial contact with a prospective customer and sales of our products and services to that customer, making it difficult to project when, if at all, we will obtain new customers and when we will generate revenue from those customers.

Our sales cycle, from initial contact to sales of our products and services to a customer can take significant time. Our sales efforts involve educating our customers about the use, technical capabilities and benefits of our completion technologies. Some of our customers undertake an evaluation process that frequently involves not only our technology but also the offerings of our competitors. As a result, it is difficult to predict when we will obtain new customers and begin generating revenue from these new customers. In addition, it may take us longer to convert prospective customers who have only used traditional completion techniques or who are located in basins where traditional completion techniques are more prevalent. As a result, we may not be able to add customers, or generate revenue, as quickly as we may expect, which could harm our growth prospects.

A significant amount of our revenue generated is denominated in the Canadian dollar and could be negatively impacted by currency fluctuations.

Because approximately 48% of our revenue for the year ended December 31, 2018 was generated in Canada, we could be materially affected by currency fluctuations. Changes in currency exchange rates, particularly with respect to the Canadian dollar (“CAD”), could have a material adverse effect on our results of operations or financial position. As we have a trade accounts receivable balance in Canadian dollars of \$21.8 million CAD as of December 31, 2018, a 10% increase in the strength of the Canadian dollar versus the U.S. dollar would result in an increase in pre-tax income of \$1.6 million. Conversely, a corresponding decrease in the strength of the Canadian dollar would have resulted in a comparable decrease in pre-tax income. We have not hedged our exposure to changes in foreign currency exchange rates and, as a result, could incur significant and unanticipated translation gains and losses.

Losses and liabilities from operating activities could have a material adverse effect on our financial condition and operations.

Our insurance policies may not be adequate to cover all liabilities. Further, insurance may not be generally available in the future or, if available, insurance premiums may make such insurance commercially unjustifiable. Moreover, even if we are successful in defending a claim, it could be time-consuming and costly to defend. The operational insurance coverage we maintain for our business may not fully insure us against all risks, either because insurance is not available or because of the high premium costs relative to perceived risk. For example, our insurance does not typically cover losses and liabilities related to intellectual property or general breach of contract claims. Further, any insurance obtained by us may not be adequate to cover any losses or liabilities and this insurance may not continue to be available at all or on terms which are acceptable to us. Insurance rates have in the past been subject to wide fluctuation and changes in coverage could result in less coverage, increases in cost or higher deductibles and retentions. Liabilities for which we are not insured, or which exceed the policy limits of our applicable insurance, could have a material adverse effect on our business, financial condition and results of operations.

The growth of our business through acquisitions or strategic partnerships exposes us to various risks, including identifying suitable opportunities and integrating businesses, assets and personnel.

We completed the acquisition of Spectrum in 2017 (the “Spectrum Acquisition”) and we expect to pursue future acquisitions in order to expand and diversify our business. We may also form strategic partnerships with third parties that we believe will complement or augment our existing business. We may not be able to identify any potential acquisition or strategic partnership candidates, consummate any acquisitions or enter into any strategic partnerships and any future acquisitions or strategic partnerships may not be successfully integrated or may not be advantageous to us. In addition, we may not have or be able to obtain sufficient capital resources to complete any acquisitions. Entities we acquire may not achieve the revenue and earnings we anticipate or their liabilities may exceed our expectations. We could face integration issues pertaining to the internal controls and operational functions of the acquired companies and we also could fail to realize cost efficiencies or synergies that we anticipated when selecting our acquisition candidates. Client dissatisfaction or performance problems with a particular acquired entity or resulting from a strategic partnership could have a material adverse effect on our reputation as a whole. We may be unable to profitably manage any acquired entities, or we may fail to integrate them successfully without incurring substantial expenses, delays or other problems. We may not achieve the anticipated benefits from our acquisitions or any of the strategic partnerships we form. In addition, business acquisitions, including the Spectrum Acquisition, and strategic partnerships involve a number of risks that could affect our business, financial condition and results of operations, including but not limited to:

- our ability to integrate operational, accounting and technology policies, processes and systems and the implementation of those policies and procedures;
- our ability to integrate personnel and human resources systems as well as the cultures of each of the acquired businesses;
- our ability to implement our business plan for the acquired business;
- transition of operations, users and clients to our existing platforms or the integration of data, systems and technology platforms with ours;
- compliance with regulatory requirements and avoiding potential conflicts of interest in markets that we serve;
- diversion of management’s attention and other resources;
- our ability to retain or replace key personnel;
- our ability to maintain relationships with the customers of the acquired business or a strategic partner and further develop the acquired business or the business of our strategic partner;
- our ability to cross-sell our products and services of the acquired businesses or strategic partners to our respective clients;
- entry into unfamiliar markets;
- assumption of unanticipated legal or financial liabilities and/or negative publicity related to prior acts by the acquired entity;
- litigation or other claims in connection with the acquired company, including claims from terminated employees, clients, former stockholders or third parties;
- misuse of intellectual property by our strategic partners;
- disagreements with strategic partners or a misalignment of incentives within any strategic partnership;
- becoming subject to increased regulation or a result of an acquisition;
- becoming significantly leveraged as a result of incurring debt to finance an acquisition;
- unanticipated operating, accounting or management difficulties in connection with the acquired entities; and

- impairment of acquired intangible assets, including goodwill, and dilution to our earnings per share.

If we fail to successfully integrate the businesses that we acquire or strategic partnerships that we enter into, we may not realize any of the benefits we anticipate in connection with the acquisitions or partnerships, which could have a material adverse effect on our business, financial condition and results of operations.

Our operations may be limited or disrupted in certain parts of the continental United States and Canada during severe weather conditions, which could have a material adverse effect on our business, financial condition and results of operations.

We provide products and services to E&P companies that operate in basins throughout the continental United States and Canada. We serve these markets through our facilities and service centers located in Texas, Oklahoma, Montana, West Virginia and Alberta and Saskatchewan, Canada. A substantial portion of our revenue is generated from our operations in geographies where weather conditions may be severe, particularly during winter and spring months. Repercussions of severe weather conditions may include:

- curtailment of drilling and completion activity;
- weather-related damage to equipment resulting in suspension of operations;
- weather-related damage to our facilities;
- inability to deliver equipment and materials to jobsites in accordance with contract schedules; and
- loss of productivity.

Many municipalities impose bans or other restrictions on the use of roads and highways, which include weight restrictions on the paved roads that lead to our jobsites due to the muddy conditions caused by spring thaws. This can limit our access to these jobsites and our ability to service wells in these areas. These constraints and the resulting shortages or high costs could delay our operations and materially increase our operating and capital costs in those regions. Weather conditions may also affect the price of crude oil and natural gas, and related demand for our services. Any of these factors could have a material adverse effect on our business, financial condition and results of operations.

Hydraulic fracturing is substantially dependent on the availability of water. Restrictions on the ability of our customers to obtain water may have a material adverse effect on our business, financial condition and results of operations.

Water is an essential component of deep shale oil and natural gas production during both the drilling and hydraulic fracturing processes. Over the past several years, certain of the areas in which we sell our products and services have experienced extreme drought conditions and competition for water in such shales is growing. As a result of this severe drought, some local water districts have begun restricting the use of water subject to their jurisdiction for hydraulic fracturing to protect local water supply. The inability of our customers to obtain water to use in their operations from local sources or to effectively utilize flowback water could impact demand for our products and services, which could have a material adverse effect on our business, financial condition and results of operations.

Our competitors may infringe upon, misappropriate, violate or challenge the validity or enforceability of our intellectual property and we may not be able to adequately protect or enforce our intellectual property rights in the future.

We currently hold multiple U.S. and international patents and have multiple pending patent applications for products and processes. Patent rights give the owner of a patent the right to exclude third parties from making, using, selling, and offering for sale the inventions claimed in the patents in the applicable country. Patent rights do not necessarily grant the owner of a patent the right to practice the invention claimed in a patent, but merely the right to exclude others from practicing the invention claimed in the patent. It may be possible for a third-party to design around our patents. Furthermore, patent rights have strict territorial limits. We may not be able to enforce our patents against infringement occurring in “non-covered” territories. Also, we do not have patents in every jurisdiction in which we conduct business and our patent portfolio will not protect all aspects of our business and may relate to obsolete or unusual methods, which would not prevent third parties from entering the same market.

Despite our efforts to safeguard our intellectual property rights, we may not be successful in doing so, or the steps taken by us in this regard may not be adequate to detect or deter misappropriation of our technology or to prevent an unauthorized third party from copying or otherwise obtaining and using our products, technology or other information that we regard as proprietary. Moreover, our competitors may independently develop equivalent knowledge, methods and know-how. Competitors could purchase our products and attempt to replicate some or all of the competitive advantages we derive from our development efforts, infringe our intellectual property rights, design around our protected technology or develop their own competitive technologies that fall outside of our intellectual property rights. For example, on July 24, 2018, we filed a patent infringement lawsuit against Kobold Corporation, Kobold Completions Inc. and 2039974 Alberta Ltd. (“Kobold”) in the Federal Court of Canada, alleging that Kobold’s fracturing tools and methods infringe on several of our Canadian patents. We also previously filed a breach of contract lawsuit on March 16, 2018, against

Kobold Corporation in the Court of Queen's Bench of Alberta, alleging breach of a prior settlement agreement. If we do not prevail in the Federal Court lawsuit, it could impact the strength or validity of the patents in question. Our inability to adequately protect our intellectual property could allow our competitors, including Kobold, and other third parties to produce products based on our patented or proprietary technology and other intellectual property rights, providing increased competition and pricing pressure, which could substantially impair our ability to compete.

In addition, by customarily entering into employment, confidentiality and/or license agreements with our employees, customers and potential customers and suppliers, we attempt to limit access to and distribution of our technology. Our rights in our confidential information, trade secrets, and confidential know-how will not prevent third parties from independently developing similar information. Publicly available information (e.g. information in expired issued patents, published patent applications, and scientific literature) can also be used by third parties to independently develop technology. This independently developed technology may be equivalent or superior to our proprietary technology.

Confidential information shared with employees, customers and potential customers and suppliers may be used by those parties in a manner inconsistent with their employment, confidentiality and/or license agreements and we may not be able to adequately protect against or stop such behavior. We may not be able to determine if competitive technology offered by third parties was independently developed or resulted from breach of our agreements. When we do become aware of breaches, we may become involved in legal proceedings from time to time to protect our legal interests and enforce such agreements.

We may be adversely affected by disputes regarding intellectual property rights and the value of our intellectual property rights is uncertain.

As discussed above, we may become involved in legal proceedings from time to time to protect and enforce our intellectual property rights. Third parties from time to time may initiate litigation against us by asserting that the conduct of our business infringes, misappropriates or otherwise violates intellectual property rights. We may not prevail in any such legal proceedings related to such claims, and our products and services may be found to infringe, impair, misappropriate, dilute or otherwise violate the intellectual property rights of others. If we are sued for infringement and lose, we could be required to pay substantial damages and/or be enjoined from using or selling the infringing products or technology. Any legal proceeding concerning intellectual property could be protracted and costly and is inherently unpredictable and could have a material adverse effect on our business, financial condition and results of operation, regardless of its outcome.

Further, our intellectual property rights may not have the value that management believes them to have and such value may change over time as we and others develop new product designs and improvements.

Our products are used in operations that are subject to potential hazards inherent in the oil and natural gas industry, including claims for personal injury and property damage, and, as a result, we are exposed to potential liabilities that may affect our financial condition and reputation.

Our products are used in potentially hazardous drilling, completion and production applications in the oil and natural gas industry where an accident or a failure of a product can potentially have catastrophic consequences. Risks inherent to these applications, such as equipment malfunctions and failures, equipment misuse and defects, explosions, blowouts and uncontrollable flows of oil, natural gas or well fluids and natural disasters can cause personal injury, loss of life, suspension of operations, damage to formations, damage to facilities, business interruption and damage to or destruction of property, surface water and drinking water resources, equipment and the environment. If our products or services fail to meet specifications or are involved in accidents or failures, we could face warranty, contract or other litigation claims, which could expose us to substantial liability for personal injury, wrongful death, property damage, pollution and other environmental damages. We operate with most of our customers under MSAs. We endeavor to allocate potential liabilities and risks between the parties in MSAs, which may result in material liability to us. In addition, despite our intention to generally allocate risk under MSAs, we might not succeed in enforcing such contractual allocation, might incur an unforeseen liability falling outside the scope of such allocation or may be required to enter into an MSA with terms that are unfavorable to us. As a result, we may incur substantial losses which could have a material adverse effect on our business, financial condition and results of operations.

In addition, the frequency and severity of such incidents will affect operating costs, insurability and relationships with customers, employees and regulators. In particular, our customers may elect not to purchase our services if they view our safety record as unacceptable, which could cause us to lose customers and substantial revenues. In addition, these risks may be greater for us because we may acquire companies that have not allocated significant resources and management focus to safety and have a poor safety record requiring rehabilitative efforts during the integration process and we may incur liabilities for losses before such rehabilitation occurs.

The adoption of climate change legislation or regulations restricting emissions of GHGs could result in increased operating costs and reduced demand for oil and natural gas.

In recent years, federal, state and local governments have taken steps to reduce emissions of GHGs. The EPA has finalized a series of GHG monitoring, reporting and emissions control rules for the oil and natural gas industry. For example, in October 2015, the EPA finalized rules adding new sources to the scope of the GHG monitoring and reporting rule. These new sources include gathering and boosting facilities as well as completions and workovers of hydraulically fractured wells. More recently, in June 2016, the EPA published final rules establishing new and more stringent methane and VOCs emissions control requirements for oil and natural gas development and production operations. However, the EPA has taken action to stay final implementation of the rules and has proposed certain modifications. The rules also have been the subject of litigation. As a result, the future implementation of these rules remains uncertain.

While Congress has from time to time considered legislation to reduce emissions of GHGs, there has not been significant activity in the form of adopted legislation to reduce GHG emissions at the federal level in recent years. In the absence of federal climate legislation, a number of state and regional efforts have emerged that are aimed at tracking or reducing GHG emissions by means of cap and trade programs. In addition, in December 2015, the United States joined the international community at the 21st Conference of the Parties of the United Nations Framework Convention on Climate Change in Paris, France. The resulting Paris Agreement calls for the parties to undertake “ambitious efforts” to limit the average global temperature, and to conserve and enhance sinks and reservoirs of GHGs. The Paris Agreement, which entered into force on November 4, 2016, establishes a framework for the parties to cooperate and report actions to reduce GHG emissions. On June 1, 2017, the current United States administration announced that the United States would be pulling out of the Paris Agreement. The direction of future U.S. climate change regulation is difficult to predict given the current uncertainties surrounding the policies of the current United States administration. The EPA may or may not continue developing regulations to reduce greenhouse gas emissions from the oil and natural gas industry. Even if federal efforts in this area slow, states may continue pursuing climate regulations.

Restrictions on emissions of methane or carbon dioxide that may be imposed could adversely affect the oil and natural gas industry by reducing demand for hydrocarbons and by making it more expensive to develop and produce hydrocarbons, either of which could have a material adverse effect on future demand for our products and services. At this time, it is not possible to accurately estimate how potential future laws or regulations addressing GHG emissions would impact our or our customers’ business.

In addition, claims have been made against certain energy companies alleging that GHG emissions from oil and natural gas operations constitute a public nuisance under federal and/or state common law. As a result, private individuals may seek to enforce environmental laws and regulations against certain energy companies and could allege personal injury or property damages. While our business is not a party to any such litigation, we could be named in actions making similar allegations. An unfavorable ruling in any such case could significantly impact our or our customers’ operations and could have a material adverse effect on our business, financial condition and results of operations.

Moreover, climate change may cause more extreme weather conditions such as more intense hurricanes, thunderstorms, tornadoes and snow or ice storms, as well as rising sea levels and increased volatility in seasonal temperatures. Extreme weather conditions can interfere with our or our customers’ operations and increase our costs, and damage resulting from extreme weather may not be fully insured. However, at this time, we are unable to determine the extent to which climate change may lead to increased storm or weather hazards affecting our operations.

Federal and state legislative and regulatory initiatives relating to hydraulic fracturing could result in increased costs and additional operating restrictions or delays on our customers which could in turn decrease the demand for our products and services.

Our business is dependent on the ability of our customers to conduct hydraulic fracturing and horizontal drilling activities. Hydraulic fracturing is an important common practice that is used to stimulate production of hydrocarbons, particularly natural gas, from tight formations, including shales. The process, which involves the injection of water, sand and other proppants under pressure into formations to fracture the surrounding rock and stimulate production, is typically regulated by state oil and natural gas commissions. However, federal agencies have asserted regulatory authority over certain aspects of the process and there are certain governmental reviews either completed, underway, or being proposed that focus on the environmental aspects of hydraulic fracturing practices. These completed, ongoing, or proposed studies, depending on their degree of pursuit and whether any meaningful results are obtained, could spur initiatives to further regulate hydraulic fracturing. For example, in December 2016, the EPA released a final report assessing the potential impacts of hydraulic fracturing on drinking water resources. In this report, the EPA found scientific evidence that hydraulic fracturing activities can impact drinking water resources under some circumstances. Other governmental agencies, including the U.S. Department of Energy, the U.S. Geological Survey and the U.S. Government Accountability Office, have evaluated or are evaluating various other aspects of hydraulic fracturing. State and federal regulatory agencies recently have focused on a possible connection between the operation of injection wells used for oil and natural gas waste disposal and seismic activity. Similar concerns have been raised that hydraulic fracturing may also contribute to seismic activity. When caused by human activity,

such events are called induced seismicity. Regulatory agencies at all levels are continuing to study the possible linkage between oil and natural gas activity and induced seismicity. These ongoing or proposed studies could spur initiatives to further regulate hydraulic fracturing, and could ultimately make it more difficult or costly to perform fracturing and increase the costs of compliance and doing business for our customers. In addition, in response to concerns regarding induced seismicity, regulators in some states have from time to time, developed and implemented plans directing certain wells where seismic incidents have occurred to restrict or suspend disposal well operations. Such actions to restrict or suspend disposal well operations could make it more difficult or costly for our customers to perform fracturing.

Various state and local-level initiatives in regions with substantial shale resources have been or may be proposed or implemented to further regulate hydraulic fracturing practices, limit water withdrawals and water use, require disclosure of fracturing fluid constituents, restrict which additives may be used, or implement temporary or permanent bans on hydraulic fracturing. For instance, the State of New York elected in 2015 to prohibit high volume hydraulic fracturing altogether. Any increased regulation of hydraulic fracturing could reduce our customers' demand for our products and services and have a material adverse effect on our business, financial condition and results of operations.

At this time, it is not possible to estimate the impact on our business of newly enacted or potential federal, state or local laws governing hydraulic fracturing.

We may not be able to meet applicable regulatory requirements for our use of certain chemicals by our recently acquired tracer diagnostics business, and, even if requirements are met, complying on an ongoing basis with the numerous regulatory requirements will be time-consuming and costly.

The chemicals that we use in our recently acquired tracer diagnostics business may be subject to government regulation in our target markets. In the United States, the EPA administers the Toxic Substances Control Act (the "TSCA") which regulates the commercial registration, distribution, and use of many chemicals, including many of the chemicals we use in our tracer diagnostics business. Before we can manufacture or distribute significant volumes of a chemical, we need to determine whether that chemical is listed in the TSCA inventory. If the substance is listed, then manufacture or distribution can commence immediately. If not, then we must file a Pre-Manufacture Notice ("PMN") with the EPA for review. Certain categories of chemical substances may be exempt from a full PMN review, including chemical substances that qualify for a Low Volume Exemption ("LVE"). We have filed PMNs for certain chemicals, and have sought for and obtained LVEs for other chemicals that we use in our tracer diagnostics business, and we will file additional PMNs or seek additional LVEs in the future. We may not be able to expediently receive approval from the EPA to list such chemicals on the TSCA inventory, resulting in delays in our ability to manufacture such chemicals, or significant increases in testing requirements.

In addition, once we have a consent order from the EPA allowing us to manufacture PMN substances for our tracer diagnostics business, we remain subject to regulatory requirements, including, as applicable, volume limitations that may impede us from producing sufficient quantities of such chemicals. Noncompliance with an EPA consent order could result in civil or criminal penalties and delays, or require us to cease operations that are authorized under the consent order. Similar programs exist in most, if not all, of the countries in which we may seek to produce, import or use certain chemicals in our tracer diagnostics business, including compliance with regulations imposed in Canada by the Environment and Climate Change Canada/Health Canada. We cannot assure you that we will be able to obtain necessary approvals in a timely manner or at all. If we do not meet applicable regulatory requirements in a particular country for some chemicals, then we may not be able to commercialize those chemicals or tracers in such country, and our business could be adversely affected. Changes in regulatory requirements, laws and policies, or evolving interpretations of existing regulatory requirements, laws and policies, may result in increased compliance costs, delays, capital expenditures and other financial obligations that could adversely affect our business or financial results.

Our operations and our customers' operations are subject to a variety of governmental laws and regulations that may increase our costs, limit the demand for our products and services or restrict our operations.

Our business and our customers' businesses may be significantly affected by:

- federal, state and local and non-U.S. laws and other regulations relating to import tariffs, oilfield operations, worker safety and protection of the environment;
- changes in these laws and regulations; and
- the level of enforcement of these laws and regulations.

If we fail to comply with safety regulations or maintain an acceptable level of safety at our facilities, we may incur fines, penalties or other liabilities, or may be held criminally liable. We may incur additional costs to upgrade equipment or conduct additional training, or otherwise incur costs in connection with compliance with safety regulations. Failure to maintain safe operations or achieve certain safety performance metrics could disqualify us from doing business with certain customers, particularly major oil companies.

We depend on the demand for our products and services from the oil and natural gas industry which is affected by changing taxes, price controls and other laws and regulations relating to the oil and natural gas industry in general. For example, the adoption of laws and regulations curtailing exploration and development drilling for oil and natural gas for economic or other policy reasons could adversely affect our operations by limiting demand for our products. In addition, some non-U.S. countries may adopt regulations or practices that give advantage to indigenous oil companies in bidding for oil leases, or require indigenous companies to perform oilfield services currently supplied by international service companies. To the extent that such companies are not our customers, or we are unable to develop relationships with them, our business may suffer. We cannot determine the extent to which our future operations and earnings may be affected by new legislation, new regulations or changes in existing regulations.

Because of our non-U.S. operations and sales, we are subject to changes in regional, political or economic conditions, and non-U.S. laws and policies, including taxes, trade protection measures, and changes in regulatory requirements governing the operations of companies in non-U.S. countries. We are also subject to changes in non-U.S. laws and regulations that may encourage or require hiring of local contractors or require non-U.S. contractors to employ citizens of, or purchase supplies from, a particular jurisdiction. If we fail to comply with any applicable law or regulation, it could have a material adverse effect on our business, financial condition and results of operations.

Changes in trade policies, including the imposition of additional tariffs, could negatively impact our business, financial condition and results of operations.

The current United States administration has signaled support for implementing, and in some instances, has already proposed or taken action with respect to, major changes to certain trade policies, such as the imposition of additional tariffs on imported products and the withdrawal from or renegotiation of certain trade agreements, including the North American Free Trade Agreement. On March 8, 2018, the President of the United States signed an order to impose a tariff of 25% on steel imported from certain countries. On July 1, 2018, Canada implemented retaliatory tariffs on certain U.S. imports, including steel. We anticipate that the tariff could result in an increase in our cost of sales in 2019 as compared to 2018, and we may not be able to pass any of the increases in raw material costs directly resulting from the tariff to our customers. On September 24, 2018, the United States implemented a tariff of 10% on a significant number of commodities originating from China, including certain chemicals utilized in our tracer diagnostics business. The tariffs were scheduled to increase to 25% on January 1, 2019 but the increase has been delayed pending ongoing trade negotiations between the two countries. If a trade resolution with China is not reached, the increased tariff would result in an increase in our cost of sales and we may not be able to pass any of the increases in raw material costs directly resulting from the tariff to our customers.

In addition, there could be additional tariffs imposed by the United States and these could also result in additional retaliatory actions by the United States' trade partners. Given that we procure many of the raw materials that we use to create our products directly or indirectly from outside of the United States, the imposition of tariffs and other potential changes in U.S. trade policy could increase the cost or limit the availability of such raw materials, which could hurt our competitive position and adversely impact our business, financial condition and results of operations. In addition, we sell a significant proportion of our products to customers outside of the United States. Retaliatory actions by other countries could result in increases in the price of our products, which could limit demand for such products, hurt our global competitive position and have a material adverse effect on our business, financial condition and results of operations.

If we are unable to accurately predict customer demand or if customers cancel their orders on short notice, we may hold excess or obsolete inventory, which would reduce gross margins. Conversely, insufficient inventory would result in lost revenue opportunities and potentially a loss in market share and damaged customer relationships.

Customers can generally cancel or defer purchase orders on short notice without incurring a significant penalty. As a result, we cannot accurately predict what or how many products such customers will need in the future. Anticipating demand is difficult because our customers face unpredictable demand for their own products and are increasingly focused on cash preservation and tighter inventory management.

Orders are placed with our suppliers based on forecasts of customer demand and, in some instances, we may establish buffer inventories to accommodate anticipated demand. Our forecasts of customer demand are based on multiple assumptions, each of which may introduce errors into the estimates. If we overestimate customer demand, we may allocate resources to the purchase of material or manufactured products that we may not be able to sell when we expect to, if at all. As a result, we would hold excess or obsolete inventory, which would reduce gross margin and adversely affect financial results. Conversely, if we underestimate customer demand or if insufficient manufacturing capacity is available, we would miss revenue opportunities and potentially lose market share and damage our customer relationships. In addition, any future significant cancellations or deferrals of product orders or the return of previously sold products could materially and adversely affect profit margins, increase product obsolescence and restrict our ability to fund our operations.

We could be subject to additional income tax liabilities.

We are subject to income taxes in the U.S. (federal and state), Canada and other foreign jurisdictions. Tax laws, regulations, and administrative practices in various jurisdictions may be subject to significant change, with or without notice, due to economic, political, and other conditions, and significant judgment is required in evaluating and estimating our provision and accruals for these taxes. There are many transactions that occur during the ordinary course of business for which the ultimate tax determination is uncertain. Our effective tax rates could be affected by numerous factors, such as intercompany transactions, the relative amount of our foreign earnings, including earnings being lower than anticipated in jurisdictions where we have lower statutory rates and higher than anticipated in jurisdictions where we have higher statutory rates, losses incurred in jurisdictions for which we are not able to realize the related tax benefit, changes in foreign currency exchange rates, entry into new businesses and geographies, changes to our existing businesses and operations, acquisitions (including integrations) and investments and how they are financed, changes in our deferred tax assets and liabilities and their valuation, and changes in the relevant tax, accounting, and other laws, regulations, administrative practices, principles, and interpretations. In addition, a number of countries are actively pursuing changes to their tax laws applicable to corporate multinationals, such as the recently enacted U.S. tax reform legislation. Finally, foreign governments may enact tax laws in response to the 2017 Tax Act that could result in further changes to global taxation and materially affect our financial position and results of operations.

The 2017 Tax Act significantly changes how the U.S. taxes corporations. The 2017 Tax Act requires complex computations to be performed that were not previously required by U.S. tax law, judgments to be made in interpretation of the provisions of the 2017 Tax Act and estimates in calculations, and the preparation and analysis of information not previously relevant or regularly produced. The U.S. Treasury Department, the IRS, and other standard-setting bodies could interpret or issue guidance on how provisions of the 2017 Tax Act will be applied or otherwise administered that is different from our interpretation. As we complete our analysis of the 2017 Tax Act, collect and prepare necessary data, and interpret any additional guidance, we may make adjustments to amounts that we have recorded that may impact our provision for income taxes in the period in which the adjustments are made.

We are also currently subject to audit in various jurisdictions, and these jurisdictions may assess additional income tax liabilities against us. Developments in an audit, litigation, or the relevant laws, regulations, administrative practices, principles, and interpretations could have a material effect on our operating results or cash flows in the period or periods for which that development occurs, as well as for prior and subsequent periods.

Loss of our information and computer systems could adversely affect our business.

We are heavily dependent on our information systems and computer based programs, including our engineering information and accounting data. If any of such programs or systems were to fail or create erroneous information in our hardware or software network infrastructure, whether due to cyber-attack or otherwise, possible consequences include our loss of communication links and inability to automatically process commercial transactions or engage in similar automated or computerized business activities. Any such consequence could have a material adverse effect on our business, financial condition and results of operations.

We are subject to cyber security risks. A cyber incident could occur and result in information theft, data corruption, operational disruption and/or financial loss.

The oil and natural gas industry has become increasingly dependent on digital technologies to conduct certain processing activities. For example, we depend on digital technologies to perform many of our services and process and record financial and operating data. At the same time, cyber incidents, including deliberate attacks or unintentional events, have increased. The United States government has issued public warnings that indicate that energy assets might be specific targets of cyber security threats. Our technologies, systems and networks, and those of our customers, vendors, suppliers and other business partners, may become the target of cyberattacks or information security breaches that could result in the unauthorized release, gathering, monitoring, misuse, loss or destruction of proprietary and other information, or other disruption of its business operations.

Our databases and systems, as well as those of our third-party vendors, have been, and likely will continue to be, subject to computer viruses or other malicious codes, unauthorized access attempts, denial of service attacks, phishing and other cyber-attacks. We also face risks associated with new personnel, as well as with new processes and technologies which are implemented from time to time to augment our security and privacy management programs. To date, we have seen no material impact on our business or operations from these attacks, however, we cannot guarantee that our security efforts or the security efforts of our third-party vendors will prevent breaches or breakdowns to our or their databases or systems. If our security measures or those of the third-party vendors we use who have access to this information are inadequate or are breached as a result of third party action, employee error, malfeasance, malware, phishing, hacking attacks, system error, trickery or otherwise, and, as a result, someone obtains unauthorized access to sensitive information on our systems or our providers' systems, our reputation and business could be damaged. We cannot guarantee that our security efforts will prevent breaches or breakdowns to our or our third-party vendors' databases or systems.

In addition, certain cyber incidents, such as surveillance, may remain undetected for an extended period. Our systems and insurance coverage for protecting against cyber security risks may not be sufficient. As cyber incidents continue to evolve, we may be required to expend additional resources to continue to modify or enhance our protective measures or to investigate and remediate any vulnerability to cyber incidents. Our insurance coverage for cyberattacks may not be sufficient to cover all the losses we may experience as a result of such cyberattacks.

Complications with the design or implementation of our new enterprise resource planning system could adversely impact our business and operations.

We rely extensively on information systems and technology to manage our business and summarize operating results. We are in the process of the implementation of a new enterprise resource planning (“ERP”) system. This ERP system has replaced and will continue to replace our existing operating and financial systems. The ERP system is designed to accurately maintain our financial records, enhance operational functionality and provide timely information to our management team related to the operation of the business. The ERP system implementation process has required, and will continue to require, the investment of significant personnel and financial resources. We may not be able to successfully implement the ERP system without experiencing delays, increased costs and other difficulties. If we are unable to successfully design and implement the new ERP system as planned, it could have a material adverse effect on our business, financial condition and results of operations. Additionally, if we do not effectively implement the ERP system as planned or the ERP system does not operate as intended, the effectiveness of our internal control over financial reporting could be adversely affected or our ability to assess those controls adequately could be delayed.

Our business operations in countries outside of the United States are subject to a number of U.S. federal laws and regulations, including restrictions imposed by the Foreign Corrupt Practices Act as well as trade sanctions administered by the Office of Foreign Assets Control (“OFAC”) and the Commerce Department.

Local laws and customs in many countries differ significantly from those in the United States. In many countries, particularly in those with developing economies, it is common to engage in business practices that are prohibited by U.S. regulations applicable to us. The United States Foreign Corrupt Practices Act (“FCPA”) and similar anti-bribery laws in other jurisdictions, including the UK Bribery Act 2010, prohibit corporations and individuals, including us and our employees, from engaging in certain activities to obtain or retain business or to influence a person working in an official capacity. We are responsible for any violations by our employees, contractors and agents, whether based within or outside of the United States, for violations of the FCPA. We may also be held responsible for any violations by an acquired company that occur prior to an acquisition, or subsequent to the acquisition but before we are able to institute our compliance procedures. In addition, our non-U.S. competitors that are not subject to the FCPA or similar laws may be able to secure business or other preferential treatment in such countries by means that such laws prohibit with respect to us. A violation of any of these laws, even if prohibited by our policies, could have a material adverse effect on our business, financial condition or results of operation. Actual or alleged violations could damage our reputation, be expensive to defend, and impair our ability to do business.

Compliance with U.S. regulations on trade sanctions and embargoes administered by OFAC also poses a risk to us. We cannot provide products or services to certain countries subject to U.S. trade sanctions. Furthermore, the laws and regulations concerning import activity, export recordkeeping and reporting, export control and economic sanctions are complex and constantly changing. Any failure to comply with applicable legal and regulatory trading obligations could result in criminal and civil penalties and sanctions, such as fines, imprisonment, debarment from governmental contracts, seizure of shipments and loss of import and export privileges.

We may have difficulty managing growth in our business, which could have a material adverse effect on our business, financial condition and results of operations.

Any significant growth, if achieved, could place a significant strain on our financial, technical, operational and management resources. As we expand the scope of our activities and our geographic coverage through organic growth, acquisitions and strategic partnerships, there will be additional demands on our financial, technical, operational and management resources. The failure to continue to upgrade our technical, administrative, operating and financial control systems or the occurrences of unexpected expansion difficulties, including the failure to recruit and retain experienced managers, engineers and other professionals, could have a material adverse effect on our business, financial condition and results of operations.

Our success may depend on the continued service and availability of key personnel.

Our success and future growth is dependent upon the ability of our executive officers, senior managers and other key personnel to operate and manage our business and execute on our growth strategies successfully. We may be unable to continue to attract and retain our executive officers, senior managers or other key personnel. We may incur increased expenses in connection with the hiring, promotion, retention or replacement of any of these individuals. These labor costs include the cost of providing employee benefits in the United States, Canada and other foreign jurisdictions, including severance benefits. The loss of the services of any of our key personnel could have a material adverse effect our business, financial condition and results of operations.

We may be unable to attract and retain skilled and technically knowledgeable employees, which could adversely affect our business.

Our success and future growth is dependent upon attracting and retaining highly skilled professionals and other technical personnel. A number of our employees are highly skilled engineers, geologists and highly trained technicians, and our failure to continue to attract and retain such individuals could adversely affect our ability to compete in the oilfield services industry. We may confront significant and potentially adverse competition for these skilled and technically knowledgeable personnel, particularly during periods of increased demand for oil and natural gas. Additionally, at times there may be a shortage of skilled and technical personnel available in the market, potentially compounding the difficulty of attracting and retaining these employees. If we are unable to recruit or retain sufficient skilled and technical personnel it could have a material adverse effect on our business, financial condition and results of operations.

Unionization efforts could increase our costs or limit our flexibility.

Presently, none of our employees work under collective bargaining agreements. Unionization efforts have been made from time to time within our industry, to varying degrees of success. Any such unionization could increase our costs or limit our flexibility, which could have a material adverse effect on our business, financial condition and results of operations.

Restrictions on drilling activities intended to protect certain species of wildlife may adversely affect the ability of our customers to conduct drilling activities in some of the areas where we operate.

Oil and natural gas operations in our operating areas can be adversely affected by seasonal or permanent restrictions on drilling activities designed to protect various wildlife, which may limit the ability of our customers to operate in protected areas. Permanent restrictions imposed to protect endangered species could prohibit drilling in certain areas or require the implementation of expensive mitigation measures. Additionally, the designation of previously unprotected species as threatened or endangered in areas where we operate could result in increased costs arising from species protection measures. Restrictions on the oil and natural gas operations of our customers to protect wildlife could reduce demand for our products and services, which could have a material adverse effect on our business, financial condition and results of operations.

We are subject to the risk of supplier concentration.

Certain of our product lines depend on a limited number of third-party suppliers and vendors. As a result of this concentration in some of our supply chains, our business and operations could be negatively affected if our key suppliers were to experience significant disruptions affecting the price, quality, availability or timely delivery of their products. The partial or complete loss of any one of our key suppliers, or a significant adverse change in the relationship with any of these suppliers, through consolidation or otherwise, may limit our ability to manufacture and sell certain of our products.

We may not be able to satisfy technical requirements, testing requirements, code requirements or other specifications under contracts and contract tenders.

Many of our products could be used in harsh environments and severe service applications. Our contracts with customers and customer requests for bids may set forth detailed specifications or technical requirements (including that they meet certain industrial code requirements, such as API, ASME or similar codes, or that our processes and facilities maintain ISO or similar certifications) for our products and services, which may also include extensive testing requirements. We anticipate that such code testing requirements will become more common in our contracts. We cannot assure you that our products or facilities will be able to satisfy the specifications or requirements, or that we will be able to perform the full-scale testing necessary to prove that the product specifications are satisfied in future contract bids or under existing contracts, or that the costs of modifications to our products or facilities to satisfy the specifications and testing will not adversely affect our results of operations. If our products or facilities are unable to satisfy such requirements, or we are unable to perform or satisfy any scale testing, our customers may cancel their contracts and/or seek new suppliers, which could have a material adverse effect on our business, financial conditions and results of operations.

Risks Relating to Our Indebtedness

We are a holding company and rely on dividends, distributions and other payments, advances and transfers of funds from our subsidiaries to meet our obligations.

We are a holding company that does not conduct any business operations of our own. As a result, we are largely dependent upon cash dividends and distributions and other transfers from our subsidiaries to meet our obligations. The agreements governing the indebtedness of our subsidiaries impose restrictions on our subsidiaries' ability to pay dividends or other distributions to us. The deterioration of the earnings from, or other available assets of, our subsidiaries for any reason also could limit or impair their ability to pay dividends or other distributions to us.

Our outstanding indebtedness could adversely affect our financial condition and our ability to operate our business, and we may not be able to generate sufficient cash flows to meet our debt service obligations.

As of December 31, 2018, our total outstanding indebtedness was \$25.7 million, including \$20.0 million under our Senior Secured Credit Facility (as defined below). Our outstanding indebtedness and any additional indebtedness we incur may have important consequences for us, including, without limitation, that:

- we may be required to use a substantial portion of our cash flow to pay the principal of and interest on our indebtedness;
- our indebtedness and leverage may increase our vulnerability to adverse changes in general economic and industry conditions, as well as to competitive pressures;
- our ability to obtain additional financing for working capital, capital expenditures, acquisitions and for general corporate and other purposes may be limited;
- expose us to the risk of increased interest rates because our borrowings are at variable rates of interest;
- prevent us from taking advantage of business opportunities as they arise or successfully carrying out our plans to expand our business; and
- our flexibility in planning for, or reacting to, changes in our business and our industry may be limited.

Under the terms of the credit agreement governing our Senior Secured Credit Facility, we are required to comply with specified financial and operating covenants, which may limit our ability to operate our business as we otherwise might operate it. The obligations under our Senior Secured Credit Facility may be accelerated upon the occurrence of an event of default, which includes customary events of default including, without limitation, payment defaults, cross-defaults to certain material indebtedness, covenant defaults, material inaccuracy of representations and warranties, bankruptcy events, material judgments, certain ERISA-related events, material defects with respect to guarantees and collateral, invalidity of subordination provisions and change of control. If not cured, an event of default could result in any amounts outstanding, including any accrued interest and unpaid fees, becoming immediately due and payable, which would require us to, among other things: seek additional financing in the debt or equity markets, refinance or restructure all or a portion of our indebtedness, sell selected assets and/or reduce or delay planned capital or operating expenditures. Such measures might not be sufficient to enable us to service our debt and any such financing or refinancing might not be available on economically favorable terms or at all. If we are not able to generate sufficient cash flows to meet our debt service obligations or are forced to take additional measures to be able to service our indebtedness, it could have a material adverse effect on our business, financial condition and results of operations.

We and our subsidiaries may be able to incur substantial indebtedness.

We may incur substantial additional indebtedness in the future. Although the terms of the agreement governing our Senior Secured Credit Facility contains restrictions on our ability to incur additional indebtedness, these restrictions are subject to a number of important exceptions, and indebtedness incurred in compliance with these restrictions could be substantial. If we and our subsidiaries incur significant additional indebtedness, the related risks to our financial condition could increase.

Restrictive covenants in the agreement governing our Senior Secured Credit Facility may restrict our ability to pursue our business strategies.

The agreement governing our Senior Secured Credit Facility contains a number of restrictive covenants that impose significant operating and financial restrictions on us and may limit our ability to engage in acts that may be in our long-term best interests. These include covenants restricting, among other things, our ability to:

- incur additional indebtedness;
- grant liens;
- enter into burdensome agreements with negative pledge clauses or restrictions on subsidiary distributions;

- make certain investments;
- pay dividends;
- make payments in respect of junior lien or subordinated debt;
- make acquisitions;
- consolidate, amalgamate, merge, liquidate or dissolve;
- sell, transfer or otherwise dispose of assets;
- make certain organizational changes (including with respect to organizational documents and changes in fiscal year);
- engage in sale-leaseback transactions;
- engage in transactions with affiliates;
- enter into operating leases;
- enter into hedging arrangements;
- enter into certain leasehold arrangements and arrangements with respect to inventory and equipment;
- materially alter our business; and
- incur capital expenditures.

Our Senior Secured Credit Facility contains financial covenants that require (i) commencing with the fiscal quarter ended June 30, 2017, compliance with a leverage ratio test set at (A) 3.00 to 1.00 as of the last day of each fiscal quarter ending prior to March 31, 2018 and (B) 2.50 to 1.00 as of the last day of each fiscal quarter ending on or after March 31, 2018, (ii) commencing with the fiscal quarter ended June 30, 2017, compliance with an interest coverage ratio test set at 2.75 to 1.00 as of the last day of each fiscal quarter, (iii) if the leverage ratio as of the end of any fiscal quarter is greater than 2.00 to 1.00 and the amount outstanding under the Canadian Facility at any time during such fiscal quarter was greater than \$0, compliance as of the end of such fiscal quarter with a Canadian asset coverage ratio test set at 1.00 to 1.00 and (iv) if the leverage ratio as of the end of any fiscal quarter is greater than 2.00 to 1.00 and the amount outstanding under the U.S. Facility at any time during such fiscal quarter was greater than \$0, compliance as of the end of such fiscal quarter with a U.S. asset coverage ratio test set at 1.00 to 1.00. Our ability to meet these financial ratios can be affected by events beyond our control and we cannot assure you that we will be able to meet these ratios. A breach of any covenant or restriction contained in the agreement governing our Senior Secured Credit Facility could result in an event of default under this agreement. If any such event of default occurs, the lenders under the facility, may elect (after the expiration of any applicable notice or grace periods) to declare all outstanding borrowings, together with accrued and unpaid interest and other amounts payable thereunder, to be immediately due and payable. The lenders under our Senior Secured Credit Facility, also have the right upon an event of default thereunder to terminate any commitments they have to provide further borrowings. Further, following an event of default under the agreement governing our Senior Secured Credit Facility, the lenders under the facility will have the right to proceed against the collateral granted to them to secure that debt. If the debt under our Senior Secured Credit Facility was to be accelerated, our assets may not be sufficient to repay in full that debt or any other debt that may become due as a result of that acceleration.

Volatility and weakness in bank and capital markets may adversely affect credit availability and related financing costs for us.

The indebtedness under our Senior Secured Credit Facility matures on May 4, 2020. Our ability to refinance this indebtedness on acceptable terms will be dependent upon a number of factors, including our degree of leverage, the value of our assets, borrowing restrictions which may be imposed by lenders and conditions in the credit markets at the time we refinance. Furthermore, bank and capital markets can experience periods of volatility and disruption. If the disruption in these markets is prolonged, our ability to refinance, and the related cost of refinancing, some or all of our debt could be adversely affected. Additionally, during periods of volatile credit markets, there is a risk that lenders, even those with strong balance sheets and sound lending practices, could fail or refuse to honor their legal commitments and obligations under existing credit commitments, including our Senior Secured Credit Facility. Although we currently can access the bank and capital markets, there is no assurance that such markets will continue to be a reliable source of financing for us. These factors, including the tightening of credit markets, could adversely affect our ability to obtain cost-effective financing. Increased volatility and disruptions in the financial markets also could make it more difficult and more expensive for us to refinance outstanding indebtedness and obtain financing. In addition, the adoption of new statutes and regulations, the implementation of recently enacted laws or new interpretations or the enforcement of older laws and regulations applicable to the financial markets or the financial services industry could result in a reduction in the amount of available credit or an increase in the cost of credit. Disruptions in the financial markets can also adversely affect our lenders, insurers, customers and other counterparties. Any of these results could have a material adverse effect on our business, financial condition and results of operations.

Risks Relating to Ownership of Our Common Stock

The price of our common stock may be volatile and you could lose all or part of your investment.

Securities markets worldwide have experienced in the past, and are likely to experience in the future, significant price and volume fluctuations. Specifically, the oilfield services sector has recently experienced significant market volatility. This market volatility, as well as general economic, market or political conditions could reduce the market price of our common stock regardless of our results of operations. The trading price of our common stock may be highly volatile and could be subject to wide price fluctuations in response to various factors, including, among other things, the risk factors described herein and other factors beyond our control. Factors affecting the trading price of our common stock could include:

- market conditions in the broader stock market;
- actual or anticipated variations in our quarterly financial and operating results;
- developments in the oil and natural gas industry in general or in the oil and natural gas services market in particular;
- variations in operating results of similar companies;
- introduction of new services by us, our competitors or our customers;
- issuance of new, negative or changed securities analysts' reports, recommendations or estimates;
- investor perceptions of us and the industries in which we or our customers operate;
- sales, or anticipated sales, of our stock, including sales by our officers, directors and significant stockholders;
- additions or departures of key personnel;
- regulatory or political developments;
- the public's response to press releases or other public announcements by us or third parties, including our filings with the SEC;
- announcements media reports or other public forum comments related to litigation, claims or reputational charges against us;
- guidance, if any, that we provide to the public, any changes in this guidance or our failure to meet this guidance;
- the sustainability of an active trading market for our common stock;
- investor perceptions of the investment opportunity associated with our common stock relative to other investment alternatives;
- other events or factors, including those resulting from system failures and disruptions, earthquakes, hurricanes, war, acts of terrorism, other natural disasters or responses to these events;
- changes in accounting principles;
- share-based compensation expense under applicable accounting standards;
- litigation and governmental investigations; and
- changing economic conditions.

These and other factors may cause the market price and demand for shares of our common stock to fluctuate substantially, which may limit or prevent investors from readily selling their shares of common stock and may otherwise negatively affect the liquidity of our common stock. In addition, in the past, when the market price of a stock has been volatile, holders of that stock sometimes have instituted securities class action litigation against the company that issued the stock. Securities litigation against us, regardless of the merits or outcome, could result in substantial costs and divert the time and attention of our management from our business, which could significantly harm our business, profitability and reputation.

We are controlled by the Advent Funds, whose interests may differ from those of our public stockholders.

We are controlled by funds (the "Advent Funds") managed by Advent International Corporation ("Advent"), which beneficially own in the aggregate 63.7% of the combined voting power of our common stock. As a result of this ownership, Advent will have effective control over the outcome of votes on all matters requiring approval by our stockholders, including the election of directors, the adoption of amendments to our charter and bylaws and other significant corporate transactions.

In addition, persons associated with Advent currently serve on our board of directors (our "Board"). The interests of Advent may not always coincide with the interests of our other stockholders, and the concentration of effective control in Advent will limit

other stockholders' ability to influence corporate matters. The concentration of ownership and voting power of Advent also may delay, defer or even prevent an acquisition by a third-party or other change of control and may make some transactions more difficult or impossible without their support, even if such events are in the best interests of our other stockholders.

Further, Advent may have an interest in having us pursue acquisitions, divestitures, financing or other transactions, including, but not limited to, the issuance of additional debt or equity and the declaration and payment of dividends, that, in its judgment, could enhance Advent's equity investments, even though such transactions may involve risk to us or to our creditors. Additionally, the Advent Funds may make investments in businesses that directly or indirectly compete with us, or may pursue acquisition opportunities that may be complementary to our business and, as a result, those acquisition opportunities may not be available to us.

Advent may take actions that our other stockholders do not view as beneficial, which may adversely affect our business, financial condition and results of operations and cause the value of your investment to decline.

Advent and our directors affiliated with Advent, with certain exceptions, do not have obligations to present business opportunities to us and may compete with us.

Our Second Amended and Restated Certificate of Incorporation (our "amended and restated certificate of incorporation") provides that Advent and our directors affiliated with Advent do not have any obligation to offer us an opportunity to participate in business opportunities presented to them even if the opportunity is one that we might reasonably have pursued (and therefore may be free to compete with us in the same business or similar businesses), and that, to the extent permitted by law, Advent and such directors, will not be liable to us or our stockholders for breach of any duty by reason of any such activities.

As a result, Advent or any of its managers, officers, directors, agents, stockholders, members, partners, affiliates and subsidiaries (other than us and our subsidiaries) will not be prohibited from investing in competing businesses or doing business with our clients. Therefore, we may be in competition with Advent and such persons or their respective affiliates, and we may not have knowledge of, or be able to pursue, transactions that could potentially be beneficial to us. Accordingly, we may lose certain corporate opportunities or suffer competitive harm, which could have a material adverse effect on our business, financial condition, results of operation or prospects.

Future sales of our common stock, or the perception in the public markets that these sales may occur, could cause the market price for our common stock to decline.

We may sell additional shares of common stock in subsequent public offerings. As of March 6, 2019, we had 46,669,205 outstanding shares of our common stock. We also have registered 7,645,071 shares of common stock reserved for issuance under our equity incentive plans and 2,000,000 registered shares of common stock are reserved for issuance under our Employee Stock Purchase Plan for U.S. Employees (the "U.S. ESPP") and our Employee Stock Purchase Plan for non-U.S. Employees (the "Non-U.S. ESPP" and together with the U.S. ESPP, the "ESPP"). Of those shares initially registered and reserved for issuance, 156,486 shares of common stock were issued in January 2019 in connection with outstanding awards and the settlement of our prior ESPP offering period and 1,843,514 shares remain available for future issuance. See Part III, Item 12. "Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters" for more information.

In addition, we currently have an effective shelf registration statement on file with the SEC to allow us to sell and certain requesting holders to resell shares of our common stock. We cannot predict the effect, if any, that such market sales of shares of our common stock or the availability of shares of our common stock for sale will have on the market price of our common stock prevailing from time to time. Sales of substantial amounts of shares of our common stock in the public market, or the perception that those sales will occur, could cause the market price of our common stock to decline.

We have elected to take advantage of the "controlled company" exemption to the corporate governance rules for publicly-listed companies, which could make our common stock less attractive to some investors or otherwise harm our stock price.

Because we qualify as a "controlled company" under the corporate governance rules for publicly-listed companies on NASDAQ Global Select Market ("NASDAQ"), we are not required to have a majority of our Board be independent, nor are we required to have a compensation committee or a Board committee performing the Board nominating function. As permitted by our status as a controlled company, we may choose to change our Board composition, or the composition of the compensation, nominating and corporate governance committee. Accordingly, should the interests of the Advent Funds differ from those of other stockholders, the other stockholders may not have the same protections afforded to stockholders of companies that are subject to all of the corporate governance rules for publicly-listed companies. Our status as a controlled company could make our common stock less attractive to some investors or otherwise harm our stock price.

Anti-takeover protections in our amended and restated certificate of incorporation, our amended and restated bylaws or our contractual obligations may discourage or prevent a takeover of our company, even if an acquisition would be beneficial to our stockholders.

Provisions contained in our amended and restated certificate of incorporation and amended and restated bylaws, as amended, as well as provisions of the Delaware General Corporation Law (the “DGCL”), could delay or make it more difficult to remove incumbent directors or could impede a merger, takeover or other business combination involving us or the replacement of our management or discourage a potential investor from making a tender offer for our common stock, which, under certain circumstances, could reduce the market value of our common stock, even if it would benefit our stockholders.

In addition, our Board has the authority to cause us to issue, without any further vote or action by the stockholders, up to 10,000,000 shares of preferred stock, par value \$0.01 per share, in one or more series, to designate the number of shares constituting any series, and to fix the rights, preferences, privileges and restrictions thereof, including dividend rights, voting rights, rights and terms of redemption, redemption price or prices and liquidation preferences of such series. The issuance of shares of preferred stock or the adoption of a stockholder rights plan may have the effect of delaying, deferring or preventing a change in control of our company without further action by the stockholders, even where stockholders are offered a premium for their shares.

In addition, under the agreement governing our Senior Secured Credit Facility, a change of control would cause an event of default to occur and the lenders under the facility would have the right to accelerate their loans, and if so accelerated, we would be required to repay all of our outstanding obligations under our Senior Secured Credit Facility. In addition, from time to time we may enter into contracts that contain change of control provisions that limit the value of, or even terminate, the contract upon a change of control. These change of control provisions may discourage a takeover of our company, even if an acquisition would be beneficial to our stockholders.

We are an “emerging growth company” and may elect to comply with reduced reporting requirements applicable to emerging growth companies, which could make our common stock less attractive to investors.

We are an emerging growth company and we may take advantage of certain exemptions from various reporting requirements that are applicable to other public companies that are not emerging growth companies, including, but not limited to, not being required to comply with the auditor attestation requirements of Section 404 of Sarbanes-Oxley, reduced disclosure obligations regarding executive compensation in our periodic reports and proxy statements and exemptions from the requirements of holding a nonbinding advisory vote on executive compensation and shareholder approval of any golden parachute payments not previously approved. In addition, even if we choose to comply with certain of the greater obligations of public companies that are not emerging growth companies, we may avail ourselves of the reduced requirements applicable to emerging growth companies from time to time in the future. We cannot predict if investors will find our common stock less attractive if we choose to rely on these exemptions. If some investors find our common stock less attractive as a result, there may be a less active trading market for our common stock and our stock price may be more volatile.

We will remain an emerging growth company until December 31, 2022, or until the earliest of (i) the last day of the first fiscal year in which our annual gross revenues exceed \$1.07 billion, (ii) the date that we become a “large accelerated filer” as defined in Rule 12b-2 under the Exchange Act, which would occur if the market value of our common stock that is held by non-affiliates exceeds \$700 million as of the last business day of our most recently completed second fiscal quarter, or (iii) the date on which we have issued more than \$1.0 billion in non-convertible debt during the preceding three-year period, whether or not issued in a registered offering.

Notwithstanding the above, we are also currently a “smaller reporting company,” meaning that we are not an investment company, an asset-backed issuer, or a majority-owned subsidiary of a parent company that is not a smaller reporting company and have a public float of less than \$250 million. In the event that we are still considered a “smaller reporting company,” at such time we cease being an “emerging growth company”, we will be required to provide additional disclosure in our SEC filings. However, similar to “emerging growth companies”, “smaller reporting companies” are exempt from the auditor attestation requirements of Section 404(b) of Sarbanes-Oxley; have reduced disclosure obligations regarding executive compensation in periodic reports and proxy statements and are exempt from the requirements of holding a nonbinding advisory vote on executive compensation and shareholder approval of any golden parachute payments not previously approved; and have certain other decreased disclosure obligations in their SEC filings, including, among other things, only being required to provide two years of audited financial statements in annual reports.

Decreased disclosures in our SEC filings due to our status as an “emerging growth company” or “smaller reporting company” may make it harder for investors to analyze our results of operations and financial prospects.

In the past, we identified material weaknesses in our internal control over financial reporting and may identify material weaknesses in the future or otherwise fail to maintain an effective system of internal controls, which may result in material misstatements of our financial statements or cause us to fail to meet our reporting obligations or fail to prevent fraud; which would harm our business and could negatively impact the price of our common stock.

Effective internal controls are necessary for us to provide reliable financial reports and prevent fraud. If we fail to maintain an effective system of internal controls, we might not be able to report on our financial results accurately or prevent fraud; which would harm our business and could negatively impact the price of our common stock. Prior to our IPO, we were a private company and had limited accounting and financial reporting personnel and other resources with which to address our internal controls and procedures. In connection with the audit of our financial statements for the years ended December 31, 2015 and December 31, 2016, we and our independent registered public accounting firm identified material weaknesses in our internal control over financial reporting, which were remediated as of March 31, 2018. The material weakness described above, or any newly identified material weakness, could result in a material misstatement of our annual or interim consolidated financial statements that would not be prevented or detected on a timely basis.

In addition, an independent registered public accounting firm has never performed an evaluation of our internal control over financial reporting in accordance with the provisions of the Sarbanes-Oxley Act because no such evaluation has been required. Had our independent registered public accounting firm performed an evaluation of our internal control over financial reporting in accordance with the provisions of the Sarbanes-Oxley Act, additional material weaknesses may have been identified. If we are unable to prevent or remediate any future material weakness in our internal control over financial reporting, or identify any additional material weaknesses that may exist, the accuracy and timing of our financial reporting may be adversely affected, we may be unable to maintain compliance with securities law requirements regarding timely filing of periodic reports in addition to applicable stock exchange listing requirements, we may be unable to prevent fraud, investors may lose confidence in our financial reporting, and our stock price may decline as a result. Additionally, our reporting obligations as a public company could place a strain on our management, operational and financial resources and systems for the foreseeable future and may cause us to fail to timely achieve and maintain the adequacy of our internal control over financial reporting.

Our amended and restated certificate of incorporation provides, subject to certain exceptions, that the Court of Chancery of the State of Delaware will be the sole and exclusive forum for certain stockholder litigation matters, which could limit our stockholders' ability to obtain a favorable judicial forum for disputes with us or our directors, officers, employees or stockholders.

Our amended and restated certificate of incorporation provides, subject to limited exceptions, that the Court of Chancery of the State of Delaware will, to the fullest extent permitted by law, be the sole and exclusive forum for (i) any derivative action or proceeding brought on our behalf; (ii) any action asserting a claim of breach of a fiduciary duty owed by any of our directors, officers or other employees to us or our stockholders; (iii) any action asserting a claim against us, any director or our officers or employees arising pursuant to any provision of the DGCL, our certificate or our amended and restated by-laws; or (iv) any action asserting a claim against us, any director or our officers or employees that is governed by the internal affairs doctrine. Any person or entity purchasing or otherwise acquiring any interest in shares of our capital stock shall be deemed to have notice of and to have consented to the provisions of our certificate described above. This choice of forum provision may limit a stockholder's ability to bring a claim in a judicial forum that it finds favorable for disputes with us or any of our directors, officers, other employees or stockholders which may discourage lawsuits with respect to such claims. Alternatively, if a court were to find the choice of forum provision that will be contained in our certificate to be inapplicable or unenforceable in an action, we may incur additional costs associated with resolving such action in other jurisdictions, which could have a material adverse effect on our business, financial condition and results of operations.

Item 1B. Unresolved Staff Comments

None.

Item 2. Properties

Our corporate headquarters are located at 19450 State Highway 249, Suite 200, Houston, Texas 77070. We currently own one property, located in Calgary, Alberta, which is used for our engineering and research and development activities. In addition to our property in Calgary, Alberta, we also lease 49 properties that are used for our corporate headquarters, sales offices, manufacturing, engineering, district operations, laboratory, warehousing and storage yards. All of these properties are leased from third parties. We believe that these facilities are adequate for our current operations and that none of our leases are individually material to our business.

Item 3. Legal Proceedings

In the ordinary course of our business, from time to time, we have various claims, lawsuits and administrative proceedings that are pending or threatened with respect to commercial, intellectual property and employee matters.

On July 24, 2018, we filed a patent infringement lawsuit against Kobold in the Federal Court of Canada, alleging that Kobold's fracturing tools and methods infringe on several of our Canadian patents. We previously filed a breach of contract lawsuit on March 16, 2018, against Kobold Corporation in the Court of Queen's Bench of Alberta, alleging breach of a prior settlement agreement. Both of these lawsuits seek unspecified monetary damages and injunctive relief.

In early February 2019, we filed a lawsuit against Diamondback Industries, Inc. ("Diamondback") in the United States District Court for the Western District of Texas, Waco Division, alleging patent infringement, breach of contract and related claims stemming from Diamondback's breach of an exclusive license, granted by Diamondback to Repeat Precision, to a patent necessary for the manufacture and sale of a disposable setting tool. Around the same time, Diamondback filed a lawsuit against Repeat Precision and various NCS entities in an effort to invalidate the exclusive license agreement and requested monetary damages. We believe the exclusive license is enforceable and there is no basis to support the claims asserted by Diamondback and we intend to vigorously enforce our rights under the license agreement.

While the outcome of any legal proceedings cannot be predicted with any certainty, based on a consideration of relevant facts and circumstances, our management currently does not expect that the results of these legal proceedings would have a material adverse effect on our financial position, results of operations or cash flows.

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

Market Information

Our common stock has traded on the NASDAQ under the symbol “NCSM” since April 28, 2017. Prior to that time, there was no public market for our shares.

See Part III, Item 12. “Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters” for information regarding shares of common stock authorized for issuance under our stock incentive plans.

Holdings

On March 6, 2019, we had 46,669,205 shares of common stock outstanding, which were held by approximately 19 record holders. The actual number of stockholders is considerably greater than this number of record holders, and includes stockholders who are beneficial owners but whose shares are held in street name by brokers and other nominees.

Dividends

We do not intend to pay cash dividends on our common stock in the foreseeable future. However, in the future, we may change this policy and choose to pay dividends. Any future determination to pay dividends will be at the discretion of our Board and will take into account restrictions in our debt instruments, including our secured credit facilities, general economic and business conditions, our net income, financial condition and results of operations, our capital requirements, our prospects, the ability of our operating subsidiaries to pay dividends and make distributions to us, legal restrictions and such other factors as our Board may deem relevant.

Performance Graph

As we are a “smaller reporting company,” for the year ended December 31, 2018, we are not required to provide the performance graph under Item 201(e) of Regulation S-K.

Unregistered Sales of Equity Securities and Use of Proceeds

The following sets forth information regarding all unregistered securities sold by us in transactions that were exempt from the requirements of the Securities Act in the last three years:

- In January 2016, we issued 5,235 shares of common stock at a purchase price of \$9.55 per share, to a former employee.
- In April 2016, we granted options to purchase 6,150, 4,500 and 18,843 shares of common stock at a strike price of \$9.55 per share, to certain employees.
- In July 2016, we issued 5,400 shares of common stock at a purchase price of \$9.55 per share and granted options to purchase an aggregate of 23,553 shares of common stock at a strike price of \$9.55 per share, to Kevin Trautner.
- In August 2016, we granted options to purchase an aggregate of 17,835 shares of common stock at a strike price of \$9.81 per share, to a certain employee.
- In May 2017, in connection with the exercise of the over-allotment option in connection with our IPO, we issued 50,000 shares of common stock to Cemblend Systems, Inc. (“Cemblend”) in exchange for shares of one of our wholly-owned subsidiaries.
- In August 2017, we issued 355,658 shares of common stock to certain individuals in exchange for their membership interests in Spectrum.
- In February 2018, we issued 442,312 shares of common stock to Cemblend in exchange for shares of one of our wholly-owned subsidiaries.
- In February 2019, we issued 1,326,935 shares of common stock to Cemblend in exchange for shares of one of our wholly-owned subsidiaries.

The shares of common stock in all of the transactions listed above were issued or will be issued in reliance upon Section 4(a)(2) of the Securities Act or Rule 701 promulgated under Section 3(b) of the Securities Act as the sale of such securities did not or will not involve a public offering. The recipients of the securities in each of these transactions represented their intentions to acquire the securities for investment only and not with a view to or for sale in connection with any distribution thereof, and appropriate legends

were placed upon the stock certificates issued in these transactions. All recipients had adequate access, through their relationships with us, to information about us.

Issuer Purchases of Equity Securities

None.

Item 6. Selected Financial Data

The selected consolidated financial information contained below is derived from our consolidated financial statements and should be read in conjunction with Item 7. “Management’s Discussion and Analysis of Financial Condition and Results of Operations” and our audited consolidated financial statements each of which is included in this Form 10-K. Our historical results are not necessarily indicative of our results to be expected in any future period.

	Year Ended December 31,			
	2018	2017	2016	2015
(in thousands, except per share amounts)				
Revenues				
Product sales	\$ 156,781	\$ 144,666	\$ 73,220	\$ 80,079
Services	70,182	56,968	25,259	33,926
Total revenues	226,963	201,634	98,479	114,005
Cost of sales				
Cost of product sales, exclusive of depreciation and amortization expense shown below	74,892	76,288	40,511	40,160
Cost of services, exclusive of depreciation and amortization expense shown below	33,414	22,504	13,322	14,553
Total cost of sales, exclusive of depreciation and amortization expense shown below	108,306	98,792	53,833	54,713
Selling, general and administrative expenses	82,813	64,707	37,061	37,804
Depreciation	4,747	3,193	1,766	2,695
Amortization	13,090	24,458	23,801	24,576
Change in fair value of contingent consideration	(2,872)	5,525	—	—
Impairments	227,543	—	—	—
(Loss) income from operations	(206,664)	4,959	(17,982)	(5,783)
Other income (expense)				
Interest expense, net	(1,963)	(4,306)	(6,286)	(8,064)
Other income (expense), net	182	1,085	45	(131)
Foreign currency exchange gain (loss)	162	224	(2,522)	25,779
Total other (expense) income	(1,619)	(2,997)	(8,763)	17,584
(Loss) income before income tax	(208,283)	1,962	(26,745)	11,801
Income tax (benefit) expense	(23,052)	670	(8,818)	(16,224)
Net (loss) income	(185,231)	1,292	(17,927)	28,025
Net income (loss) attributable to non-controlling interest	5,086	(810)	—	—
Net (loss) income attributable to NCS Multistage Holdings, Inc.	\$ (190,317)	\$ 2,102	\$ (17,927)	\$ 28,025
(Loss) earnings per common share				
Basic	\$ (4.25)	\$ 0.05	\$ (0.53)	\$ 0.88
Diluted	\$ (4.25)	\$ 0.05	\$ (0.53)	\$ 0.86
Weighted average common shares outstanding				
Basic	44,788	40,484	34,008	29,966
Diluted (1)	44,788	43,583	34,008	32,433
Consolidated Statement of Cash Flows Data:				
Net cash provided by (used in)				
Operating activities	\$ 14,026	\$ 16,114	\$ 10,684	\$ 4,369
Investing activities	(15,410)	(85,221)	(1,840)	(1,221)
Financing activities	(5,130)	84,033	(315)	(12,766)
Other Financial Data:				
Adjusted EBITDA (2)	\$ 49,739	\$ 49,498	\$ 13,880	\$ 26,219
Consolidated Balance Sheet Data:				
Cash and cash equivalents	\$ 25,131	\$ 33,809	\$ 18,275	\$ 9,545
Total assets	229,701	463,913	326,827	332,537
Total debt, net	25,691	27,036	89,166	85,856
Total liabilities	53,470	94,922	149,349	145,068
Total stockholders' equity	161,301	356,847	177,478	187,469

- (1) The diluted weighted average shares outstanding amount excludes the impact of securities that would be anti-dilutive.
- (2) Adjusted EBITDA is defined as net income (loss) before interest expense, net, income tax expense (benefit) and depreciation and amortization adjusted to exclude certain items which we believe are not reflective of ongoing operating performance or which, in the case of impairments and share-based compensation, are non-cash in nature. We believe that Adjusted EBITDA is an important measure that excludes costs that management believes do not reflect our ongoing operating performance and certain costs associated with our capital structure. Accordingly, Adjusted EBITDA is a key metric that management uses to assess the period-to-period performance of our core business operations. We believe that presenting Adjusted EBITDA enables investors to assess our performance from period to period using the same metrics utilized by management and also allows investors to evaluate our performance relative to other companies that are not subject to such factors. Adjusted EBITDA is not defined under accounting principles generally accepted in the United States (“GAAP”), is not a measure of net income, income from operations or any other performance measure derived in accordance with GAAP, and is subject to important limitations. Adjusted EBITDA may not be comparable to similarly titled measures of other companies in our industry and is not a measure of performance calculated in accordance with GAAP.

A reconciliation of net income (loss), the most directly comparable GAAP measure, to Adjusted EBITDA on a consolidated basis for the periods indicated is as follows (in thousands):

	Year Ended December 31,			
	2018	2017	2016	2015
Net (loss) income	\$ (185,231)	\$ 1,292	\$ (17,927)	\$ 28,025
Income tax (benefit) expense	(23,052)	670	(8,818)	(16,224)
Interest expense, net (a)	1,963	4,306	6,286	8,064
Depreciation	4,747	3,193	1,766	2,695
Amortization	13,090	24,458	23,801	24,576
EBITDA	(188,483)	33,919	5,108	47,136
Impairments (b)	227,543	—	—	—
Share-based compensation (c)	10,930	6,108	1,354	1,313
Restructuring charges (d)	—	—	277	430
Professional fees (e)	1,542	3,870	3,079	306
Unrealized foreign currency loss (gain) (f)	1,479	17,006	2,612	(12,787)
Realized foreign currency gain (g)	(1,641)	(17,230)	(89)	(12,992)
Change in fair value of contingent consideration (h)	(2,872)	5,525	—	—
Other (i)	1,241	300	1,539	2,813
Adjusted EBITDA	<u>\$ 49,739</u>	<u>\$ 49,498</u>	<u>\$ 13,880</u>	<u>\$ 26,219</u>

- (a) Includes the remaining deferred loan costs of \$1,422 related to the prior credit agreement that were expensed when the debt was repaid with a portion of our net proceeds from the IPO during the second quarter of 2017.
- (b) Represents non-cash impairment charges for goodwill and intangible assets as the fair values were lower than the carrying values.
- (c) Represents non-cash compensation charges related to share-based compensation granted to our officers, employees and directors.
- (d) Represents severance and other expenses associated with headcount reductions and other cost savings initiated as part of our restructuring initiatives.
- (e) Represents non-capitalizable costs of professional services incurred in connection with our IPO, financings, refinancings, legal proceedings and the evaluation of proposed and completed acquisitions.
- (f) Represents unrealized foreign currency translation gains and losses primarily in respect of our indebtedness.
- (g) Represents realized foreign currency translation gains and losses with respect to principal and interest payments related to our indebtedness.
- (h) Represents the change in the fair value of the earn-outs associated with our acquisitions.
- (i) Represents the impact of a research and development subsidy that is included in income tax expense (benefit) in accordance with GAAP, fees incurred in connection with refinancing our credit facilities, arbitration awards, Board fees and travel expenses prior to our IPO, as permitted by the terms of our prior credit agreement, and other charges and credits.

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

The following is a discussion and analysis of our financial condition and results of operations as of, and for, the periods presented. You should read the following discussion and analysis of our financial condition and results of operations together with the sections entitled Item 1A. “Risk Factors,” “—Cautionary Note Regarding Forward-Looking Statements,” Item 6. “Selected Historical Financial Data” and our consolidated financial statements and related notes thereto included elsewhere in this Form 10-K. This section and other parts of the Form 10-K contain forward-looking statements regarding the industry outlook, estimates and assumptions concerning events and financial and industry trends that may affect our future results of operations or financial condition and other non-historical statements. These forward-looking statements are subject to numerous risks and uncertainties, including but not limited to the risks and uncertainties described in “—Cautionary Note Regarding Forward-Looking Statements” and Item 1A. “Risk Factors.” Our actual results may differ materially from those contained in or implied by these forward-looking statements.

Overview and Outlook

We are a leading provider of highly engineered products and support services that facilitate the optimization of oil and natural gas well completions and field development strategies. We provide our products and services primarily to E&P companies for use in onshore wells, predominantly wells that have been drilled with horizontal laterals in unconventional oil and natural gas formations. Our products and services are utilized in oil and natural gas basins throughout North America and in selected international markets, including Argentina, China, Russia and the North Sea. We provided our products and services to over 310 customers in 2018, including leading large independent oil and natural gas companies and major oil companies.

Our primary offering is our fracturing systems products and services, which enable efficient pinpoint stimulation: the process of individually stimulating each entry point into a formation targeted by an oil or natural gas well. Our fracturing systems products and services are typically utilized in cemented wellbores and enable our customers to precisely place stimulation treatments in a more controlled and repeatable manner as compared with traditional completion techniques. Our fracturing systems products and services are utilized in conjunction with third-party providers of pressure pumping, coiled tubing and other services.

We sell products for well construction, including our AirLock casing buoyancy system, liner hanger systems and toe initiation sleeves. We provide tracer diagnostics services for well completion and reservoir characterization that utilize downhole chemical and radioactive tracers and consult on reservoir strategies by providing engineering services. Repeat Precision sells composite frac plugs and related products and provides third-party manufacturing services. We operate in one reportable segment.

Based on recent commodity prices and preliminary budgets set by E&P companies, we believe that industry drilling and completions activity in North America will be lower in 2019 than it was in 2018. Many of our customers in North America have begun to prioritize free cash flow and the return of capital to shareholders over production growth, which is leading to lower levels of capital expenditures. This is due in part to relatively low commodity prices at the time our customers established their budgets and also concerns over global demand for oil and natural gas based on macroeconomic conditions. We expect customer activity in the U.S. to decline slightly on a year-over-year basis, with activity levels declining in early 2019 from year-end 2018 levels, with the possibility for activity to improve over the course of the year. We believe that customer activity in Canada could be significantly below levels seen in prior years, especially in the first quarter of 2019 as compared to the first quarter in prior years. This is due to the factors mentioned above and also due to elevated commodity price differentials and mandatory production curtailments imposed on certain operators in Alberta. Market conditions in Canada have resulted in continued customer and competitor-driven pricing pressure for our products and services, negatively impacting our margins and market share in certain markets. We currently expect international activity to increase slightly in 2019 as market conditions remain more constructive than in North America.

Market Conditions

Oil and Natural Gas Drilling and Completion Activity

Our products and services are primarily sold to North American E&P companies and our ability to generate revenues from our products and services depends upon oil and natural gas drilling and production activity in North America. Oil and natural gas drilling and production activity is directly related to oil and natural gas prices.

Oil and natural gas prices remain volatile, with WTI crude oil pricing falling to a low of approximately \$26 per barrel in February 2016 before recovering to approximately \$60 per barrel by the end of December 2017 and then falling again to approximately \$45 per barrel by the end of December 2018. Crude oil pricing has been supported by voluntary oil production reductions by members of OPEC, and certain other countries, including Russia. These supply reductions were announced in November 2016 and were initially implemented in 2017. In November 2017, OPEC and certain other countries, including Russia, announced their intent to extend the supply reductions through the end of 2018. These countries had reduced their supply by more than the targeted amounts through early 2018, reaching 152% of targeted supply reductions in May 2018. In June 2018, OPEC and certain

other countries, including Russia, announced that they would strive to conform with the supply reductions at a 100% level as of July 1, 2018, signaling an increase in production from prior levels. In response to falling crude oil prices in late 2018, OPEC and certain other countries, including Russia, agreed to a new round of supply reductions in December 2018, which were intended to be effective as of January 2019. There can be no assurance that the countries involved will continue to comply with the intended reductions and the amount of oil supply that may be returned to the market if the supply reductions are not extended further is unknown.

On August 6, 2018, the United States announced its intent to impose economic sanctions on Iran, following the United States' withdrawal from an international accord intended to limit Iran's nuclear programs. The sanctions, including secondary sanctions targeting companies that do business with Iran, are expected to reduce Iran's level of crude oil exports and went into effect in early November. However, the United States granted temporary waivers to eight countries that import oil from Iran. Other oil exporting countries, including Saudi Arabia and Russia have committed to increase oil supplies to offset any shortfall related to a reduction in Iranian oil exports. There can be no assurance in the level of reduction of Iranian crude exports, the expiration of the temporary waivers or of the ability of other countries to readily supply crude oil to the market if Iranian crude exports decline materially.

Over the course of 2018, there was an increase in the difference between the benchmark crude oil pricing in certain markets and WTI, known in the industry as differentials. Crude oil in certain areas, including West Texas, North Dakota and Canada have traded at a larger discount to WTI than in historical periods due to current and forecasted production levels that are in excess of local refining demand and pipeline capacity. In response to these price differentials, many E&P companies operating in these areas reduced their drilling and completion activity in the second half of 2018 and into 2019 or chose to delay completions until additional pipeline or rail capacity is placed into service. In Canada, the Province of Alberta implemented a number of measures intended to reduce the differential in the region, including supporting the purchase of railcars to be utilized to transport oil out of the province and by implementing mandatory production curtailments for companies producing more than 10,000 barrels per day in the province.

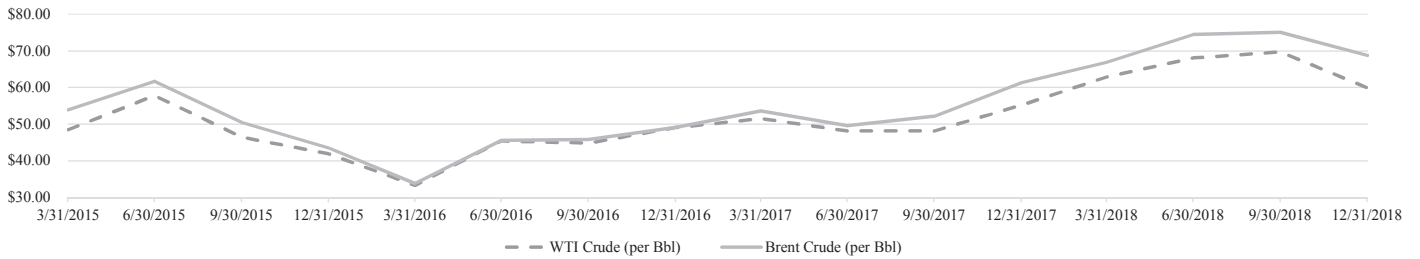
Natural gas pricing reached a low of approximately \$1.50 per MMBtu in March 2016 before recovering to an average level of approximately \$3.15 per MMBtu during 2018. Realized natural gas prices for Canadian E&P customers are typically at a discount to U.S. Henry Hub pricing. Spot pricing for Canadian natural gas at the AECO hub has been volatile since mid-2017, with wider-than-normal discounts to Henry Hub pricing resulting from infrastructure bottlenecks. Some Canadian E&P customers have reacted to the lower prices by shutting in a portion of their natural gas production, negatively impacting their cash flows, capital spending and drilling activity.

Sustained declines in commodity prices, or sustained periods of high differentials, would be expected to lead North American E&P companies to reduce drilling and completion activity, which could negatively impact our business.

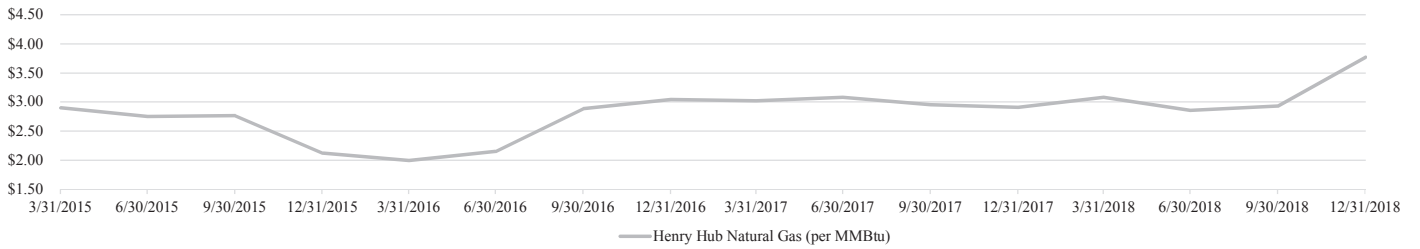
Listed and depicted below are recent crude oil and natural gas pricing trends, as provided by the Energy Information Administration ("EIA") of the U.S. Department of Energy:

Quarter Ended	Average Price		
	WTI Crude (per Bbl)	Brent Crude (per Bbl)	Henry Hub Natural Gas (per MMBtu)
3/31/2015	\$ 48.49	\$ 53.98	\$ 2.90
6/30/2015	57.85	61.65	2.75
9/30/2015	46.49	50.44	2.76
12/31/2015	41.94	43.56	2.12
3/31/2016	33.35	33.84	1.99
6/30/2016	45.46	45.57	2.15
9/30/2016	44.85	45.80	2.88
12/31/2016	49.14	49.11	3.04
3/31/2017	51.62	53.59	3.02
6/30/2017	48.10	49.55	3.08
9/30/2017	48.15	52.10	2.95
12/31/2017	55.27	61.40	2.91
3/31/2018	62.91	66.86	3.08
6/30/2018	68.07	74.45	2.85
9/30/2018	69.69	75.07	2.93
12/31/2018	59.97	68.76	3.77

Crude Oil (per Bbl)



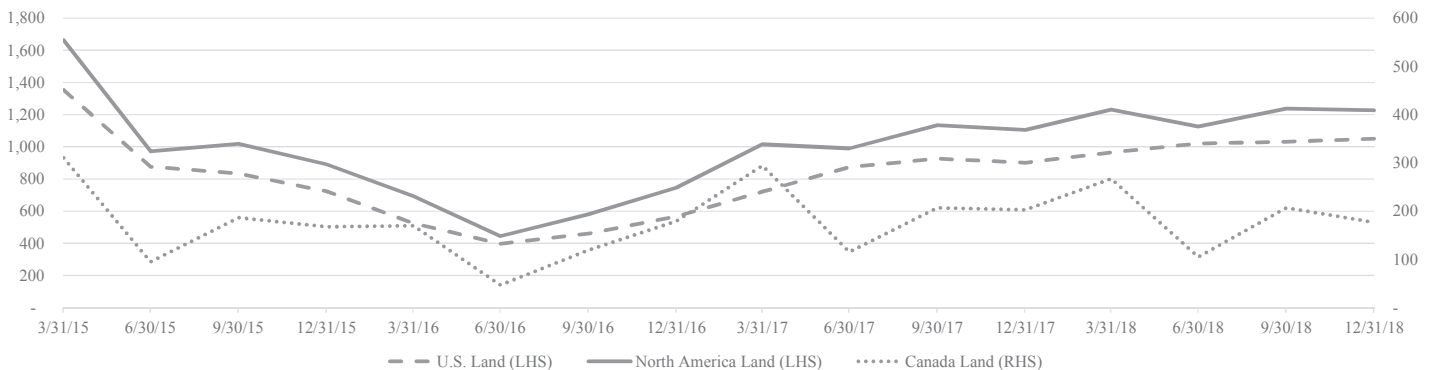
Henry Hub Natural Gas (per MMBtu)



Listed and depicted below are the average number of operating onshore rigs in the U.S. and in Canada per quarter since the first quarter of 2015, as provided by Baker Hughes. The Canadian land rig count illustrates the seasonality of activity in that market:

Quarter Ended	Average Drilling Rig Count		
	U.S. Land	Canada Land	North America Land
3/31/2015	1,353	310	1,664
6/30/2015	876	95	971
9/30/2015	833	186	1,020
12/31/2015	724	168	892
3/31/2016	524	170	694
6/30/2016	398	47	445
9/30/2016	461	119	580
12/31/2016	567	180	746
3/31/2017	722	294	1,016
6/30/2017	874	116	990
9/30/2017	927	207	1,134
12/31/2017	902	203	1,105
3/31/2018	965	267	1,232
6/30/2018	1,021	105	1,126
9/30/2018	1,032	207	1,239
12/31/2018	1,050	177	1,227

North American Land Rig Count



Over the past several years, North American E&P companies have been able to reduce their cost structures and have also utilized technologies, including ours, to increase efficiency and improve well performance. After a period of declining drilling and completion activity from late 2014 through early 2016, North American E&P companies began to increase activity levels beginning in the second quarter of 2016, as evidenced by increasing rig counts in the U.S. and Canada. The rate of increase slowed in the U.S. starting in the third quarter of 2018 and the average rig count in Canada decreased in 2018 compared to 2017, with the average rig count in the fourth quarter of 2018 13% lower than the fourth quarter of 2017.

A substantial portion of our business is subject to quarterly variability. In Canada, we typically experience higher activity levels in the first quarter of each year, as our customers take advantage of the winter freeze to gain access to remote drilling and production areas. In the past, our revenue in Canada has declined during the second quarter due to warming weather conditions that result in thawing, softer ground, difficulty accessing drill sites and road bans that curtail drilling and completion activity. Access to well sites typically improves throughout the third and fourth quarters in Canada, leading to activity levels that are higher than in the second quarter, but lower than activity in the first quarter. Our business can also be impacted by a reduction in customer activity during the winter holidays in late December and early January. We anticipate that activity in Canada in the first quarter of 2019 will be significantly lower than in the first quarter of prior years due to low realized commodity prices resulting from high differentials and the production curtailments that are currently in place in Alberta.

The industry experienced a reduction in completions activity in the United States in the second half of 2018, which has extended into early 2019. In addition, preliminary capital budgets from E&P companies indicate that capital spending in 2019 is expected to be below capital spending in 2018, with a number of customers indicating the intention to reduce the number of rigs and completion crews that they are operating.

The market in Canada continues to be impacted by logistical constraints in moving oil and natural gas from areas of production activity to demand centers. These constraints have led to lower realized pricing for our Canadian customers, which have been partially offset by the initiatives implemented by the Province of Alberta. As a result, industry activity and capital spending in Canada in 2019 is currently forecasted to be materially below 2018 levels, both for producers of oil and liquids-rich natural gas and producers of natural gas. During the year ended December 31, 2018, the average land drilling rig count in Canada, as provided by Baker Hughes, was eight percent lower than during the same period in 2017. The average rig count in Canada for the first nine weeks of 2019 was 33% lower than in the same period in 2018. Commodity price differentials are forecasted to remain at higher-than-normal levels for an extended period of time, which we expect to have a negative impact on customer activity in 2019 and potentially beyond.

Adoption of Pinpoint Stimulation

Traditional well completion techniques, including plug and perf and ball drop, currently account for the majority of unconventional well completions in North America. We believe that pinpoint stimulation provides substantial benefits compared to these traditional well completion techniques. Our ability to grow our market share, as evidenced by the percentage of horizontal wells in North America completed using our products and services, will depend in large part on the industry's further adoption of pinpoint stimulation to complete wells, our ability to continue to innovate our technology to compete against continuing technological advances in competing traditional well completions techniques, and our ability to successfully compete with other providers of pinpoint stimulation products and services, including adjusting our pricing in certain markets to respond to customer demands and to competitors that may provide discounted pricing to our customers.

Increasing Well Complexity and Focus on Completion Optimization

In recent years, E&P companies have drilled longer horizontal wells and completed more hydraulic fracturing stages per well to maximize the volume of hydrocarbon recoveries per well. This trend towards longer and more complex wells has resulted in us selling more sliding sleeves or composite frac plugs per well on average, which increases our revenue opportunity per well completion and has led to increased sales of our AirLock casing buoyancy systems. Additionally, E&P companies have become increasingly focused on well productivity through optimization of completion designs and we believe this trend may further the adoption of pinpoint stimulation, and in turn, increase the opportunity for sales of our products and services if our customers observe operational benefits and long-term production results from the application of pinpoint stimulation. This trend towards more complex well completions has also resulted in increased use of tracer diagnostics services, which can be utilized to assess the effectiveness of various well completion techniques and well spacing strategies in support of completion and field development optimization efforts.

Acquisitions

On August 31, 2017, we acquired 100% of the equity interests in Spectrum in exchange for approximately \$83 million. Spectrum offers chemical and radioactive tracer diagnostics services that our customers utilize to better characterize their assets and to optimize completion designs. Chemical and radioactive tracer studies may provide a cost-effective and reliable means to determine the production profile along a lateral, assess fluid and proppant communication between wells during completions and determine stage and cluster level efficiency of completion designs. We believe Spectrum's tracer diagnostics services strengthens our ability to provide our customers with actionable data and analysis to optimize oil and natural gas well completions and field development strategies.

On February 1, 2017, we acquired a 50% interest in Repeat Precision for \$6.0 million. Repeat Precision has historically been a supplier to NCS. Our strategic purchase of 50% of this business ensures that we have continued access to their machining services and allows us greater control of the allocation of Repeat Precision's capacity, ensuring that we can scale their operations together with ours. In addition, Repeat Precision also markets certain completion products on a wholesale basis, providing an additional revenue opportunity.

On January 31, 2019, the cash payment of \$10.0 million for the Repeat Precision earn-out consideration was paid to the joint venture partner. In connection with the Spectrum acquisition, we may need to pay the sellers additional consideration as part of an earn-out upon meeting certain specified targets. For additional information regarding our 2017 acquisitions, see "Note 4. Acquisitions" of our consolidated financial statements.

How We Generate Revenues

We derive the majority of our revenues from the sale of our fracturing systems products and the provision of related services. The remainder of our revenues are generated from sales of our AirLock casing buoyancy system, liner hanger systems, toe initiation sleeves and tracer diagnostics and reservoir strategies services. Repeat Precision generates revenue through the sale of composite frac plugs and related products and the provision of third-party manufacturing services.

Product sales represented 69%, 72% and 74% of our revenue for the years ended December 31, 2018, 2017 and 2016, respectively. Most of our sales are on a just-in-time basis, as specified in individual purchase orders, with a fixed price for our products. We occasionally supply our customers with large orders that may be filled on negotiated terms. Services represented 31%, 28% and 26% of our revenues for the years ended December 31, 2018, 2017 and 2016, respectively. Services include our tool charges and associated services related to our fracturing systems and our tracer diagnostics services (which are classified together as "services" in our financial results). Services are provided at agreed rates we charge to our customers for the provision of our downhole frac isolation assembly, our personnel and for the provision of tracer diagnostics services.

During periods of low drilling and well completion activity or as may be needed to compete in certain markets we will, in certain instances, lower the prices of our products and services. Our revenues are also impacted by well complexity, with wells with more stages resulting in longer jobs and increased revenue attributable to selling more sliding sleeves or composite frac plugs and the provision of our services.

For the years ended December 31, 2018, 2017 and 2016, approximately 48%, 63% and 71%, respectively, of our revenues were derived from sales in Canada and were denominated in Canadian dollars. Because our Canadian contracts are typically invoiced in Canadian dollars, the effects of foreign currency fluctuations impact our revenues and are regularly monitored.

Although most of our sales are to North American E&P companies, we do have sales to customers outside of North America and expect sales to international customers to increase over time. These international sales are made through local NCS entities or to our local operating partners on a free on board or free carrier basis with a point of sale in the United States. Some of the locations in which we have operating partners or sales representatives include China and the Middle East. Our operating partners and representatives do not have authority to contractually bind our company, but market our products in their respective territories as part of their product or service offering.

Costs of Conducting our Business

Our cost of sales is comprised of expenses relating to the manufacture of our products in addition to the costs of our support services. Manufacturing cost of sales includes payments made to our suppliers for raw materials and payments made to machine shops for the manufacturing of components used in our products and costs related to our employees that perform quality control analysis, assemble and test our products. During the first quarter of 2017, we acquired 50% of Repeat Precision, which has allowed us to reduce our costs for certain product categories. We review forecasted activity levels in our business and either directly procure or ensure that our vendors procure the required raw materials with sufficient lead time to meet our business requirements. On March 8, 2018, the President of the United States signed an order to impose a tariff of 25% on steel imported from certain countries. On July 1, 2018, Canada implemented retaliatory tariffs on certain U.S. imports, including steel. While we and our suppliers have locked in pricing for

certain raw materials required to support some of our anticipated business activity during 2019, we anticipate that the tariff could result in an increase in our cost of sales during the year. On September 24, 2018, the United States implemented a tariff of 10% on significant number of commodities originating from China, including certain chemicals utilized in our tracer diagnostics business. The tariffs were scheduled to increase to 25% on January 1, 2019 but the increase has been delayed pending ongoing trade negotiations between the two countries. If a trade resolution with China is not reached, the increased tariffs would result in an increase in our cost of sales. We will strive to pass through some of the increases in raw material costs directly resulting from the tariffs to our customers, however there can be no assurance that we will be able to do so. Cost of sales for support services includes compensation and benefit-related expenses for employees who provide direct revenue generating services to customers in addition to the costs incurred by these employees for travel and subsistence while on site. Cost of sales includes other variable manufacturing costs, such as shrinkage, obsolescence and revaluation or scrap related to our existing inventory and costs related to the chemicals and laboratory analysis associated with our tracer diagnostics services.

Our selling, general and administrative (“SG&A”) expenses are comprised of compensation expense, which includes compensation and benefit-related expenses for our employees who are not directly involved in revenue generating activities, including those involved in our research and development activities, as well as our general operating costs. These general operating costs include, but are not limited to: rent and occupancy for our facilities, information technology infrastructure, software licensing, advertising and marketing, third party research and development, risk insurance and professional service fees for audit, legal and other consulting services. In 2015 and 2016, in response to decreased demand for our products and services resulting from the decline in E&P activity in our markets, we reduced our headcount and took certain other actions which resulted in restructuring charges, primarily severance expense. As a result of being a public company, our legal, accounting and other expenses have increased and will further increase for costs associated with our compliance with the Sarbanes-Oxley Act.

The percentage of our costs, defined as cost of sales, excluding depreciation and amortization, and including SG&A, denominated in Canadian dollars for the years ended December 31, 2018, 2017 and 2016, were approximately 21%, 32% and 36%, respectively.

How We Evaluate our Results of Operations

Our management uses a variety of financial and operating metrics to analyze our performance. These metrics are significant factors in assessing our results of operations and profitability and include:

Revenues

We primarily sell our products and services under purchase orders with pricing negotiated on a one-off basis with each customer. Our revenues are generated primarily from the sales of our fracturing systems, well construction and composite plug products and from services related to the utilization of our downhole frac isolation assembly as well as from the provision of tracer diagnostics services. We compare our actual revenue performance on a monthly, quarterly and annual basis to our annual budget and to the most recent estimate we have for the relevant period and to applicable market metrics.

Adjusted EBITDA

Adjusted EBITDA is defined as net income (loss) before interest expense, net, income tax expense (benefit) and depreciation and amortization adjusted to exclude certain items which we believe are not reflective of ongoing operating performance or which, in the case of impairments and share-based compensation, are non-cash in nature. We believe that Adjusted EBITDA is an important measure that excludes costs that management believes do not reflect our ongoing operating performance and certain costs associated with our capital structure. Accordingly, Adjusted EBITDA is a key metric that management uses to assess the period-to-period performance of our core business operations. We believe that presenting Adjusted EBITDA enables investors to assess our performance from period to period using the same metrics utilized by management and also allows investors to evaluate our performance relative to other companies that are not subject to such factors. Adjusted EBITDA is not defined under accounting principles generally accepted in the United States (“GAAP”), is not a measure of net income, income from operations or any other performance measure derived in accordance with GAAP and is subject to important limitations. Adjusted EBITDA may not be comparable to similarly titled measures of other companies in our industry and is not a measure of performance calculated in accordance with GAAP.

Free Cash Flow

We utilize free cash flow to evaluate the cash generated by our operations and results of operations. We define free cash flow as net cash provided by (used in) operating activities less purchases of property and equipment (inclusive of the purchase and development of software and technology) plus proceeds from sales of property and equipment, as presented in our consolidated statement of cash flows. Management believes free cash flow is useful because it provides information to investors regarding the cash that was available in the period that was in excess of our needs to fund our capital expenditures and other investment needs. Free cash

flow does not represent our residual cash flow available for discretionary expenditures, as we have non-discretionary expenditures, including, but not limited to, repayment of outstanding balances under our Senior Secured Credit Facility, that is not deducted in calculating free cash flow.

Free Cash Flow is a non-GAAP financial measure and should not be considered as an alternative to cash provided by operating activities as a cash flow measurement.

Results of Operations

We made acquisitions in the first quarter and third quarter of 2017. For additional information about these acquisitions, see Note 4. “Acquisitions” of our consolidated financial statements. Due to these acquisitions, our results of operations for the 2018 and 2017 periods presented may not be comparable to historical results of operations for the prior periods. The following table summarizes our revenues and expenses for the periods indicated (dollars in thousands):

	Year Ended December 31,				
	2018	2017	2016	2018 /2017 % Change (1)	2017 /2016 % Change (1)
Revenues					
Product sales	\$ 156,781	\$ 144,666	\$ 73,220	8.4 %	97.6 %
Services	70,182	56,968	25,259	23.2 %	125.5 %
Total revenues	226,963	201,634	98,479	12.6 %	104.7 %
Cost of sales					
Cost of product sales, exclusive of depreciation and amortization expense shown below	74,892	76,288	40,511	(1.8)%	88.3 %
Cost of services, exclusive of depreciation and amortization expense shown below	33,414	22,504	13,322	48.5 %	68.9 %
Total cost of sales, exclusive of depreciation and amortization expense shown below	108,306	98,792	53,833	9.6 %	83.5 %
Selling, general and administrative expenses	82,813	64,707	37,061	28.0 %	74.6 %
Depreciation	4,747	3,193	1,766	48.7 %	80.8 %
Amortization	13,090	24,458	23,801	(46.5)%	2.8 %
Change in fair value of contingent consideration	(2,872)	5,525	—	(152.0)%	100.0 %
Impairments	227,543	—	—	100.0 %	—%
(Loss) income from operations	(206,664)	4,959	(17,982)	NM	127.6 %
Other income (expense)					
Interest expense, net	(1,963)	(4,306)	(6,286)	54.4 %	31.5 %
Other income, net	182	1,085	45	(83.2)%	NM
Foreign currency exchange gain (loss)	162	224	(2,522)	(27.7)%	108.9 %
Total other expense	(1,619)	(2,997)	(8,763)	46.0 %	65.8 %
(Loss) income before income tax	(208,283)	1,962	(26,745)	NM	107.3 %
Income tax (benefit) expense	(23,052)	670	(8,818)	NM	(107.6)%
Net (loss) income	(185,231)	1,292	(17,927)	NM	107.2 %
Net income (loss) attributable to non-controlling interest	5,086	(810)	—	727.9 %	(100.0)%
Net (loss) income attributable to NCS Multistage Holdings, Inc.	<u>\$ (190,317)</u>	<u>\$ 2,102</u>	<u>\$ (17,927)</u>	NM	111.7 %

(1) NM – Percentage not meaningful

Year Ended December 31, 2018 compared to Year Ended December 31, 2017

Revenues

Revenues were \$227.0 million for the year ended December 31, 2018 as compared to \$201.6 million for the year ended December 31, 2017. This increase was primarily attributable to an increase in the volume of sales of our well construction products as well as the contributions from Repeat Precision and tracer diagnostics services, both of which were added through acquisitions completed during 2017. The increase was partially offset by a reduction in fracturing systems product sales and services, especially in Canada. Product sales for the year ended December 31, 2018 were \$156.8 million as compared to \$144.7 million for the year ended December 31, 2017. Our service revenue was \$70.2 million for the year ended December 31, 2018 as compared to \$57.0 million for the year ended December 31, 2017.

Cost of sales

Cost of sales was \$108.3 million, or 47.7% of revenues, for the year ended December 31, 2018 as compared to \$98.8 million, or 49.0% of revenues, for the year ended December 31, 2017. The increase in cost of sales was primarily a result of higher cost of services due to increased services revenue resulting from the full year inclusion of tracer diagnostics services. Cost of sales was a lower percentage of revenues due to higher sales volumes for well construction products and at Repeat Precision, which enabled better utilization of fixed costs, partially offset by reduced fixed cost utilization related to a reduction in fracturing systems product sales and services, especially in Canada and higher cost of sales in tracer diagnostics, related to field service staffing levels and increased chemicals costs associated with tariffs imposed on certain imports from China in September 2018. Cost of product sales was \$74.9 million or 47.8% of product sales revenue and cost of services was \$33.4 million or 47.6% of service revenue for the year ended December 31, 2018. For the year ended December 31, 2017, cost of product sales was \$76.3 million or 52.7% of product sales revenue and cost of services was \$22.5 million or 39.5% of service revenue.

Selling, general and administrative expenses

Selling, general and administrative expenses were \$82.8 million for the year ended December 31, 2018 as compared to \$64.7 million for the year ended December 31, 2017. The increase was the direct result of headcount additions in substantially all functional areas, twelve months of operations for tracer diagnostics services and Repeat Precision and an increase in share-based compensation related to the issuance of restricted stock units (“RSUs”) and performance stock unit awards (“PSUs”) during the first quarter of 2018 as well as amendments to certain stock options in connection with our IPO during the second quarter of 2017 that were to vest only in connection with a change of control (the “Liquidity Options”). The increases were partially offset by a reduction in our bonus accrual during the year ended December 31, 2018 and significant non-capitalizable additional expenses incurred related to our IPO of \$2.3 million and acquisition costs of \$1.0 million incurred during the year ended December 31, 2017, but not incurred in the year ended December 31, 2018.

Depreciation

Depreciation was \$4.7 million for the year ended December 31, 2018 as compared to \$3.2 million for the year ended December 31, 2017. The increase is attributable to a higher level of property and equipment, primarily related to our acquisitions in 2017 and capital expenditures made during 2018.

Amortization

Amortization was \$13.1 million for the year ended December 31, 2018 as compared to \$24.5 million for the year ended December 31, 2017. The decrease in amortization was related to intangible assets that became fully amortized during the fourth quarter of 2017. The decrease was partially offset by an increase in amortizable intangible assets related to our acquisitions in 2017.

Change in fair value of contingent consideration

Change in fair value of contingent consideration was \$(2.9) million for the year ended December 31, 2018 as compared to \$5.5 million for the year ended December 31, 2017 due to the revaluation of the earn-out obligations associated with our acquisitions. The fair value of contingent consideration reflects the impact of both actual results and forecasted future earnings, as well as the consideration of time from the current period to the payment date. As of December 31, 2018, the fair value of the contingent consideration related to the Spectrum earnout was \$0.0 million, as no payment is currently expected, and the fair value of the contingent consideration related to the Repeat earnout was \$10.0 million.

Impairments

During the fourth quarter, as a result of unfavorable oil and gas industry market conditions in late 2018 that have continued to persist into early 2019, and the related impact on expected customer activity levels, particularly in Canada, as well as a decline in the quoted price of our common stock, NCS recorded a total of \$227.5 million of charges for the impairment of certain assets. These charges include:

- A \$6.9 million non-cash impairment of customer relationships related to our fracturing systems and well construction products and services
- A \$66.6 million non-cash impairment of technology related to our fracturing systems and well construction products and services
- A \$122.1 million non-cash impairment of goodwill related to our fracturing systems and well construction products and services
- A \$31.9 million non-cash impairment of goodwill related to tracer diagnostics

See “Note 2. Summary of Significant Accounting Policies” and “Note 7. Goodwill and Intangibles” of our consolidated financial statements for additional detail related to these charges.

Interest expense, net

Interest expense, net was \$2.0 million for the year ended December 31, 2018 as compared to \$4.3 million for the year ended December 31, 2017. The decrease in interest expense, net was primarily a result of prepaying our prior term loan in full in May 2017 by utilizing a portion of the proceeds from our IPO. The decrease was partially offset by higher interest expense due to borrowing \$20.0 million under our Senior Secured Credit Facility in August 2017.

Other income, net

Other income, net was \$0.2 million for the year ended December 31, 2018 as compared to \$1.1 million for the year ended December 31, 2017. Other income, net was lower primarily due to the receipt of \$0.9 million from an arbitration case that was decided in our favor in February 2017.

Income tax (benefit) expense

Income tax benefit was \$(23.1) million for the year ended December 31, 2018 as compared to an expense of \$0.7 million for the year ended December 31, 2017. For the years ended December 31, 2018 and 2017, our effective income tax rates were 11.1% and 34.1%, respectively. The income tax benefit and effective tax rate for the year ended December 31, 2018 was significantly impacted by the income tax rate change from 35% to 21% and the one time impairment charge which resulted in a corresponding decrease in the effective tax rate of 15.7%. During the year ended December 31, 2017, the income tax expense and effective tax rate differences included several offsetting items, including the effect of recording a tax expense for the enacted U.S. tax reform legislation commonly referred to as the 2017 Tax Act of \$3.9 million, not providing U.S. income taxes on the undistributed earnings of foreign subsidiaries because we intended to permanently reinvest such earnings outside the U.S. and a tax benefit for the reversal of our deferred tax liability due to the change in our foreign unremitted earnings assertion of \$3.9 million. During the first quarter of 2017, we changed our assertion to state that undistributed foreign earnings are indefinitely or permanently reinvested as a result of cash proceeds received from the IPO during May 2017, a portion of which was used to pay off existing debt.

The 2017 Tax Act significantly changes how the U.S. taxes corporations. The 2017 Tax Act requires complex computations to be performed that were not previously required by U.S. tax law, significant judgments to be made in interpretation of the provisions of the 2017 Tax Act, significant estimates in calculations, and the preparation and analysis of information not previously relevant or regularly produced. The ultimate impact of the 2017 Tax Act may differ from our estimates, possibly materially, due to changes in the interpretations and assumptions made as well as additional regulatory guidance that may be issued and actions we may take as a result of the 2017 Tax Act.

The 2017 Tax Act was signed into law on December 22, 2017. The 2017 Tax Act significantly revised the U.S. corporate income tax by, among other things, lowering the statutory corporate tax rate from 35% to 21%, eliminating certain deductions, imposing a mandatory one-time tax on accumulated earnings of foreign subsidiaries as of 2017, introducing new tax regimes, and changing how foreign earnings are subject to U.S. tax. Our preliminary estimate of the 2017 Tax Act and the remeasurement of our deferred tax assets and liabilities is subject to the finalization of management’s analysis related to certain matters, such as developing interpretations of the provisions of the 2017 Tax Act, changes to certain estimates and the filing of our tax returns. U.S. Treasury regulations, administrative interpretations or court decisions interpreting the 2017 Tax Act may require further adjustments and changes in our estimates. Those adjustments may impact our provision for income taxes in the period in which the adjustments are made.

For our calendar year beginning in 2018 we are subject to several provisions of the 2017 Tax Act including computations under Global Intangible Low Taxed Income (“GILTI”) and Foreign Derived Intangible Income (“FDII”). We were able to make a reasonable estimate of the impact of each provision of the 2017 Tax Act on our effective tax rate for the year ended December 31, 2018.

On a longer term basis, certain aspects of the 2017 Tax Act are expected to have a positive impact on our future income tax expense, including the reduction in the U.S. corporate income tax rate.

As a result of the geographic mix of earnings and losses, including discrete items, our tax rate has been and will continue to be volatile.

Year Ended December 31, 2017 compared to Year Ended December 31, 2016

Revenues

Revenues were \$201.6 million for the year ended December 31, 2017 as compared to \$98.5 million for the year ended December 31, 2016. This increase was primarily attributable to an increase in volume of sales of our completions products and services due to higher drilling and well completion activity in North America as a result of an improved commodity price environment in 2017 as compared to 2016 as well as the contribution of Repeat Precision and four months of revenue from Spectrum. Product sales for the year ended December 31, 2017 were \$144.7 million as compared to \$73.2 million for the year ended December 31, 2016. Our service revenue was \$57.0 million for the year ended December 31, 2017 as compared to \$25.3 million for the year ended December 31, 2016.

Cost of sales

Cost of sales was \$98.8 million, or 49.0% of revenues, for the year ended December 31, 2017 as compared to \$53.8 million, or 54.7% of revenues, for the year ended December 31, 2016. The increase in cost of sales was primarily a result of a higher number of wells completed and a higher volume of product sales as well as the effect of Repeat Precision and four months of cost of sales from Spectrum. Cost of sales were a lower percentage of revenues due to the higher volume of well completions and sliding sleeve and AirLock system sales, resulting in greater absorption of fixed costs. Cost of product sales was \$76.3 million or 52.7% of product sales revenue and cost of services was \$22.5 million or 39.5% of service revenue for the year ended December 31, 2017. For the year ended December 31, 2016, cost of product sales was \$40.5 million or 55.3% of product sales revenue and cost of services was \$13.3 million or 52.7% of service revenue.

Selling, general and administrative expenses

Selling, general and administrative expenses were \$64.7 million for the year ended December 31, 2017 as compared to \$37.1 million for the year ended December 31, 2016. The increase was the direct result of headcount additions in substantially all functional areas. In addition, there were significant non-capitalizable additional expenses incurred related to our IPO of \$2.3 million, subsequent costs related to operating as a public company, expenses related to the acquisitions, the effect of Repeat Precision and four months of operations from Spectrum and an increase in share-based compensation related to the issuance of RSUs and amendments to our Liquidity Options certain stock options that were to vest only in connection with a change of control as discussed in "Note 12. Share-Based Compensation" of our consolidated financial statements.

Depreciation

Depreciation was \$3.2 million for the year ended December 31, 2017 as compared to \$1.8 million for the year ended December 31, 2016. The increase is attributable to a higher level of property and equipment, primarily related to our acquisitions.

Amortization

Amortization was \$24.5 million for the year ended December 31, 2017 as compared to \$23.8 million for the year ended December 31, 2016. The majority of the increase in amortization was due to an increase in amortizable intangible assets related to our acquisitions and the increase in the average exchange rate between the Canadian dollar and the U.S. dollar.

Change in fair value of contingent consideration

Change in fair value of contingent consideration was \$5.5 million for the year ended December 31, 2017 due to the \$5.5 million increase in the fair value of the earn-outs associated with our acquisitions. The fair value of contingent consideration reflects the impact of both actual results and forecasted future earnings, as well as the consideration of time from the current period to the payment date. As of December 31, 2017, the fair value of the contingent consideration related to the Spectrum earnout was \$3.4 million and the fair value of the contingent consideration related to the Repeat earnout was \$9.4 million.

Interest expense, net

Interest expense, net was \$4.3 million for the year ended December 31, 2017 as compared to \$6.3 million for the year ended December 31, 2016. The decrease in interest expense, net was primarily a result of prepaying our prior credit agreement in full in May 2017 by utilizing a portion of the proceeds from our IPO. The decrease was partially offset by the write-off of the remaining loan fees of \$1.4 million associated with the prepayment of the prior credit agreement and interest expense due to borrowing \$20.0 million under our Senior Secured Credit Facility in August 2017.

Other income, net

Other income, net was \$1.1 million for the year ended December 31, 2017 as compared to \$45 thousand for the year ended December 31, 2016. Other income, net was higher primarily due to the receipt of \$0.9 million from an arbitration case that was decided in our favor in February 2017.

Foreign currency exchange gain (loss)

Foreign currency exchange gain was \$0.2 million for the year ended December 31, 2017 as compared to a loss of \$(2.5) million for the year ended December 31, 2016. The change was primarily due to the impact of the retirement of our foreign currency denominated debt and changes in the foreign currency exchange rates between the periods.

Income tax expense (benefit)

Income tax expense (benefit) was \$0.7 million for the year ended December 31, 2017 as compared to a benefit of \$(8.8) million for the year ended December 31, 2016. For the years ended December 31, 2017 and 2016, our effective income tax rates were 34.1% and 33.0%, respectively. The primary differences between these effective tax rates were due to several offsetting items, including the effects of recording a tax expense for the recently enacted U.S. tax reform legislation commonly referred to as the 2017 Tax Act of \$3.9 million, not providing U.S. income taxes on the undistributed earnings of foreign subsidiaries because we intend to permanently reinvest such earnings outside the U.S. and a tax benefit for the reversal of our deferred tax liability due to the change in our foreign unremitted earnings assertion of \$3.9 million. During the first quarter of 2017, we changed our assertion to state that undistributed foreign earnings are indefinitely or permanently reinvested as a result of cash proceeds received from the IPO during May 2017, a portion of which was used to pay off existing debt.

The 2017 Tax Act significantly changes how the U.S. taxes corporations. The 2017 Tax Act requires complex computations to be performed that were not previously required by U.S. tax law, significant judgments to be made in interpretation of the provisions of the 2017 Tax Act, significant estimates in calculations, and the preparation and analysis of information not previously relevant or regularly produced. The ultimate impact of the 2017 Tax Act may differ from our estimates, possibly materially, due to changes in the interpretations and assumptions made as well as additional regulatory guidance that may be issued and actions we may take as a result of the 2017 Tax Act.

The 2017 Tax Act was signed into law on December 22, 2017. The 2017 Tax Act significantly revises the U.S. corporate income tax by, among other things, lowering the statutory corporate tax rate from 35% to 21%, eliminating certain deductions, imposing a mandatory one-time tax on accumulated earnings of foreign subsidiaries as of 2017, introducing new tax regimes, and changing how foreign earnings are subject to U.S. tax. We have reasonably estimated the effects of the 2017 Tax Act and recorded amounts in our financial statements as of December 31, 2017. We recorded a tax benefit of \$0.5 million for the remeasurement of federal net deferred tax liabilities resulting from the permanent reduction in the U.S. statutory corporate tax rate to 21% from 35% and recorded a mandatory one-time tax on the accumulated earnings of our foreign subsidiaries of \$4.4 million.

Liquidity and Capital Resources

Our primary sources of liquidity are our existing cash and cash equivalents, cash provided by operating activities and borrowings under our Senior Secured Credit Facility. As of December 31, 2018, we had cash and cash equivalents of \$25.1 million and availability under the Senior Secured Credit Facility of \$55.0 million. Our total indebtedness was \$25.7 million as of December 31, 2018. Our principal liquidity needs have been, and are expected to continue to be, capital expenditures, working capital, debt service and potential mergers and acquisitions.

We plan to incur approximately \$9 million to \$13 million in capital expenditures during 2019, which includes capital expenditures related to (i) additional machining capacity at Repeat Precision, (ii) additional production equipment and instrumentation to support our tracer diagnostics services, (iii) machinery and equipment utilized in manufacturing and engineering and (iv) the remainder of the estimated spending for our research and development facility. Our capital expenditures, including the purchase and development of software and technology, for the years ended December 31, 2018, 2017 and 2016 were \$15.8 million, \$5.4 million and \$1.2 million, respectively. Our 2018 capital expenditures included our investment in the research and development facility and an enterprise resource planning system. We believe our cash on hand, cash flows from operations and potential borrowings under our Senior Secured Credit Facility will be sufficient to fund our capital expenditure and liquidity requirements for the next twelve months.

We anticipate that to the extent that we require additional liquidity, it will be funded through the incurrence of additional indebtedness, the proceeds of equity issuances, or a combination thereof. We cannot assure you that we will be able to obtain this additional liquidity on reasonable terms, or at all. Our liquidity and our ability to meet our obligations and fund our capital requirements are also dependent on our future financial performance, which is subject to general economic, financial and other factors that are beyond our control. Accordingly, we cannot assure you that our business will generate sufficient cash flow from

operations or that funds will be available from additional indebtedness, the capital markets or otherwise to meet our liquidity needs. If we decide to pursue one or more significant acquisitions, we may incur additional debt or sell additional equity to finance such acquisitions, which could result in additional expenses or dilution.

Cash Flows and Free Cash Flow

The following table provides a summary of cash flows from operating, investing and financing activities for the periods presented (in thousands):

	Year Ended December 31,		
	2018	2017	2016
Net cash provided by operating activities	\$ 14,026	\$ 16,114	\$ 10,684
Net cash used in investing activities	(15,410)	(85,221)	(1,840)
Net cash (used in) provided by financing activities	(5,130)	84,033	(315)
Effect of exchange rate changes on cash and cash equivalents	(2,164)	608	201
Net change in cash and cash equivalents	<u>\$ (8,678)</u>	<u>\$ 15,534</u>	<u>\$ 8,730</u>
Free cash flow ⁽¹⁾	<u>\$ (1,384)</u>	<u>\$ 11,048</u>	<u>\$ 9,844</u>

(1) Free cash flow is a non-GAAP financial measure. We define free cash flow as net cash provided by (used in) operating activities less purchases of property and equipment (inclusive of the purchase and development of software and technology) plus proceeds from sales of property and equipment. Management believes free cash flow is useful because it provides information to investors regarding the cash that was available in the period that was in excess of our needs to fund our capital expenditures and other investment needs. Free cash flow does not represent our residual cash flow available for discretionary expenditures, as we have non-discretionary expenditures, including, but not limited to, repayment of outstanding balances under our Senior Secured Credit Facility, that are not deducted in calculating free cash flow. A reconciliation of net cash provided by (used in) operating activities, the most directly comparable GAAP measure, to free cash flow for the periods indicated is as follows (in thousands):

	Year Ended December 31,		
	2018	2017	2016
Net cash provided by operating activities	\$ 14,026	\$ 16,114	\$ 10,684
Purchases of property and equipment	(11,134)	(5,366)	(1,157)
Purchase and development of software and technology	(4,675)	(54)	—
Proceeds from sales of property and equipment	399	354	317
Free cash flow	<u>\$ (1,384)</u>	<u>\$ 11,048</u>	<u>\$ 9,844</u>

Operating Activities

Net cash provided by operating activities was \$14.0 million compared to \$16.1 million for the years ended December 31, 2018 and 2017, respectively. The decrease in 2018 was primarily related to lower net income as a result of one-time impairment charges of \$227.5 million and significantly higher cash taxes paid, partially offset by the addback of the non-cash impairment charges, a smaller increase in non-tax net working capital accounts in addition to increased business activity.

Net cash provided by operating activities was \$16.1 million and \$10.7 million for the years ended December 31, 2017 and 2016, respectively. The increase in 2017 was primarily related to higher net income and higher levels of non-cash expenses, including share-based compensation and changes in the fair value of contingent consideration. The increase was partially offset by changes in working capital including higher accounts receivable, inventories and income taxes payable and a decrease in accounts payable.

Investing Activities

Net cash used in investing activities was \$15.4 million and \$85.2 million for the years ended December 31, 2018 and 2017, respectively. The decrease in cash used in investing activities during the year ended December 31, 2018 as compared to the year ended December 31, 2017 was primarily related to the \$81.2 million funding of two acquisitions during 2017. See “Note 4. Acquisitions” in our consolidated financial statements. The decrease was partially offset by capital expenditures, including property, equipment, software and technology, of \$15.8 million for the year ended December 31, 2018 compared to \$5.4 million for the same period in 2017.

Net cash used in investing activities was \$85.2 million and \$1.8 million for the years ended December 31, 2017 and 2016, respectively. The increase in cash used in investing activities during the year ended December 31, 2017 as compared to the year ended December 31, 2016 was primarily due to the \$81.2 million funding of two acquisitions. We also incurred an additional \$4.2 million of capital expenditures for the year ended December 31, 2017 in comparison to the same period in 2016. The increase is primarily

attributable to the growth of our business and capital expenditures for Repeat Precision and Spectrum. The increase was partially offset by a \$1.0 million note receivable repayment during the year ended December 31, 2017.

Financing Activities

The net cash used in financing activities for the year ended December 31, 2018 was \$(5.1) million as compared to net cash provided by financing activities of \$84.0 million for the year ended December 31, 2017. The change between net cash used in financing activities for the year ended December 31, 2018 and net cash provided by financing activities for the year ended December 31, 2017 was primarily related to net proceeds from the completion of our IPO on May 3, 2017 of \$148.9 million, after deducting underwriting discounts and commissions and other offering expenses, borrowings of \$20.0 million under our Senior Secured Credit Facility during the third quarter of 2017 and distributions of \$2.3 million made to our joint venture partner during the third and fourth quarters of 2018. The decreases were partially offset by the \$89.1 million repayment of the prior term loan under our prior credit agreement during the second quarter of 2017.

The net cash provided by financing activities for the year ended December 31, 2017 was \$84.0 million as compared to net cash used in financing activities of \$(0.3) million for the year ended December 31, 2016. The cash provided by financing activities for the year ended December 31, 2017 primarily related to net proceeds of \$148.9 million from our IPO after deducting underwriting discounts and commissions and other offering expenses. Additionally, we borrowed \$20.0 million under our Senior Secured Credit Facility. The increases were partially offset by \$89.1 million of note repayments of the prior credit agreement.

Financing Arrangement

On May 4, 2017, we entered into an Amended and Restated Credit Agreement (the "Credit Agreement") with Pioneer Investment, Inc., as borrower (the "U.S. Borrower"), NCS Multistage Inc., as borrower (the "Canadian Borrower"), Pioneer Intermediate, Inc. (together with the Company, the "Parent Guarantors") and the lenders party thereto, Wells Fargo Bank, National Association as administrative agent in respect of the U.S. Facility (as defined below) and Wells Fargo Bank, National Association, Canadian Branch as administrative agent in respect of the Canadian Facility (as defined below) (the senior secured revolving credit facilities provided thereunder, the "Senior Secured Credit Facility"). The Credit Agreement amended and restated the prior credit agreement in its entirety. The Senior Secured Credit Facility will mature on May 4, 2020.

The Senior Secured Credit Facility originally consisted of a (i) senior secured revolving credit facility in an aggregate principal amount of \$25.0 million made available to the U.S. Borrower (the "U.S. Facility"), of which up to \$5.0 million may be made available for letters of credit and up to \$5.0 million may be made available for swingline loans and (ii) senior secured revolving credit facility in an aggregate principal amount of \$25.0 million made available to the Canadian Borrower (the "Canadian Facility").

We entered into Amendment No. 1 to the Credit Agreement on August 31, 2017, which increased the loan commitment available to the U.S. Borrower to \$50.0 million from \$25.0 million under the U.S. Facility. The loan commitment available under the Canadian Facility remained at \$25.0 million. On February 16, 2018, we entered into Amendment No. 2 to the Credit Agreement and, on October 9, 2018, we entered into Amendment No. 3 to the Credit Agreement, each of which amended certain negative covenants contained in the Credit Agreement. At December 31, 2018, we had \$20.0 million in outstanding indebtedness under the U.S. Facility and no outstanding indebtedness under the Canadian Facility.

Borrowings under the U.S. Facility may be made in U.S. dollars, Canadian dollars or Euros and bear interest at a rate equal to the Adjusted Base Rate or Eurocurrency Rate (each as defined in the Credit Agreement), in each case, plus an applicable interest margin as set forth in the Credit Agreement. Borrowings under the Canadian Facility may be made in U.S. dollars or Canadian dollars and bear interest at the Canadian (Cdn) Base Rate, Canadian (U.S.) Base Rate, Eurocurrency Rate or Discount Rate (each as defined in the Credit Agreement), in each case, plus an applicable interest margin as set forth in the Credit Agreement. The Adjusted Base Rate, Canadian (U.S.) Base Rate and Canadian (Cdn) Base Rate applicable margin will be between 2.25% and 3.00% and Eurocurrency Rate applicable margin will be between 3.25% and 4.00%, in each case, depending on the Company's leverage ratio. The applicable interest rate at December 31, 2018 was 5.88%.

The obligations of the U.S. Borrower under the U.S. Facility are guaranteed by the Parent Guarantors and each of the other existing and future direct and indirect restricted subsidiaries of the Company organized under the laws of the United States (subject to certain exceptions) and are secured by substantially all of the assets of the Parent Guarantors, the U.S. Borrower and such other subsidiary guarantors, in each case, subject to certain exceptions and permitted liens. The obligations of the Canadian Borrower under the Canadian Facility are guaranteed by the Parent Guarantors, the U.S. Borrower and each of the future direct and indirect restricted subsidiaries of the Company organized under the laws of the United States and Canada (subject to certain exceptions) and are secured by substantially all of the assets of the Parent Guarantors, the U.S. Borrower, the Canadian Borrower and such subsidiary guarantors, in each case, subject to certain exceptions and permitted liens.

The Credit Agreement contains financial covenants that require (i) commencing with the fiscal quarter ended June 30, 2017, compliance with a leverage ratio test set at (A) 3.00 to 1.00 as of the last day of each fiscal quarter ending prior to March 31, 2018 and (B) 2.50 to 1.00 as of the last day of each fiscal quarter ending on or after March 31, 2018, (ii) commencing with the fiscal quarter ended June 30, 2017, compliance with an interest coverage ratio test set at 2.75 to 1.00 as of the last day of each fiscal quarter, (iii) if the leverage ratio as of the end of any fiscal quarter is greater than 2.00 to 1.00 and the amount outstanding under the Canadian Facility at any time during such fiscal quarter was greater than \$0, compliance as of the end of such fiscal quarter with a Canadian asset coverage ratio test set at 1.00 to 1.00 and (iv) if the leverage ratio as of the end of any fiscal quarter is greater than 2.00 to 1.00 and the amount outstanding under the U.S. Facility at any time during such fiscal quarter was greater than \$0, compliance as of the end of such fiscal quarter with a U.S. asset coverage ratio test set at 1.00 to 1.00. As of December 31, 2018, we were in compliance with these financial covenants. The Credit Agreement also contains customary affirmative and negative covenants, including, among other things, restrictions on the creation of liens, the incurrence of indebtedness, investments, dividends and other restricted payments, dispositions and transactions with affiliates. The Credit Agreement also includes customary events of default for facilities of this type (with customary grace periods, as applicable). If an event of default occurs, the lenders under each of the U.S. Facility and the Canadian Facility may elect (after the expiration of any applicable notice or grace periods) to declare all outstanding borrowings under such facility, together with accrued and unpaid interest and other amounts payable thereunder, to be immediately due and payable. The lenders under each of the U.S. Facility and the Canadian Facility also have the right upon an event of default thereunder to terminate any commitments they have to provide further borrowings under such facility. Further, following an event of default under each of the U.S. Facility and the Canadian Facility, the lenders thereunder will have the right to proceed against the collateral granted to them to secure such facility.

Contractual Obligations

The following table presents our contractual obligations and other commitments as of December 31, 2018 (in thousands):

	<u>Total</u>	<u>Less than 1 year</u>	<u>1-3 years</u>	<u>3- 5 years</u>	<u>More than 5 years</u>
Capital lease obligations including interest payments	\$ 3,625	\$ 1,768	\$ 1,659	\$ 198	\$ —
Senior Secured Credit Facility and other debt	22,412	666	21,746	—	—
Interest on long-term debt	1,767	1,301	466	—	—
Earn-outs for the acquisitions	9,963	9,963	—	—	—
Income tax payable related to the 2017 Tax Act (1)	456	43	87	190	136
Equipment and office operating leases	6,024	2,867	2,033	726	398
	<u>\$ 44,247</u>	<u>\$ 16,608</u>	<u>\$ 25,991</u>	<u>\$ 1,114</u>	<u>\$ 534</u>

(1) The 2017 Tax Act includes a mandatory one-time tax on accumulated earnings of foreign subsidiaries, and as a result, all previously unremitted earnings for which no U.S. deferred tax liability had been accrued have now been subject to U.S. tax. The income tax payable related to the 2017 Tax Act is due in installments in varying percentages over the next seven years.

Off-Balance Sheet Arrangements

We have no off-balance sheet financing arrangements with the exception of operating leases.

Effects of Inflation

We do not believe that the effects of inflation have had a material effect on our business, financial condition or results of operations. However, if our costs become subject to significant inflationary pressures, we may not be able to offset such increased costs through price increases. Our inability or failure to offset any such cost increases in the future could have a material adverse effect on our business, financial condition and results of operations.

Critical Accounting Policies

Our discussion and analysis of our financial condition and results of operations is based upon our consolidated financial statements, which have been prepared in accordance with GAAP. The preparation of these consolidated financial statements requires us to make estimates and judgments that affect the reported amounts of assets, liabilities, revenue and expenses. Certain of our accounting policies require the application of significant judgment by management in selecting the appropriate assumptions for calculating financial estimates. By their nature, these judgments are subject to an inherent degree of uncertainty. Our actual results may differ from these estimates. The accounting policies that we believe to be the most critical to an understanding of our financial condition and results of operations and that require the most complex and subjective management judgments are discussed below.

Revenue Recognition

We derive our revenues primarily from highly engineered products and support services. Revenues are based upon a purchase order, contract or other persuasive evidence of an arrangement with the customer that includes a fixed or determinable price, provided that collectability is reasonably assured, but such arrangements do not generally include right of return or other similar provisions or other significant post-delivery obligations. Sales and value added taxes that we collect concurrent with revenue-producing activities are excluded from revenue. We determine revenue recognition through the following steps: (i) identify the contract, (ii) identify the performance obligations, (iii) determine the transaction price, (iv) allocate the transaction price and (v) satisfy the performance obligation. No single customer individually accounted for 10% or more of our consolidated revenue during the year ended 2018. One customer accounted for 12% of our trade receivable accounts balance as of December 31, 2018, with the majority of the balance collected in January 2019. For the year ended December 31, 2017, we recognized revenue from our largest customer totaling \$27.4 million, or 14% of total revenue for the year. Amounts due from this customer included in trade accounts receivable was \$2.0 million, or 4% of trade accounts receivable, as of December 31, 2017. For the year ended December 31, 2016, the same customer accounted for \$25.5 million, or approximately 26% of total revenue, and as of December 31, 2016, \$7.8 million in trade accounts receivable were due from this customer, or 24% of trade accounts receivable. No other customer individually accounted for 10% or more of our consolidated revenue during 2017 and 2016 or trade receivable accounts balance as of December 31, 2018 and 2017.

On occasion, we issue credits to our customers that are related specifically to the performance of our products or the services we provide, with such credits reducing the amount of revenue for that sale or job. Such credits are infrequent, situation-specific and cannot be estimated in advance.

The payment terms and conditions in our customer contracts vary. We do not have contracts that contain a financing component and do not accept noncash consideration from customers.

NCS has elected to recognize shipping and handling costs when the control of the product transfers to the customer. These costs are included in cost of sales in our consolidated statements of operations.

Product Sales Revenues

For product sale arrangements that are standard inventory products or modified inventory products with an alternative use, revenue is recognized at a point in time when control transfers. Control generally transfers upon shipment or delivery, and delivery is based on the customer instructions. Customers may also request bill and hold arrangements in writing. Once we have completed the bill and hold order, the products are segregated from the rest of inventory in the warehouse. The transaction price for product sales having a performance obligation is the price per unit times the unit quantity ordered and shipped to the customer or consumed at the well site.

Services Revenue

For service arrangements that do not have a contract provision with a right to a payment for services up to the date of termination, revenue is recognized when the job has been completed, which usually includes a customer signature or acknowledgement and when there are no additional services or future obligations required by us. The transaction price is determined by the contract unit day rate times the cumulative number of days of service provided upon the completion of the service and upon customer acceptance.

For service arrangements that do have a contract provision with a right to payment for services up to the date of termination, revenue is recognized over time using a unit rate (labor and materials) output method that corresponds to the value we would receive upon termination of the contract at a reporting period. In applying the output method at the end of a quarter, we check that there is no material work in progress that is not in the measurement of the output. The transaction price for the period end is determined by the contract unit rate times the cumulative number of units earned up to the reporting period less any revenue recognized in prior periods.

Allowance for Doubtful Accounts

We maintain an allowance for doubtful accounts for estimated losses that may result from the inability of our customers to make required payments. Earnings are charged with a provision for doubtful accounts based on a current review of the collectability of customer accounts by management. Such allowances are based upon several factors including, but not limited to, credit approval practices, industry and customer historical experience as well as the current and projected financial condition of the specific customer. Accounts deemed uncollectible are applied against the allowance for doubtful accounts. We have recorded \$0.3 million and \$11 thousand in provisions for doubtful accounts as of December 31, 2018 and 2017, respectively.

Inventories

Inventories consist primarily of raw material, sliding sleeve components, assembled sliding sleeves, certain components used to internally construct our frac isolation assemblies, assembled well construction products and components, composite plugs and components and chemicals, in raw material or finished goods, used for frac diagnostics testing and reporting. Inventories are stated at the lower of cost or estimated net realizable value. Cost is determined at standard costs approximating the first-in first-out basis with the exception of chemical costs, which are determined using average costing. We continuously evaluate inventories, based on an analysis of inventory levels, historical sales experience and future sales forecasts, to determine obsolete, slow-moving and excess inventory. Adjustments to reduce such inventory to its estimated recoverable value have been recorded by management as an adjustment to cost of sales.

Impairments

We evaluate our property and equipment and finite-lived intangible assets for impairment whenever changes in circumstances indicate that the carrying amount of an asset group may not be recoverable. We assess recoverability based on undiscounted future net cash flows. Should the review indicate that the carrying value is not fully recoverable, the amount of the impairment loss is determined by comparing the carrying value to the estimated fair value. Estimating future net cash flows requires us to make judgements regarding long-term forecasts of future revenues and costs related to the assets subject to review. These forecasts are uncertain in that they require assumptions about our revenue growth, operating margins, capital expenditures, future market conditions and technological developments. If changes in these assumptions occur, our expectations regarding future net cash flows may change such that a material impairment could result. As a result of unfavorable oil and gas industry market conditions in late 2018 that have continued to persist into early 2019 and the related impact on expected customer activity levels, particularly in Canada, as well as a decline in the quoted price of our common stock, we determined that the carrying values of certain long-lived assets in one of our asset groups were no longer recoverable, which resulted in an impairment charge of \$73.5 million related to identifiable intangible assets, which we recorded in the fourth quarter of 2018. There was no impairment related to fixed assets in 2018. No fixed asset or finite-lived intangible impairments were recorded in 2017 or 2016. See “Note 7. Goodwill and Intangibles” of our consolidated financial statements for additional detail related to these charges.

An assessment for goodwill impairment is performed annually or when there is an indication an impairment may have occurred. We typically complete our annual impairment test for goodwill using an assessment date in the fourth quarter of each fiscal year. Goodwill is reviewed for impairment by comparing the carrying value of the reporting unit’s net assets (including allocated goodwill) to the fair value of the reporting unit. The fair value of the reporting unit is determined using a combination of a market multiple and a discounted cash flow approach. Determining the fair value of a reporting unit requires the use of estimates, assumptions and judgement. The principal estimates and assumptions that we use include revenue growth, operating margins, capital expenditures, future market conditions, weighted average costs of capital, a terminal growth rate, the set of comparable companies utilized, and the earnings metrics and multiples utilized. We believe that the estimates and assumptions used in impairment assessments are reasonable. If the reporting unit’s carrying value is greater than its calculated fair value, we recognize a goodwill impairment charge for the amount by which the carrying value of goodwill exceeds its calculated fair value. At December 31, 2018, we performed our annual goodwill impairment test on each of our three reporting units and as a result of unfavorable oil and gas industry market conditions in late 2018 that have continued to persist into early 2019 and the related impact on expected customer activity levels, particularly in Canada, as well as a decline in the quoted price of our common stock, we concluded that there had been an impairment because the carrying value exceeded the estimated fair values for two reporting units, which resulted in an impairment charge of \$154.0 million. No impairments were recorded in 2017 or 2016. See “Note 7. Goodwill and Intangibles” of our consolidated financial statements for additional detail related to these charges.

Property and Equipment

Property and equipment are stated at cost less accumulated depreciation. Equipment held under capital leases are stated at the present value of minimum lease payments. Expenditures for property and equipment and for items which substantially increase the useful lives of existing assets are capitalized at cost and depreciated over their estimated useful life utilizing the straight-line method. Routine expenditures for repairs and maintenance are expensed as incurred. Depreciation is calculated over the estimated useful lives of the related assets using the straight-line method. Leasehold improvements and property under capital leases are amortized over the shorter of the remaining lease term or useful life of the related asset. Depreciation expense includes amortization of assets under capital leases. The cost and related accumulated depreciation of assets retired or otherwise disposed of are eliminated from the accounts, and any resulting gains or losses are recognized in other (expense) income, net in the year of disposal.

Depreciation on property and equipment, including assets held under capital leases, is calculated using the straight-line method over the following useful service lives or lease term (which includes reasonably assured renewal periods):

	Years
Buildings	30
Building equipment	5 - 15
Machinery and equipment	5 - 12
Furniture and fixtures	3 - 5
Computers and software	3 - 5
Vehicles and rental equipment	3 - 4
Leasehold improvements	Lease term (1-5)

Business Combinations, Goodwill and Intangible Assets

Business combinations are accounted for under the acquisition method of accounting in accordance with Financial Accounting Standards Board (“FASB”) Accounting Standards Codification (“ASC”) 805, *Business Combinations*. Under the acquisition method of accounting, the total consideration transferred in connection with the acquisition is allocated to the tangible and intangible assets acquired, liabilities assumed, and any non-controlling interest in the acquiree based on their fair values. Goodwill acquired in connection with business combinations represents the excess of consideration transferred over the net tangible and identifiable intangible assets acquired. Certain assumptions and estimates are employed in evaluating the fair value of assets acquired and liabilities assumed. These estimates may be affected by factors such as changing market conditions, technological advances in the oil and natural gas industry or changes in regulations governing that industry. The most significant assumptions requiring judgment involve identifying and estimating the fair value of intangible assets and the associated useful lives for establishing amortization periods. To finalize purchase accounting for significant acquisitions, we utilize the services of independent valuation specialists to assist in the determination of the fair value of acquired intangible assets.

Costs related to the acquisition, other than those associated with the issuance of debt or equity securities, that we incur in connection with a business combination are expensed as incurred.

Any contingent consideration payable is recognized at fair value at the acquisition date. Liability-classified contingent consideration is remeasured each reporting period with changes in fair value recognized in earnings until the contingent consideration is settled.

All identifiable intangibles are amortized on a straight-line basis over the estimated useful life or term of related agreements. Deferred loan costs are amortized to interest expense using the effective interest method. Certain costs incurred in the development of internal-use software applications are capitalized and costs incurred outside of the software application development stage are expensed as incurred. The amounts capitalized are included in intangibles, categorized as internally developed software, and will be amortized on a straight-line basis over the estimated useful life of the software when it is ready for its intended use. These assets are tested for impairment whenever events or changes in circumstances indicate that their carrying amount may not be recoverable.

Income Taxes

We are taxed as a corporation as defined under the Internal Revenue Code. The liability method is used in accounting for deferred income taxes. Under this method, deferred tax assets and liabilities are determined based on the difference between the financial reporting and tax bases of assets and liabilities and are measured using the enacted tax rates and laws that will be in effect when these differences are expected to reverse. The realizability of deferred tax assets is evaluated annually and a valuation allowance is provided if it is more likely than not that the deferred tax assets will not give rise to future benefits. We recognize tax benefits from uncertain tax positions only if it is more likely than not that the tax position will be sustained, based upon technical merits, upon examination by the taxing authorities. If the income tax position is expected to meet the more likely than not criteria, the benefit recorded in the consolidated financial statements equals the largest amount that is greater than 50% likely to be realized upon its ultimate settlement. A valuation allowance to reduce deferred tax assets is established when it is more likely than not that some portion or all the deferred tax assets will not be realized. As of December 31, 2018 and 2017, the valuation allowance was \$1.1 million and \$18 thousand, respectively. We recognize accrued interest and penalties related to uncertain tax positions in other income (expense). During the years ended December 31, 2018, 2017 and 2016, we recognized \$0.1 million, \$0.2 million and \$0.1 million, respectively, in interest and penalties. We had \$0.6 million and \$0.6 million in interest and penalties accrued at December 31, 2018 and 2017, respectively.

One of our Canadian subsidiaries guaranteed the credit facilities of our U.S. entities until May 2017 when cash proceeds were received from the IPO, a portion of which was used to pay off the existing debt. Under U.S. federal income tax rules, this guarantee resulted in all of the earnings and profits of our Canadian subsidiary being subject to current U.S. tax. As a result of the 2017 Tax Act and a change in our permanent earnings reinvestment assertion, we have recognized a U.S. tax benefit for the reversal of our deferred

tax liability on a portion of our differences between book value and tax basis in our Canadian subsidiary for which we are now asserting indefinite reinvestment. No U.S. deferred tax liabilities have been recognized on the differences between book value and tax basis that we continue to indefinitely reinvest. Upon reversal of these book value and tax basis differences through dividends or otherwise, we may be subject to foreign withholding taxes. It is not practical, however, to estimate the amount of taxes that may be payable on the eventual remittance of these temporary differences after consideration of available foreign tax credits.

We completed our analysis of our tax positions and believe there are no material uncertain tax positions that would require derecognition in the consolidated financial statements as of December 31, 2018 and 2017. We believe that there are no tax positions taken or expected to be taken that would significantly increase or decrease unrecognized tax benefits within the next twelve months following the balance sheet date. As of December 31, 2018 and 2017, there were no material amounts that had been accrued with respect to uncertain tax positions.

No valuation allowances have been provided for the \$9.3 million U.S. deferred tax asset as of December 31, 2018. The Company believes it is more likely than not to realize the benefit of this asset. The Company has historically been a U.S. taxpayer and projects future operations will generate sufficient taxable income. However, in the event the Company has a change in circumstances which would change management's judgment regarding the ability to generate sufficient U.S. taxable income, a valuation allowance would be recorded against the U.S. deferred tax asset.

We file income tax returns in the United States, Canada and various state and foreign jurisdictions. Our U.S. income tax returns for 2011 and subsequent years remain open for examination. The Internal Revenue Service ("IRS") commenced an examination of our United States income tax returns for 2011 through 2012 in the first quarter of 2014 which was completed in 2015. No tax adjustments were proposed. Additionally, subsequent to December 31, 2015, the IRS commenced an examination of our United States income tax return for 2014 in the second quarter of 2016, which was completed in 2017. No tax adjustments were proposed. During 2018, the Canada Revenue Agency ("CRA") commenced an examination of our transfer pricing on Canadian income tax returns for the 2012 through 2015 filings and no tax adjustments have been proposed.

Share-Based Compensation

We account for our stock-based compensation awards in accordance with ASC Topic 718, *Compensation—Stock Compensation* ("ASC 718"). We recognize compensation cost for all share-based payment transactions, including compensation cost associated with the grant of options, RSUs and PSUs for our common stock using the Black-Scholes model for options, the market price of the common stock on the date of the grant for the RSUs and a Monte Carlo simulation for the PSUs. Expense is recognized ratably from one to five years based upon the requisite service period. We also have an ESPP, which allows eligible employees to purchase shares of our common stock. The purchase price of the stock is 85% of the lower of the stock price at the beginning or end of the offering period. The fair value of the employees' purchase rights under the ESPP is estimated using the Black-Scholes model. For additional information, see "Note 12. Share-Based Compensation" of our consolidated financial statements.

Recently Issued Accounting Pronouncements

See "Note 2. Summary of Significant Accounting Policies" to our consolidated financial statements for discussion of the accounting pronouncements we recently adopted and the accounting pronouncements recently issued by the FASB.

Emerging Growth Company and Smaller Reporting Company Status

We are an "emerging growth company" as defined in the Jumpstart Our Business Startups Act of 2012 (the "JOBS Act"). We will remain an emerging growth company until the earlier of (1) the last day of our fiscal year (a) following the fifth anniversary of the completion of our IPO, (b) in which we have total annual gross revenue of at least \$1.07 billion, or (c) in which we are deemed to be a large accelerated filer, which means the market value of our common stock that is held by non-affiliates exceeds \$700.0 million as of the last business day of our most recently completed second fiscal quarter, and (2) the date on which we have issued more than \$1.0 billion in non-convertible debt securities during the prior three-year period. Additionally, we are also a "smaller reporting company" as defined by Section 12b-2 of the Securities Exchange Act of 1934, as amended ("Exchange Act"), meaning that we are not an investment company, an asset-backed issuer, or a majority-owned subsidiary of a parent company that is not a smaller reporting company and have a public float of less than \$250 million. As an emerging growth company and a smaller reporting company, we may take advantage of specified reduced reporting and other burdens that are otherwise applicable generally to public companies that do not qualify for those classifications.

Item 7A. Quantitative and Qualitative Disclosures About Market Risk

Commodity Price Risk

The market for our products and services is indirectly exposed to fluctuations in the prices of crude oil and natural gas to the extent such fluctuations impact drilling and completion activity levels and thus impact the activity levels of our customers in the E&P industries. Additionally, because we do not sell our products under long-term contracts, we believe we are particularly exposed to short-term fluctuations in the prices of crude oil and natural gas. We do not currently intend to hedge our indirect exposure to commodity price risk.

Foreign Currency Exchange Rate Risk

A substantial amount of our revenues is derived in Canada and, accordingly, our competitiveness and financial results are subject to foreign currency fluctuations where revenues and costs are denominated in Canadian dollars rather than U.S. dollars. During the years ended December 31, 2018, 2017 and 2016, approximately 48%, 63% and 71%, respectively, of our revenues were attributable to our operations in Canada. We may use foreign currency forward exchange contracts to hedge our future exposure to the Canadian dollar.

Interest Rate Risk

We are primarily exposed to interest rate risk through our Senior Secured Credit Facility, which is subject to variable interest rates. The Senior Secured Credit Facility consists of a U.S. Facility and a Canadian Facility. As of December 31, 2018, we had \$20.0 million in outstanding indebtedness under our U.S. Facility.

Borrowings under the U.S. Facility may be made in U.S. dollars, Canadian dollars or Euros and will bear interest at a rate equal to the Adjusted Base Rate or Eurocurrency Rate (each as defined in the Credit Agreement), in each case, plus an applicable interest margin. Borrowings under the Canadian Facility may be made in U.S. dollars or Canadian dollars and will bear interest at the Canadian (Cdn) Base Rate, Canadian (U.S.) Base Rate, Eurocurrency Rate or Discount Rate (each as defined in the Credit Agreement), in each case, plus an applicable interest margin as set forth in the Credit Agreement. The Adjusted Base Rate, Canadian (U.S.) Base Rate and Canadian (Cdn) Base Rate applicable margin will be between 2.25% and 3.00% and Eurocurrency Rate applicable margin will be between 3.25% and 4.00%, in each case, depending on our leverage ratio. The applicable interest rate at December 31, 2018 was 5.88%. Based on our outstanding debt as of December 31, 2018, and assuming that it remains the same, the annualized effect of a one percentage point change in variable interest rates would have an annualized pre-tax impact on our earnings and cash flows of \$0.2 million.

Credit Risk

Our customers are E&P companies and other oilfield services companies. This concentration of counterparties operating in a single industry may increase our overall exposure to credit risk, in that the counterparties may be similarly affected by changes in economic, regulatory or other conditions. We manage credit risk by analyzing the counterparties' financial condition prior to accepting new customers and prior to adjusting existing credit limits.

Item 8. Financial Statements and Supplementary Data

INDEX TO FINANCIAL STATEMENTS

	Page
CONSOLIDATED FINANCIAL STATEMENTS	
<u>Report of Independent Registered Public Accounting Firm</u>	57
<u>Consolidated Balance Sheets as of December 31, 2018 and 2017</u>	58
<u>Consolidated Statements of Operations for the Years Ended December 31, 2018, 2017 and 2016</u>	59
<u>Consolidated Statements of Comprehensive (Loss) Income for the Years Ended December 31, 2018, 2017 and 2016</u>	60
<u>Consolidated Statements of Changes in Stockholders' Equity for the Years Ended December 31, 2018, 2017 and 2016</u>	61
<u>Consolidated Statements of Cash Flows for the Years Ended December 31, 2018, 2017 and 2016</u>	62
<u>Notes to Consolidated Financial Statements</u>	63

Report of Independent Registered Public Accounting Firm

To the Board of Directors and Stockholders of NCS Multistage Holdings, Inc.:

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of NCS Multistage Holdings, Inc. and its subsidiaries (the “Company”) as of December 31, 2018 and 2017 and the related consolidated statements of operations, comprehensive (loss) income, changes in stockholders’ equity and cash flows for each of the three years in the period ended December 31, 2018, including the related notes (collectively referred to as the “consolidated financial statements”). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2018 and 2017 and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2018 in conformity with accounting principles generally accepted in the United States of America.

Basis for Opinion

These consolidated financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company’s consolidated financial statements based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (“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 of these consolidated financial statements 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 consolidated financial statements are free of material misstatement, whether due to error or fraud. The Company is not required to have, nor were we engaged to perform, an audit of its internal control over financial reporting. As part of our audits we are required to obtain an understanding of internal control over financial reporting but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control over financial reporting. Accordingly, we express no such opinion.

Our audits included performing procedures to assess the risks of material misstatement of the consolidated 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 regarding the amounts and disclosures in the consolidated 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 consolidated financial statements. We believe that our audits provide a reasonable basis for our opinion.

/s/ PricewaterhouseCoopers LLP
Houston, Texas
March 8, 2019

We have served as the Company's auditor since 2013.

NCS MULTISTAGE HOLDINGS, INC.
CONSOLIDATED BALANCE SHEETS
(In thousands, except share data)

	December 31, 2018	December 31, 2017
Assets		
Current assets		
Cash and cash equivalents	\$ 25,131	\$ 33,809
Accounts receivable—trade, net	49,984	47,880
Inventories	32,753	33,135
Prepaid expenses and other current assets	2,037	1,616
Other current receivables	4,685	1,369
Total current assets	<u>114,590</u>	<u>117,809</u>
Noncurrent assets		
Property and equipment, net	32,296	23,651
Goodwill	23,112	184,478
Identifiable intangibles, net	48,985	136,412
Deposits and other assets	1,392	1,563
Deferred income taxes, net	9,326	—
Total noncurrent assets	<u>115,111</u>	<u>346,104</u>
Total assets	<u>\$ 229,701</u>	<u>\$ 463,913</u>
Liabilities and Stockholders' Equity		
Current liabilities		
Accounts payable—trade	\$ 7,167	\$ 7,448
Accrued expenses	4,084	6,673
Income taxes payable	184	10,561
Current contingent consideration	9,963	—
Other current liabilities	1,991	1,673
Current maturities of long-term debt	2,236	5,334
Total current liabilities	<u>25,625</u>	<u>31,689</u>
Noncurrent liabilities		
Long-term debt, less current maturities	23,455	21,702
Noncurrent contingent consideration	—	12,835
Other long-term liabilities	1,258	4,513
Deferred income taxes, net	3,132	24,183
Total noncurrent liabilities	<u>27,845</u>	<u>63,233</u>
Total liabilities	<u>53,470</u>	<u>94,922</u>
Commitments and contingencies (Note 10)		
Stockholders' equity		
Preferred stock, \$0.01 par value, 10,000,000 shares authorized, one share issued and outstanding at December 31, 2018 and 2017	—	—
Common stock, \$0.01 par value, 225,000,000 shares authorized, 45,100,771 shares issued and 45,072,463 shares outstanding at December 31, 2018 and 43,931,484 shares issued and 43,913,136 shares outstanding at December 31, 2017	451	439
Additional paid-in capital	411,423	399,426
Accumulated other comprehensive loss	(84,030)	(66,707)
Retained (deficit) earnings	(166,206)	23,864
Treasury stock, at cost; 28,308 shares at December 31, 2018 and 18,348 shares at December 31, 2017	(337)	(175)
Total stockholders' equity	<u>161,301</u>	<u>356,847</u>
Non-controlling interest	14,930	12,144
Total equity	<u>176,231</u>	<u>368,991</u>
Total liabilities and stockholders' equity	<u>\$ 229,701</u>	<u>\$ 463,913</u>

The accompanying notes are an integral part of these consolidated financial statements.

NCS MULTISTAGE HOLDINGS, INC.
CONSOLIDATED STATEMENTS OF OPERATIONS
(In thousands, except per share data)

	Year Ended December 31,		
	2018	2017	2016
Revenues			
Product sales	\$ 156,781	\$ 144,666	\$ 73,220
Services	70,182	56,968	25,259
Total revenues	226,963	201,634	98,479
Cost of sales			
Cost of product sales, exclusive of depreciation and amortization expense shown below	74,892	76,288	40,511
Cost of services, exclusive of depreciation and amortization expense shown below	33,414	22,504	13,322
Total cost of sales, exclusive of depreciation and amortization expense shown below	108,306	98,792	53,833
Selling, general and administrative expenses	82,813	64,707	37,061
Depreciation	4,747	3,193	1,766
Amortization	13,090	24,458	23,801
Change in fair value of contingent consideration	(2,872)	5,525	—
Impairments	227,543	—	—
(Loss) income from operations	(206,664)	4,959	(17,982)
Other income (expense)			
Interest expense, net	(1,963)	(4,306)	(6,286)
Other income, net	182	1,085	45
Foreign currency exchange gain (loss)	162	224	(2,522)
Total other expense	(1,619)	(2,997)	(8,763)
(Loss) income before income tax	(208,283)	1,962	(26,745)
Income tax (benefit) expense	(23,052)	670	(8,818)
Net (loss) income	(185,231)	1,292	(17,927)
Net income (loss) attributable to non-controlling interest	5,086	(810)	—
Net (loss) income attributable to NCS Multistage Holdings, Inc.	\$ (190,317)	\$ 2,102	\$ (17,927)
(Loss) earnings per common share			
Basic (loss) earnings per common share attributable to NCS Multistage Holdings, Inc.	\$ (4.25)	\$ 0.05	\$ (0.53)
Diluted (loss) earnings per common share attributable to NCS Multistage Holdings, Inc.	\$ (4.25)	\$ 0.05	\$ (0.53)
Weighted average common shares outstanding			
Basic	44,788	40,484	34,008
Diluted	44,788	43,583	34,008

The accompanying notes are an integral part of these consolidated financial statements.

NCS MULTISTAGE HOLDINGS, INC.
CONSOLIDATED STATEMENTS OF COMPREHENSIVE (LOSS) INCOME
(In thousands)

	Year Ended December 31,		
	2018	2017	2016
Net (loss) income	\$ (185,231)	\$ 1,292	\$ (17,927)
Foreign currency translation adjustments, net of tax of \$0	(17,323)	15,308	6,655
Comprehensive (loss) income	(202,554)	16,600	(11,272)
Comprehensive income (loss) attributable to non-controlling interest	5,086	(810)	—
Comprehensive (loss) income attributable to NCS Multistage Holdings, Inc.	<u>\$ (207,640)</u>	<u>\$ 17,410</u>	<u>\$ (11,272)</u>

The accompanying notes are an integral part of these consolidated financial statements.

NCS MULTISTAGE HOLDINGS, INC.
CONSOLIDATED STATEMENTS OF CHANGES IN STOCKHOLDERS' EQUITY
(In thousands, except share data)

	Preferred Stock		Common Stock		Additional Paid-In Capital	Accumulated Other Comprehensive Loss	Retained Earnings (Deficit)	Treasury Stock		Non- controlling Interest	Total Stockholders' Equity
	Shares	Amount	Shares	Amount				Shares	Amount		
Balances as of											
December 31, 2015	1	\$ —	34,013,691	\$ 340	\$ 236,110	\$ (88,670)	\$ 39,689	—	\$ —	\$ —	\$ 187,469
Contributions	—	—	10,635	—	102	—	—	—	—	—	102
Share- based compensation	—	—	—	—	1,354	—	—	—	—	—	1,354
Treasury shares purchased at cost	—	—	—	—	—	—	—	(18,348)	(175)	—	(175)
Net loss	—	—	—	—	—	—	(17,927)	—	—	—	(17,927)
Currency translation adjustment	—	—	—	—	—	6,655	—	—	—	—	6,655
Balances as of											
December 31, 2016	1	\$ —	34,024,326	\$ 340	\$ 237,566	\$ (82,015)	\$ 21,762	(18,348)	\$ (175)	\$ —	\$ 177,478
Acquisitions	—	—	355,658	4	6,903	—	—	—	—	12,954	19,861
Share- based compensation	—	—	—	—	6,108	—	—	—	—	—	6,108
Net income (loss)	—	—	—	—	—	—	2,102	—	—	(810)	1,292
Issuance of common stock upon IPO, net of offering costs	—	—	9,550,000	95	148,841	—	—	—	—	—	148,936
Exercise of stock options	—	—	1,500	—	8	—	—	—	—	—	8
Currency translation adjustment	—	—	—	—	—	15,308	—	—	—	—	15,308
Balances as of											
December 31, 2017	1	\$ —	43,931,484	\$ 439	\$ 399,426	\$ (66,707)	\$ 23,864	(18,348)	\$ (175)	\$ 12,144	\$ 368,991
Adoption of ASC 606	—	—	—	—	—	—	247	—	—	—	247
Share- based compensation	—	—	—	—	10,930	—	—	—	—	—	10,930
Net loss	—	—	—	—	—	—	(190,317)	—	—	5,086	(185,231)
Distribution to non-controlling interest	—	—	—	—	—	—	—	—	—	(2,300)	(2,300)
Exercise of stock options	—	—	690,254	8	1,071	—	—	—	—	—	1,079
Vesting of restricted stock	—	—	36,721	—	—	—	—	—	—	—	—
Shares withheld	—	—	—	—	—	—	—	(9,960)	(162)	—	(162)
Blend exchangeable shares	—	—	442,312	4	(4)	—	—	—	—	—	—
Currency translation adjustment	—	—	—	—	—	(17,323)	—	—	—	—	(17,323)
Balances as of											
December 31, 2018	1	\$ —	45,100,771	\$ 451	\$ 411,423	\$ (84,030)	\$ (166,206)	(28,308)	\$ (337)	\$ 14,930	\$ 176,231

The accompanying notes are an integral part of these consolidated financial statements.

NCS MULTISTAGE HOLDINGS, INC.
CONSOLIDATED STATEMENTS OF CASH FLOWS
(In thousands)

	Year Ended December 31,		
	2018	2017	2016
Cash flows from operating activities			
Net (loss) income	\$ (185,231)	\$ 1,292	\$ (17,927)
Adjustments to reconcile net (loss) income to net cash provided by operating activities:			
Depreciation and amortization	17,837	27,651	25,567
Impairments	227,543	—	—
Amortization of deferred loan cost	334	444	740
Share-based compensation	10,930	6,108	1,354
Provision for inventory obsolescence	1,673	—	2,415
Deferred income tax benefit	(28,840)	(18,959)	(9,266)
Loss (gain) on sale of property and equipment	74	(33)	(143)
Foreign exchange (gain) loss on financing item	—	(1,760)	2,576
Write-off of deferred loan costs	—	1,422	—
Change in fair value of contingent consideration	(2,872)	5,525	—
Provision for doubtful accounts	304	—	—
Changes in operating assets and liabilities:			
Accounts receivable—trade	(4,213)	(9,490)	(6,482)
Inventories	(2,949)	(10,608)	3,540
Prepaid expenses and other assets	(624)	(114)	(119)
Accounts payable—trade	219	(3,755)	5,131
Accrued expenses	(2,430)	2,843	1,861
Other liabilities	(620)	(247)	1,209
Income taxes receivable/payable	(17,109)	15,795	228
Net cash provided by operating activities	<u>14,026</u>	<u>16,114</u>	<u>10,684</u>
Cash flows from investing activities			
Purchases of property and equipment	(11,134)	(5,366)	(1,157)
Purchase and development of software and technology	(4,675)	(54)	—
Proceeds from sales of property and equipment	399	354	317
Proceeds (funding) from short-term note receivable	—	1,000	(1,000)
Acquisitions of businesses, net of cash acquired	—	(81,155)	—
Net cash used by investing activities	<u>(15,410)</u>	<u>(85,221)</u>	<u>(1,840)</u>
Cash flows from financing activities			
Equipment note borrowings	1,988	1,533	—
Payments on equipment note and capital leases	(2,422)	(704)	—
Promissory note borrowings	5,360	8,995	—
Payments on promissory note	(8,673)	(5,682)	—
Line of credit borrowings	—	20,000	—
Payment of deferred loan cost related to senior secured credit facility	—	(971)	—
Payments related to public offering	—	(2,178)	(242)
Proceeds from related party note receivable	—	752	—
Repayment of term note	—	(89,077)	—
Proceeds from issuance of common stock, net of offering costs	—	151,356	102
Proceeds from the exercise of options for common stock, net	1,079	9	—
Purchases of treasury stock	—	—	(175)
Treasury shares withheld	(162)	—	—
Distribution to non-controlling interest	(2,300)	—	—
Net cash (used) provided by financing activities	<u>(5,130)</u>	<u>84,033</u>	<u>(315)</u>
Effect of exchange rate changes on cash and cash equivalents	(2,164)	608	201
Net change in cash and cash equivalents	<u>(8,678)</u>	<u>15,534</u>	<u>8,730</u>
Cash and cash equivalents beginning of period	33,809	18,275	9,545
Cash and cash equivalents end of period	<u>\$ 25,131</u>	<u>\$ 33,809</u>	<u>\$ 18,275</u>
Supplemental cash flow information			
Cash paid for interest, net of amounts capitalized	\$ 1,373	\$ 3,023	\$ 5,447
Cash paid for income taxes (net of refunds)	\$ 22,356	\$ 4,033	\$ 130
Noncash investing and financing activities			
Unpaid costs related to public offering	\$ —	\$ —	\$ 708
Issuance of common stock for business acquisition	\$ —	\$ 6,907	\$ —
Assets obtained by entering into capital leases	\$ 2,603	\$ 1,092	\$ —
Changes in accounts payable related to capital expenditures	\$ 783	\$ —	\$ —

The accompanying notes are an integral part of these consolidated financial statements.

Note 1. Organization and Basis of Presentation

Organization

NCS Multistage Holdings, Inc., a Delaware corporation, through its wholly owned subsidiaries and subsidiaries for which we have a controlling voting interest (collectively referred to as the “Company,” “NCS,” “we” or “us”), is primarily engaged in providing engineered products and support services for oil and natural gas well completions and field development strategies. We offer our products and services primarily to exploration and production companies for use in onshore wells. We operate through service facilities principally located in Houston, Midland and Corpus Christi, Texas; Tulsa and Oklahoma City, Oklahoma; Billings, Montana; and Calgary, Red Deer, Grande Prairie and Estevan, Canada.

Basis of Presentation

Our accompanying consolidated financial statements have been prepared in accordance with accounting principles generally accepted in the United States (“GAAP”). All intercompany transactions have been eliminated in consolidation.

Note 2. Summary of Significant Accounting Policies

Use of Estimates

The preparation of consolidated financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the consolidated financial statements and the reported amounts of revenues and expenses during the reporting period. Such estimates include but are not limited to estimated losses on accounts receivables, estimated realizable value on excess and obsolete inventories, estimates related to fair value of reporting units for purposes of assessing possible goodwill impairment, expected future cash flows from long lived assets to support impairment tests, share based compensation, amounts of deferred taxes and income tax contingencies. Actual results could materially differ from those estimates.

Foreign Currency

Our functional currency is the U.S. Dollar (“USD”). The financial position and results of operations of our significant foreign subsidiaries are measured using the local currency as the functional currency. In accordance with Financial Accounting Standards Board (“FASB”) Accounting Standards Codification (“ASC”) 830, *Foreign Currency Matters*, revenues and expenses of the significant foreign subsidiaries have been translated into U.S. dollars at average exchange rates prevailing during the period. Assets and liabilities have been translated at the rates of exchange on the consolidated balance sheet date. The resulting translation gain and loss adjustments have been recorded directly as a separate component of other comprehensive (loss) in the accompanying consolidated statements of comprehensive (loss), and changes in stockholders’ equity.

Transaction gains and losses that arise from exchange rate fluctuations on transactions denominated in a currency other than the functional currency are included in the consolidated statements of operations as incurred.

Revenue Recognition

We derive our revenues primarily from highly engineered products and support services. Revenues are based upon a purchase order, contract or other persuasive evidence of an arrangement with the customer that includes a fixed or determinable price, provided that collectability is reasonably assured, but such arrangements do not generally include right of return or other similar provisions or other significant post-delivery obligations. Sales and value added taxes that we collect concurrent with revenue-producing activities are excluded from revenue. We determine revenue recognition through the following steps: (i) identify the contract, (ii) identify the performance obligations, (iii) determine the transaction price, (iv) allocate the transaction price and (v) satisfy the performance obligation.

On occasion, we issue credits to our customers that are related specifically to the performance of our products or the services we provide, with such credits reducing the amount of revenue for that sale or job. Such credits are infrequent, situation-specific and cannot be estimated in advance.

The payment terms and conditions in our customer contracts vary. We do not have contracts that contain a financing component and do not accept noncash consideration from customers.

NCS MULTISTAGE HOLDINGS, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

NCS has elected to recognize shipping and handling costs when the control of the product transfers to the customer. These costs are included in cost of sales in our consolidated statements of operations.

Product Sales Revenues

For product sale arrangements that are standard inventory products or modified inventory products with an alternative use, revenue is recognized at a point in time when control transfers. Control generally transfers upon shipment or delivery, and delivery is based on the customer instructions. Customers may also request bill and hold arrangements in writing. Once we have completed the bill and hold order, the products are segregated from the rest of inventory in the warehouse. The transaction price for product sales having a performance obligation is the price per unit times the unit quantity ordered and shipped to the customer or consumed at the well site.

Services Revenue

For service arrangements that do not have a contract provision with a right to a payment for services up to the date of termination, revenue is recognized when the job has been completed, which usually includes a customer signature or acknowledgement and when there are no additional services or future obligations required by us. The transaction price is determined by the contract unit day rate times the cumulative number of days of service provided upon the completion of the service and upon customer acceptance.

For service arrangements that do have a contract provision with a right to payment for services up to the date of termination, revenue is recognized over time using a unit rate (labor and materials) output method that corresponds to the value we would receive upon termination of the contract at a reporting period. In applying the output method at the end of a quarter, we check that there is no material work in progress that is not in the measurement of the output. The transaction price for the period end is determined by the contract unit rate times the cumulative number of units earned up to the reporting period less any revenue recognized in prior periods.

Cash and Cash Equivalents

We consider all highly liquid instruments purchased with an original maturity date of three months or less to be cash equivalents. These items are carried at cost, which approximates fair value.

In accordance with ASC 230, *Statements of Cash Flow*, cash flows from our significant foreign subsidiaries are calculated based on our functional currency. As a result, amounts related to changes in assets and liabilities reported in the consolidated statements of cash flows will not necessarily agree to changes in the corresponding balances on the consolidated balance sheets.

Concentration of Credit Risk

Financial instruments that potentially subject us to credit risk are cash and cash equivalents and trade accounts receivable. Cash balances are maintained in financial institutions which, at times, exceed federally insured limits. We monitor the financial condition of the financial institutions in which the accounts are maintained and have not experienced any losses in such accounts.

Substantially all of our sales are to customers whose activities are directly or indirectly related to the oil and gas industry. We generally extend credit to these customers and, therefore, collection of receivables is affected by the oil and gas industry economy. We perform ongoing credit evaluations as to the financial condition of our customers with respect to trade accounts receivables. Generally, no collateral is required as a condition of sale.

No single customer individually accounted for 10% or more of our consolidated revenue during 2018. One customer accounted for 12% of our trade receivable accounts balance as of December 31, 2018, with the majority of the balance collected in January 2019. For the years ended December 31, 2017 and 2016, there was one customer that accounted for 10% or more of the total revenue at the end of the respective periods. We recognized revenue from this customer totaling \$27.4 million, or 14% of 2017 total revenue for the year ended December 31, 2017 and \$25.5 million, or 26% of 2016 total revenue for the year ended December 31, 2016. The amount due from this customer included in trade accounts receivable in the accompanying consolidated balance sheets was \$2.0 million as of December 31, 2017. No other customer individually accounted for 10% or more of our consolidated revenue during 2018, 2017 and 2016 or trade receivable balance as of December 31, 2018 and 2017.

Accounts Receivable, Trade and Allowance for Doubtful Accounts

Trade accounts receivable are recorded at their invoiced amounts and do not bear interest. We perform ongoing credit evaluations of our clients and monitor collections and payments.

NCS MULTISTAGE HOLDINGS, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

We maintain an allowance for doubtful accounts for estimated losses that may result from the inability of our customers to make required payments. Earnings are charged with a provision for doubtful accounts based on a current review of the collectability of customer accounts by management. Such allowances are based upon several factors including, but not limited to credit approval practices, industry and customer historical experience as well as the current and projected financial condition of the specific customer. Accounts deemed uncollectible are applied against the allowance for doubtful accounts. As of December 31, 2018 and 2017, we have recorded \$0.3 million and \$11 thousand, respectively, in provisions for doubtful accounts.

Inventories

Inventories consist primarily of raw material, product components, assembled products, certain components used to internally construct our frac isolation assemblies and chemicals, in raw material or finished goods, used in our tracer diagnostics services. Inventories are stated at the lower of cost or estimated net realizable value. Cost is determined at standard costs approximating the first-in first-out basis with the exception of chemical costs, which are determined using average costing. We continuously evaluate inventories, based on an analysis of inventory levels, historical sales experience and future sales forecasts, to determine obsolete, slow-moving and excess inventory. Adjustments to reduce such inventory to its estimated recoverable value have been recorded as an adjustment to cost of sales.

Impairments

We evaluate our property and equipment and finite-lived intangible assets for impairment whenever changes in circumstances indicate that the carrying amount of an asset group may not be recoverable. We assess recoverability based on undiscounted future net cash flows. Should the review indicate that the carrying value is not fully recoverable, the amount of the impairment loss is determined by comparing the carrying value to the estimated fair value. Estimating future net cash flows requires us to make judgements regarding long-term forecasts of future revenues and costs related to the assets subject to review. These forecasts are uncertain in that they require assumptions about our revenue growth, operating margins, capital expenditures, future market conditions and technological developments. If changes in these assumptions occur, our expectations regarding future net cash flows may change such that a material impairment could result. We recorded an impairment of \$73.5 million related to identifiable intangible assets, which we recorded in the fourth quarter of 2018. For additional information, see “Note 7. Goodwill and Intangibles”. There was no impairment related to fixed assets in 2018. No fixed asset or finite-lived intangible impairments were recorded in 2017 or 2016.

An assessment for goodwill impairment is performed annually or when there is an indication an impairment may have occurred. We typically complete our annual impairment test for goodwill using an assessment date in the fourth quarter of each fiscal year. Goodwill is reviewed for impairment by comparing the carrying value of the reporting unit’s net assets (including allocated goodwill) to the fair value of the reporting unit. The fair value of the reporting unit is determined using a combination of a market multiple and a discounted cash flow approach. Determining the fair value of a reporting unit requires the use of estimates, assumptions and judgement. The principal estimates and assumptions that we use include revenue growth, operating margins, capital expenditures, future market conditions, weighted average costs of capital, a terminal growth rate, the set of comparable companies utilized, and the earnings metrics and multiples utilized. We believe that the estimates and assumptions used in impairment assessments are reasonable. If the reporting unit’s carrying value is greater than its calculated fair value, we recognize a goodwill impairment charge for the amount by which the carrying value of goodwill exceeds the calculated fair value. We recorded an impairment charge of \$154.0 million for the year ended December 31, 2018. For additional information, see “Note 7. Goodwill and Intangibles”. No impairments were recorded in 2017 or 2016.

Property and Equipment

Property and equipment are stated at cost less accumulated depreciation. Equipment held under capital leases are stated at the present value of minimum lease payments. Expenditures for property and equipment and for items which substantially increase the useful lives of existing assets are capitalized at cost and depreciated over their estimated useful life utilizing the straight-line method. Routine expenditures for repairs and maintenance are expensed as incurred. Depreciation is calculated over the estimated useful lives of the related assets using the straight-line method. Leasehold improvements and property under capital leases are amortized over the shorter of the remaining lease term or useful life of the related asset. Depreciation expense includes amortization of assets under capital leases. The cost and related accumulated depreciation of assets retired or otherwise disposed of are eliminated from the accounts, and any resulting gains or losses are recognized in other (expense) income, net in the year of disposal.

NCS MULTISTAGE HOLDINGS, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Depreciation on property and equipment, including assets held under capital leases, is calculated using the straight-line method over the following useful service lives or lease term (which includes reasonably assured renewal periods):

	Years
Buildings	30
Building equipment	5 - 15
Machinery and equipment	5 - 12
Furniture and fixtures	3 - 5
Computers and software	3 - 5
Vehicles and rental equipment	3 - 4
Leasehold improvements	Lease term (1-5)

Business Combinations, Goodwill and Intangible Assets

Business combinations are accounted for under the acquisition method of accounting in accordance with FASB ASC 805, *Business Combinations*. Under the acquisition method of accounting, the total consideration transferred in connection with the acquisition is allocated to the tangible and intangible assets acquired, liabilities assumed, and any non-controlling interest in the acquiree based on their fair values. Goodwill acquired in connection with business combinations represents the excess of consideration transferred over the net tangible and identifiable intangible assets acquired. Certain assumptions and estimates are employed in evaluating the fair value of assets acquired and liabilities assumed. These estimates may be affected by factors such as changing market conditions, technological advances in the oil and natural gas industry or changes in regulations governing that industry. The most significant assumptions requiring judgment involve identifying and estimating the fair value of intangible assets and the associated useful lives for establishing amortization periods. To finalize purchase accounting for significant acquisitions, we utilize the services of independent valuation specialists to assist in the determination of the fair value of acquired intangible assets.

Costs related to the acquisition, other than those associated with the issuance of debt or equity securities, that we incur in connection with a business combination are expensed as incurred.

Any contingent consideration payable is recognized at fair value at the acquisition date. Liability-classified contingent consideration is remeasured each reporting period with changes in fair value recognized in earnings until the contingent consideration is settled.

All identifiable intangibles are amortized on a straight-line basis over the estimated useful life or term of related agreements. Deferred loan costs are amortized to interest expense using the effective interest method. Certain costs incurred in the development of internal-use software applications are capitalized and costs incurred outside of the software application development stage are expensed as incurred. The amounts capitalized are included in intangibles, categorized as internally developed software, and will be amortized on a straight-line basis over the estimated useful life of the software when it is ready for its intended use. These assets are tested for impairment whenever events or changes in circumstances indicate that their carrying amount may not be recoverable.

Income Taxes

We are taxed as a corporation as defined under the Internal Revenue Code. The liability method is used in accounting for deferred income taxes. Under this method, deferred tax assets and liabilities are determined based on the difference between the financial reporting and tax bases of assets and liabilities and are measured using the enacted tax rates and laws that will be in effect when these differences are expected to reverse. The realizability of deferred tax assets are evaluated annually and a valuation allowance is provided if it is more likely than not that the deferred tax assets will not give rise to future benefits. We follow guidance in ASC 740, *Income Taxes*, for uncertainty in income taxes by prescribing the minimum recognition threshold an income tax position is required to meet before being recognized in the consolidated financial statements and applies to all income tax positions. Each income tax position is assessed using a two-step process. A determination is first made as to whether it is more likely than not that the income tax position will be sustained, based upon technical merits, upon examination by the taxing authorities. If the income tax position is expected to meet the more likely than not criteria, the benefit recorded in the consolidated financial statements equals the largest amount that is greater than 50% likely to be realized upon its ultimate settlement. A valuation allowance to reduce deferred tax assets is established when it is more likely than not that some portion or all the deferred tax assets will not be realized. As of December 31, 2018 and 2017, our valuation allowance was \$1.1 million and \$18 thousand, respectively. We recognize accrued interest and penalties related to uncertain tax positions in other income (expense) on the statements of operations. During the years ended December 31, 2018, 2017 and 2016, respectively, we recognized \$0.1 million, \$0.2 million and \$0.1 million in interest and penalties. We had \$0.6 million and \$0.6 million in interest and penalties accrued at December 31, 2018 and 2017, respectively.

We completed our analysis of our tax positions and believe there are no material uncertain tax positions that would require recognition in the consolidated financial statements as of December 31, 2018 and 2017. We believe that there are no tax positions taken or expected to be taken as of December 31, 2018 and 2017 that would significantly increase or decrease unrecognized tax

NCS MULTISTAGE HOLDINGS, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

benefits within the next twelve months following the balance sheet date. As of December 31, 2018 and 2017, there were no material amounts that had been accrued with respect to uncertain tax positions.

One of our Canadian subsidiaries guaranteed the credit facilities of our U.S. entities until May 2017 when cash proceeds were received from our initial public offering (“IPO”), a portion of which was used to pay off the existing debt. Under U.S. federal income tax rules, this guarantee resulted in all of the earnings and profits of our Canadian subsidiary being subject to current U.S. tax. As a result of the 2017 Tax Act and a change in our permanent earnings reinvestment assertion, we have recognized a \$3.9 million U.S. tax benefit for the reversal of our deferred tax liability on a portion of our differences between book value and tax basis in our Canadian subsidiary for which we are now asserting indefinite reinvestment. Therefore, as of December 31, 2018 no U.S. deferred tax liabilities have been recognized on the differences between book value and tax basis that we continue to indefinitely reinvest. As of December 31, 2016, we have recognized a U.S. deferred tax liability of \$3.9 related to a portion of our book value and tax basis differences in our Canadian subsidiary for which we are unable to assert indefinite reinvestment.

No U.S. deferred taxes have been recognized on \$4.4 million and \$91.3 million as of December 31, 2018 and 2017, respectively, of our book value in excess of tax basis differences that we continue to indefinitely reinvest. Upon reversal of these book value and tax basis differences through dividends or otherwise, we may be subject to foreign withholding taxes. It is not practical, however, to estimate the amount of taxes that may be payable on the eventual remittance of these temporary differences after consideration of available foreign tax credits.

We file income tax returns in the U.S., Canada and various state and foreign jurisdictions. Our U.S. income tax returns for 2011 and subsequent years remain open for examination. The Internal Revenue Service (“IRS”) commenced an examination of our U.S. income tax returns for 2011 through 2012 in the first quarter of 2014 which was completed in 2015. No tax adjustments were proposed. Additionally, the IRS commenced an examination of our U.S. income tax return for 2014 in the second quarter of 2016 which was completed in the second quarter of 2017. No tax adjustments were proposed. During 2018, the Canada Revenue Agency (“CRA”) commenced an examination of our transfer pricing on Canadian income tax returns for the 2012 through 2015 filings and no tax adjustments have been proposed.

Share-Based Compensation

We account for our stock-based compensation awards in accordance with ASC Topic 718, *Compensation—Stock Compensation* (“ASC 718”). We measure all share-based compensation awards at fair value on the date they are granted and recognize the compensation expense in the financial statements over the requisite period and record forfeitures as they occur. Fair value of the share-based compensation was measured using the market price of the common stock for restricted stock units (“RSUs”), the Black-Scholes model for options and a Monte Carlo simulation for the performance stock unit awards (“PSUs”). We also have an Employee Stock Purchase Plan (the “U.S. ESPP”) and an employee stock purchase plan specifically applicable to non-U.S. employees on substantially the same terms as the ESPP (the “Non-U.S. ESPP” and together with the U.S. ESPP, the “ESPP”), which allows eligible employees to purchase shares of our common stock. The purchase price of the stock is 85% of the lower of the stock price at the beginning or end of the plan period. The fair value of the employees’ purchase rights under the ESPP is also estimated using the Black-Scholes model.

Fair Value

The carrying amounts for financial instruments classified as current assets and current liabilities approximate fair value, due to the short maturity of such instruments. The book values of other financial instruments, such as our debt under our Senior Credit Facility, approximates fair value because interest rates charged are similar to other financial instruments with similar terms and maturities and the rates vary in accordance with a market index in accordance with ASC 820, *Fair Value Measurements*.

For the financial assets and liabilities disclosed at fair value, fair value is determined as the exit price, or the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. The established fair value hierarchy divides fair value measurement into three broad levels:

- Level 1—inputs are quoted prices (unadjusted) in active markets for identical assets or liabilities that the reporting entity has the ability to access at the measurement date;
- Level 2—inputs other than quoted prices included within Level 1 that are observable for the assets or liability, either directly or indirectly; and
- Level 3—inputs are unobservable for the asset or liability, which reflect the best judgment of management.

The financial assets and liabilities that are disclosed at fair value for disclosure purposes are categorized in one of the above three levels based on the lowest level input that is significant to the fair value measurement in its entirety. Level 1 provides the most reliable measure of fair value, whereas Level 3 generally requires significant management judgment. For additional information on our Level 3 liabilities, see “Note 4. Acquisitions.”

NCS MULTISTAGE HOLDINGS, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Earnings Per Share

Basic income per share is calculated by dividing net income (loss) attributable to NCS Multistage Holdings, Inc., reduced for the allocation of net income (loss) attributable to participating security holders of exchangeable securities held in our indirect subsidiary, by the weighted-average number of common shares outstanding during the period. The participating security holders were allocated 0.0%, 4.2% and 0.0% of the net income for December 31, 2018, 2017 and 2016, respectively. The participating security holders are not contractually obligated to share in our losses, therefore, losses are not allocated to the participating security holders. The diluted income per share computation is calculated by dividing net income (loss) attributable to NCS Multistage Holdings, Inc. by the weighted-average number of common shares outstanding during the period, taking into effect, if any, of shares that would be issuable upon the exercise of outstanding stock options, unvested RSUs and PSUs, purchases under the ESPP and conversion of the participating security holders exchangeable securities, reduced by the number of shares purchased by us at cost, when such amounts are dilutive to the income per share calculation.

Research and Development

Research and development costs are incurred both through engaging third parties to perform development activities under our coordination and management as well as through the utilization of our employees to create and develop new ideas and products. We incurred approximately \$3.8 million, \$3.0 million and \$3.3 million in research and development costs for the years ended December 31, 2018, 2017 and 2016, respectively. These costs are recorded in selling, general and administrative (“SG&A”) expenses on the consolidated statements of operations.

Recent Accounting Pronouncements

Pronouncements Adopted in 2018

In June 2018, the FASB issued Accounting Standards Update (“ASU”) 2018-07, *Improvements to Nonemployee Share-Based Payment Accounting (Topic 718)*. The ASU is intended to reduce the cost and complexity and to improve financial reporting for nonemployee share-based payments. The ASU expands the scope of Topic 718 to include share-based payments issued to nonemployees for goods or services. Consequently, the accounting for share-based payments to nonemployees and employees will be substantially aligned. The ASU is for fiscal years beginning after December 15, 2018, including interim periods within that fiscal year. Early adoption is permitted, but no earlier than an entity’s adoption date of Topic 606, Revenue from Contracts with Customers. We elected to early adopt this ASU effective April 1, 2018. The adoption of this ASU did not have a material impact on our consolidated financial statements.

In January 2017, the FASB issued ASU 2017-01, *Clarifying the Definition of a Business (Topic 805)*, to clarify the definition of a business with the objective of adding guidance to assist entities with evaluating whether transactions should be accounted for as acquisitions or disposals of assets or businesses. For public entities, this guidance is effective for annual periods beginning after December 15, 2017, including interim periods within those periods. We adopted ASU 2017-01 effective January 1, 2018, which did not have a material impact on our consolidated financial statements.

In August 2016, the FASB issued ASU 2016-15, *Classification of Certain Cash Receipts and Cash Payments (Topic 230)*. The objective of the guidance is to reduce the existing diversity in practice related to the presentation and classification of certain cash receipts and cash payments. The guidance addresses eight specific cash flow issues including but not limited to, debt prepayment or extinguishment costs, contingent consideration payments made after a business combination, proceeds from the settlement of insurance claims and proceeds from the settlement of corporate-owned life insurance policies. For public entities, the guidance is effective for financial statements issued for fiscal years beginning after December 15, 2017, including interim periods within those fiscal years and is retrospective for all periods presented. Early adoption is permitted including for interim periods. We adopted ASU 2016-15 effective January 1, 2018, which did not have a material impact on our consolidated financial statements.

In May 2014, the FASB issued ASU No. 2014-09, *Revenue from Contracts with Customers (Topic 606)*. The new standard is effective for annual reporting periods beginning after December 15, 2017 and early adoption is permitted, however, not before fiscal years beginning after December 15, 2016. Subsequent to ASU 2014-09’s issuance, Topic 606 was amended for FASB updates that changed the effective date as well as addressed certain aspects regarding new revenue standards. The comprehensive new standard supersedes existing revenue recognition guidance and requires revenue to be recognized when promised goods or services are transferred to customers in amounts that reflect the consideration to which entities expect to be entitled in exchange for those goods or services. Adoption of the new rules could affect the timing of revenue recognition for certain transactions. The guidance permits the use of either a full retrospective or modified retrospective transition method. On January 1, 2018, we adopted ASU 2014-09 and its related amendments (collectively known as “ASC 606”), using the modified retrospective method. We have concluded that the

NCS MULTISTAGE HOLDINGS, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

adoption of this ASU did not have a material impact on our consolidated financial statements. See “Note 3. Revenue” for the required disclosures related to the impact of adopting this standard.

Pronouncements Not Yet Effective

In August 2018, the FASB issued ASU No. 2018-15, *Intangibles-Goodwill and Other-Internal-Use Software (Subtopic 350-40)*. The ASU aligns the requirements to capitalize implementation costs incurred in a cloud computing arrangement that is a service contract with the requirements to capitalize implementation costs incurred to develop or obtain internal-use software. For public entities, this guidance is effective for fiscal years beginning after December 15, 2019 and interim periods within those fiscal years. Early adoption is permitted, including adoption in any interim period. We are currently evaluating the impact of the adoption of this guidance.

In August 2018, the FASB issued ASU No. 2018-13, *Fair Value Measurement (Topic 820)*. The ASU modifies, removes and adds certain disclosure requirements on fair value measurements. For public entities, this guidance is effective for fiscal years beginning after December 15, 2019 and interim periods within those fiscal years. Early adoption is permitted for all amendments. Further, entities may early adopt eliminated or modified disclosure requirements and delay the adoption of all new disclosure requirements until the effective date. We are currently evaluating the impact of the adoption of this guidance.

In February 2016, the FASB issued ASU No. 2016-02, *Leases (Topic 842)*. Under ASC 842, lessees will need to recognize most leases on their balance sheets as lease liabilities with corresponding right-of-use (“ROU”) assets. The new lease standard also changes the definition of a lease and requires expanded quantitative and qualitative disclosures for both lessees and lessors. NCS elected to adopt ASC 842 effective January 1, 2019, using the modified retrospective transition method and applying certain optional practical expedients. We elected an optional transition method that allowed application of the new standard at the adoption date and the recognition of a cumulative-effect adjustment to the opening balance of retained earnings in the period of adoption with no adjustment to previously reported results. We also elected practical expedients permitted under the transition guidance within the new standard, which among other things, allowed the carry forward of historical lease classification as well as additional practical expedients related to land easements, short-term leases, and non-lease components. We did not elect the practical expedient related to hindsight.

The standard had a material impact on our consolidated balance sheet but did not materially impact our consolidated statements of operations and cash flows. Adoption of the standard will result in the recognition of additional ROU assets and lease liabilities for operating leases of \$7.5 million on January 1, 2019.

Note 3. Revenues

On January 1, 2018, we adopted ASC 606 and elected to use the modified retrospective method for all contracts not completed as of the date of adoption. The reported results for 2018 reflect the application of ASC 606 guidance while the reported results for 2017 were prepared under the guidance of ASC 605, Revenue Recognition. In accordance with ASC 606, revenue is recognized when promised goods or services are transferred to customers in an amount that reflects the consideration to which an entity expects to be entitled for those goods or services if certain criteria are met.

Financial Statement Impact of Adopting ASC 606

The cumulative effect of the changes made to our consolidated balance sheet at January 1, 2018 for the adoption of ASC 606 using the modified retrospective method was as follows (in thousands):

	Balance at December 31, 2017	Adjustments due to ASC 606	Balance at January 1, 2018
Assets			
Accounts receivable—trade, net	\$ 47,880	\$ 313	\$ 48,193
Liabilities			
Income taxes payable	\$ 10,561	\$ 66	\$ 10,627
Equity			
Retained earnings	\$ 23,864	\$ 247	\$ 24,111

NCS MULTISTAGE HOLDINGS, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

The following tables compare the reported consolidated balance sheet as of December 31, 2018 and statements of operations for the year ended December 31, 2018, to the balances without the adoption of ASC 606 (in thousands):

	As of December 31, 2018		
	As Reported	Balances without Adoption of ASC 606	Effect of Change Higher/(Lower)
Balance Sheet			
Assets			
Accounts receivable—trade, net	\$ 49,984	\$ 49,806	\$ 178
Liabilities			
Income taxes payable	\$ 184	\$ 147	\$ 37
Equity			
Retained deficit	\$ (166,206)	\$ (166,347)	\$ 141

	Year Ended December 31, 2018		
	As Reported	Balances without Adoption of ASC 606	Effect of Change Higher/(Lower)
Income Statement			
Revenues			
Services	\$ 70,182	\$ 70,317	\$ (135)
Costs and expenses			
Income tax expense	\$ (23,052)	\$ (23,024)	\$ (28)
Net income	\$ (185,231)	\$ (185,124)	\$ (107)
Net income attributable to NCS Multistage Holdings, Inc.	\$ (190,317)	\$ (190,210)	\$ (107)

Disaggregation of Revenue

We sell our products and services primarily in North America and in selected international markets. Revenue by geography is attributed based on the current billing address of the customer. See “Note 16. Segment and Geographic Information” for our disaggregated revenue.

Contract Balances

When the timing of the delivery of products and provision of services is different from the timing of the customer payments, we recognize either a contract asset (performance precedes contractual due date in connection with estimates of variable consideration) or a contract liability (customer payment precedes performance) on our consolidated balance sheet. The following table includes the contract assets and liabilities as of December 31, 2018 and January 1, 2018 (in thousands):

	Contract Assets		Contract Liabilities	
	Current	Non-Current	Current	Non-Current
Balance at January 1, 2018	\$ —	\$ —	\$ 170	\$ —
Additions	—	—	887	—
Revenue recognized	—	—	(542)	—
Balance at December 31, 2018	\$ —	\$ —	\$ 515	\$ —

Our contract liability as of December 31, 2018 is included in current liabilities on our consolidated balance sheet. Our performance obligations for our product and service revenues are usually satisfied before the customer’s payment although prepayments may occasionally be required for international sales.

Contracts with Multiple Performance Obligations

Approximately 99% of our product and service revenues are considered a single performance obligation. Our self-service product line, which is less than one percent of our revenue for the year ended December 31, 2018, is made up of two performance

NCS MULTISTAGE HOLDINGS, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

obligations: (i) the delivery of tracer materials to a customer well site and (ii) the creation of diagnostic reports ordered by customers when we do not perform an integrated service. For these contracts, we do not allocate the transaction price as the individual performance obligations are sold at standalone prices in the customer order. The transaction prices for our self-service product line that have two performance obligations are (i) the price per unit times the quantity of tracer materials and (ii) prices charged for diagnostic reports ordered by and delivered to the customer.

Practical Expedients and Exemptions

We generally expense sales commissions when incurred because the amortization period would have been one year or less. These costs are recorded within SG&A expenses on the consolidated statements of operations.

We do not disclose the value of unsatisfied performance obligations when the related contract has a duration of one year or less or we recognize revenue equal to what we have the right to invoice when that amount corresponds directly with the value to the customer of our performance to date.

Note 4. Acquisitions

Spectrum Tracer Services

On August 31, 2017, we acquired 100% of the equity interests in Spectrum Tracer Services, LLC (“Spectrum”) in exchange for approximately \$83 million, subject to certain adjustments, which was comprised of (i) approximately \$76 million in cash and (ii) 0.4 million shares of our common stock using a fair market value of \$19.42 per share. The cash portion was funded with available cash and borrowings under our Senior Secured Credit Facility (as defined below). We believe Spectrum’s tracer diagnostics services offering strengthens our ability to provide our customers with actionable data and analysis to optimize oil and natural gas well completions and field development strategies.

The acquisition of Spectrum includes an earn-out provision that could provide up to \$12.5 million in additional cash consideration to Spectrum’s former unitholders if Spectrum’s actual gross profit during the earn-out period that commenced on October 1, 2017 and ended on December 31, 2018 is greater than the earn-out threshold. The fair value of the earn-out recognized on the acquisition date was \$0.4 million. We first estimated the fair value of the earn-out using a Black-Scholes closed form option pricing model and then began using a risk-neutral option pricing analysis within a Monte Carlo simulation framework. The earn-out is subject to re-measurement each reporting period using Level 3 inputs until it has been paid. Subsequent changes in the fair value of the liability are reflected in our consolidated statements of operations as a change in fair value of contingent consideration. As of December 31, 2018, the earn-out had no value. As of December 31, 2017, the earn-out had a value of \$3.4 million and was included in noncurrent contingent consideration on the consolidated balance sheet. We recognized a benefit of \$(3.4) million and an expense of \$3.0 million for the years ended December 31, 2018 and 2017, respectively, as a change in fair value of contingent consideration expense in the consolidated statements of operations related to the fair value adjustment of the Spectrum earn-out. The cash payment, if any, is expected to be paid during the second quarter of 2019.

Spectrum contributed revenues of \$12.8 million and net income of \$0.3 million to us for the period from September 1, 2017 to December 31, 2017. The net income included a one-time charge of \$0.4 million of income tax expense related to the U.S. transition tax on its unremitted foreign earnings. The following unaudited pro forma summary presents our select financial information as if the acquisition had occurred on January 1, 2016. The below information reflects pro forma adjustments based on available information and certain assumptions we believe are reasonable, including: (i) adjustments related to the depreciation and amortization of the fair value of acquired intangibles and fixed assets, (ii) removal of the historical interest expense of Spectrum as well as the addition of the interest expense of the borrowings under our Senior Secured Credit Facility in connection with the acquisition, (iii) tax effect related to historical U.S. operations and the aforementioned pro forma adjustments, (iv) adjustments related to the number of shares of our common stock outstanding to reflect the 0.4 million shares issued in connection with the acquisition and (v) accounting policy conformity changes. The pro forma condensed combined financial information has been included for comparative purposes and is not necessarily indicative of the results that might have actually occurred had the Spectrum acquisition taken place on January 1, 2016; furthermore, the financial information is not intended to be a projection of future results. The following table summarizes our unaudited selected financial information on a pro forma basis (in thousands, except per share data):

	Pro Forma (Unaudited)	
	Year Ended December 31,	
	2017	2016
Revenue	\$ 220,478	\$ 117,211
Net income (loss) attributable to NCS Multistage Holdings, Inc.	\$ 1,664	\$ (19,442)

The purchase price is allocated to the estimated fair value of assets acquired and liabilities assumed as of the acquisition date. Goodwill is calculated as the excess of the consideration transferred over the fair value of the net assets recognized. By combining

NCS MULTISTAGE HOLDINGS, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Spectrum’s tracer diagnostics services offering with our existing portfolio of completions products and services, we believe we have an opportunity to increase our revenue through the cross-selling of tracer diagnostics services to current NCS customers and to sell NCS’s completions products and services to current Spectrum customers. This expected synergy gives rise to goodwill being recorded as part of the purchase price of Spectrum. The purchase price allocation was finalized during the third quarter of 2018. We have recognized \$40.2 million of goodwill as a result of the transaction of which approximately \$6 million, including deferred taxes, will be non-deductible for tax purposes. As a result of unfavorable oil and gas industry market conditions in late 2018 that have continued to persist into early 2019, and the related impact on expected customer activity levels, particularly in Canada, as well as a decline in the quoted price of our common stock, NCS concluded that the carrying amount of our goodwill exceeded the fair value and we recorded a goodwill impairment charge of approximately \$31.9 million for the business unit that includes our tracer diagnostics services. See “Note 2. Summary of Significant Accounting Policies” for additional information. We also incurred acquisition costs of \$0.7 million and \$1.0 million related to this acquisition during the years ended December 31, 2017 and 2016, respectively, which were included in general and administrative expense on our consolidated statements of operations.

The following table summarizes the consideration and the assets acquired at the Spectrum closing date (in thousands):

Consideration	
Cash consideration	\$ 76,485
Equity consideration	6,907
Earn-out liability recognized	352
Total consideration	<u>\$ 83,744</u>
Preliminary purchase price allocation	
Cash	\$ 1,326
Accounts receivable	4,648
Inventories	3,761
Other current assets	480
Property and equipment	4,725
Intangible assets	31,900
Other long-term assets	26
Total identifiable assets acquired	<u>46,866</u>
Accounts payable—trade	454
Accrued expenses	436
Income taxes payable	228
Other current liabilities	44
Deferred tax liability	1,010
Other long-term liabilities	1,191
Total liabilities assumed	<u>3,363</u>
Net identifiable assets acquired	43,503
Goodwill	40,241
Net assets acquired	<u>\$ 83,744</u>

The amount allocated to intangible assets was attributed to the following categories (in thousands):

	Fair Value	Estimated Useful Lives (Years)
Technology	\$ 5,600	16
Trademarks	1,600	10
Customer relationships	24,700	21
Total intangible assets	<u>\$ 31,900</u>	

These intangible assets are amortized on a straight-line basis, which is presented in amortization in our consolidated statements of operations. Amortization expense for the intangible assets for the Spectrum acquisition was \$1.7 million and \$0.6 million for the years ended December 31, 2018 and 2017, respectively.

Repeat Precision

On February 1, 2017, we acquired a 50% interest in Repeat Precision, LLC (“Repeat Precision”) for \$6.0 million. Historically, the business had been a supplier to NCS. Our strategic purchase of 50% of this business ensures that we have continued access to these services and allows us greater control of the allocation of their capacity, ensuring that we can scale their operations together with ours. In addition, Repeat Precision also markets composite frac plugs and related products, providing an additional revenue opportunity.

NCS MULTISTAGE HOLDINGS, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Concurrent with entering into the transaction, the previous owner of the 50% interest repaid a \$1.0 million promissory note to us. We also recorded an earn-out at the acquisition date as a contingent adjustment to the purchase price in the amount of \$7.0 million. We estimated the fair value of the earn-out using a Monte Carlo simulation on the acquisition date. The earn-out equity value was based on Repeat Precision's 2018 EBITDA, multiplied by three, which was then reduced by debt and increased by cash. The earn-out equity value was then discounted at the adjusted cost of equity. The earn-out is subject to re-measurement each reporting period using Level 3 inputs until it has been paid. Subsequent changes in the fair value of the liability are reflected in our consolidated statements of operations as a change in fair value of contingent consideration. As of December 31, 2018, the earn-out had a value of \$10.0 million. We recognized an expense of \$0.5 million and \$2.5 million for the years ended December 31, 2018 and 2017, respectively, as a change in fair value of contingent consideration expense in the consolidated statements of operations related to the fair value of the Repeat earn-out. On January 31, 2019, the cash payment of \$10.0 million for the Repeat Precision earn-out consideration was paid to the joint venture partner.

As NCS has the controlling voting interest in Repeat Precision, we determined that the transaction was a business combination and used the acquisition method of accounting and have included Repeat Precision in our consolidated financial statements from the acquisition date. As a result, the other party's ownership percentage is presented separately as a non-controlling interest.

The purchase price is allocated to the fair value of assets acquired and liabilities assumed as of the acquisition date and goodwill is recognized for the excess consideration transferred over the fair value of the net assets. By combining Repeat Precision's expertise in providing high-quality machining services with NCS's engineering capabilities, product development expertise and customer relationships, we believe that we have additional revenue opportunities for NCS to leverage the vertically integrated supply chain by developing and marketing new completions products. This expected synergy gives rise to goodwill being recorded as part of the purchase price of Repeat. The purchase price allocation was finalized during the first quarter of 2018. We have recognized \$15.2 million of goodwill as a result of the transaction and expect the full amount to be deductible for tax purposes. We also incurred acquisition costs of \$0.3 million related to this acquisition for the year ended December 31, 2017, which were included in general and administrative expense on our consolidated statements of operations.

The following table summarizes the consideration and the assets acquired at the Repeat Precision closing date (in thousands):

Consideration	
Cash paid by NCS	\$ 5,996
Earn-out liability recognized	6,958
Total consideration	<u>\$ 12,954</u>
Preliminary purchase price allocation	
Other net assets	\$ 174
Inventory	662
Property and equipment	5,750
Intangible assets	4,100
Goodwill	15,222
Total assets acquired	\$ 25,908
Less: non-controlling interest	(12,954)
Net assets acquired	<u>\$ 12,954</u>

The unaudited pro forma operating results pursuant to ASC 805, *Business Combinations*, related to the Repeat Precision acquisition have been excluded due to immateriality.

In connection with the Repeat Precision acquisition, we acquired intangible assets in the amount of \$4.1 million related to customer relationships. The intangible assets are amortized over their estimated ten year useful lives. Amortization expense for the Repeat Precision acquisition was \$0.5 million and \$0.4 million for the years ended December 31, 2018 and 2017, respectively.

NCS MULTISTAGE HOLDINGS, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Note 5. Inventories

Inventories consist of the following as of December 31, 2018 and 2017 (in thousands):

	December 31, 2018	December 31, 2017
Raw materials	\$ 2,470	\$ 2,412
Work in process	57	623
Finished goods	30,226	30,100
	<u>\$ 32,753</u>	<u>\$ 33,135</u>

Note 6. Property and Equipment

Property and equipment by major asset class consist of the following as of December 31, 2018 and 2017 (in thousands):

	December 31, 2018	December 31, 2017
Land	\$ 1,995	\$ 2,167
Building and improvements	5,185	5,155
Machinery and equipment	18,135	13,418
Computers and software	2,373	2,157
Furniture and fixtures	1,097	1,013
Vehicles	6,980	5,751
Service equipment	244	244
	36,009	29,905
Less: Accumulated depreciation and amortization	(10,270)	(7,012)
	25,739	22,893
Construction in progress	6,557	758
Property and equipment, net	<u>\$ 32,296</u>	<u>\$ 23,651</u>

Depreciation expense and amortization for property and equipment totaled \$4.7 million, \$3.2 million and \$1.8 million for the years ended December 31, 2018, 2017 and 2016, respectively.

We lease vehicles for our transportation fleet, which are included in the table above. See “Note 9. Debt” for the related amortization expense.

Note 7. Goodwill and Identifiable Intangibles

Changes in the carrying amount of goodwill is as follows (in thousands):

At December 31, 2016	\$ 122,077
Acquisitions	55,409
Currency translation adjustment	6,992
At December 31, 2017	\$ 184,478
Purchase price allocation adjustment	54
Impairments	(154,003)
Currency translation adjustment	(7,417)
At December 31, 2018	<u>\$ 23,112</u>

An assessment for goodwill impairment is performed annually or when there is an indication an impairment may have occurred. On December 31, 2018, we performed our annual impairment test for goodwill on each of our three reporting units and as a result of unfavorable oil and gas industry market conditions in late 2018 that have continued to persist into early 2019 and the related impact on expected customer activity levels, particularly in Canada, as well as a decline in the quoted price of our common stock, we concluded that there had been an impairment because the carrying value exceeded the estimated fair values for two reporting units. The total impairment charge of \$154.0 million included the following reporting units, fracturing systems and well construction of \$122.1 million and our tracer diagnostic services of \$31.9 million. As a result of the impairment loss, we have no remaining goodwill for our fracturing systems and well construction business unit and our goodwill was \$7.9 million for our tracer diagnostic services at December 31, 2018. In completing our annual evaluation, we also determined that Repeat Precision, which has goodwill of \$15.2 million, did not have a fair value below its net carrying value, and therefore, no impairment was required. No impairments were recorded in 2017 or 2016.

NCS MULTISTAGE HOLDINGS, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

All goodwill impairment charges are included in “Impairments” in the consolidated statements of operations. See “Note 2. Summary of Significant Accounting Policies” for additional information.

Identifiable intangibles by major asset class consist of the following (in thousands):

	Estimated Useful Lives (Years)	December 31, 2018		
		Gross Carrying Amount	Accumulated Amortization	Net Balance
Technology	8 - 18	\$ 17,289	\$ (516)	\$ 16,773
Trademarks	5 - 10	1,600	(213)	1,387
Customer relationships	10 - 21	28,544	(2,339)	26,205
Internally developed software	5	4,620	-	4,620
Total identifiable intangibles		<u>\$ 52,053</u>	<u>\$ (3,068)</u>	<u>\$ 48,985</u>

	Estimated Useful Lives (Years)	December 31, 2017		
		Gross Carrying Amount	Accumulated Amortization	Net Balance
Technology	14 - 16	\$ 151,433	\$ (52,730)	\$ 98,703
Trademarks	5 - 10	2,588	(1,042)	1,546
Customer relationships	10 - 21	41,058	(4,895)	36,163
Total identifiable intangibles		<u>\$ 195,079</u>	<u>\$ (58,667)</u>	<u>\$ 136,412</u>

Identifiable intangibles with definite lives are tested for impairment whenever events or changes in circumstances indicate that their carrying amount may not be recoverable. As a result of unfavorable oil and gas industry market conditions in late 2018 that have continued to persist into early 2019 and the related impact on expected customer activity levels, particularly in Canada, as well as a decline in the quoted price of our common stock, we determined that the carrying values of certain intangible assets were no longer recoverable, which resulted in an impairment charge of \$73.5 million in our asset group that includes fracturing systems and well construction, which we recorded in the fourth quarter of 2018. No finite-lived intangible impairments were recorded in 2017 or 2016. Impairment charges related to identifiable intangibles with definite lives are included in “Impairments” in the consolidated statements of operations. See “Note 2. Summary of Significant Accounting Policies” for additional information.

Total amortization expense for the years ended December 31, 2018, 2017 and 2016 was \$13.1 million, \$24.5 million and \$23.8 million, respectively.

The total weighted average amortization period is 15 years and estimated future amortization expense is as follows (in thousands):

2019	\$ 4,468
2020	4,458
2021	4,458
2022	4,458
2023	4,458
Thereafter	26,685
Total	<u>\$ 48,985</u>

Note 8. Accrued Expenses

Accrued expenses consist of the following as of December 31, 2018 and 2017 (in thousands):

	December 31, 2018	December 31, 2017
Accrued payroll and bonus	\$ 2,627	\$ 5,167
Property and franchise taxes accrual	424	390
Accrued acquisition related costs	-	25
Accrued other miscellaneous liabilities	1,033	1,091
	<u>\$ 4,084</u>	<u>\$ 6,673</u>

NCS MULTISTAGE HOLDINGS, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Note 9. Debt

Our long-term debt consists of the following as of December 31, 2018 and 2017 (in thousands):

	December 31, 2018	December 31, 2017
Senior Secured Credit Facility	\$ 20,000	\$ 20,000
Promissory note	—	3,313
Equipment notes	2,412	1,295
Capital leases	3,279	2,428
Total debt	25,691	27,036
Less: current portion	(2,236)	(5,334)
Long-term debt	<u>\$ 23,455</u>	<u>\$ 21,702</u>

The estimated fair value of total debt for the years ended December 31, 2018 and 2017 was \$25.3 million and \$26.7 million, respectively. The carrying value of the Senior Secured Credit Facility and the lines of credit approximated the fair value of debt as they can be paid at any time. The fair value for the remaining debt was estimated using Level 2 inputs by calculating the sum of the discounted future interest and principal payments through the date of maturity.

Below is a description of our credit agreement and other financing arrangements.

Senior Secured Credit Facility

On May 4, 2017, we entered into an Amended and Restated Credit Agreement (the “Credit Agreement”) with Pioneer Investment, Inc., as borrower (the “U.S. Borrower”), NCS Multistage Inc., as borrower (the “Canadian Borrower”), Pioneer Intermediate, Inc. (together with the Company, the “Parent Guarantors”) and the lenders party thereto, Wells Fargo Bank, National Association as administrative agent in respect of the U.S. Facility (as defined below) and Wells Fargo Bank, National Association, Canadian Branch, as administrative agent in respect of the Canadian Facility (as defined below) (the senior secured revolving credit facilities provided thereunder, the “Senior Secured Credit Facility”). The Credit Agreement amended and restated the prior credit agreement in its entirety. The Senior Secured Credit Facility will mature on May 4, 2020.

The Senior Secured Credit Facility originally consisted of a (i) senior secured revolving credit facility in an aggregate principal amount of \$25.0 million made available to the U.S. Borrower (the “U.S. Facility”), of which up to \$5.0 million may be made available for letters of credit and up to \$5.0 million may be made available for swingline loans and (ii) senior secured revolving credit facility in an aggregate principal amount of \$25.0 million made available to the Canadian Borrower (the “Canadian Facility”).

We entered into Amendment No. 1 to the Credit Agreement on August 31, 2017, which increased the loan commitment available to the U.S. Borrower to \$50.0 million from \$25.0 million under the U.S. Facility. The loan commitment available under the Canadian Facility remained at \$25.0 million. On February 16, 2018 and October 9, 2018, we entered into Amendments No. 2 and No. 3, respectively, to the Credit Agreement, which amended certain negative covenants contained in the Credit Agreement. As of December 31, 2018 and 2017, we had \$20.0 million in outstanding indebtedness under the U.S. Facility and no outstanding indebtedness under the Canadian Facility.

We incurred interest expense related to the Senior Secured Credit Facility, including commitment fees, of \$1.3 million and \$0.4 million for the years ended December 31, 2018 and 2017, respectively.

Borrowings under the U.S. Facility may be made in U.S. dollars, Canadian dollars or Euros and bear interest at a rate equal to the Adjusted Base Rate or Eurocurrency Rate (each as defined in the Credit Agreement), in each case, plus an applicable interest margin as set forth in the Credit Agreement. Borrowings under the Canadian Facility may be made in U.S. dollars or Canadian dollars and bear interest at the Canadian (Cdn) Base Rate, Canadian (U.S.) Base Rate, Eurocurrency Rate or Discount Rate (each as defined in the Credit Agreement), in each case, plus an applicable interest margin as set forth in the Credit Agreement. The Adjusted Base Rate, Canadian (U.S.) Base Rate and Canadian (Cdn) Base Rate applicable margin will be between 2.25% and 3.00% and Eurocurrency Rate applicable margin will be between 3.25% and 4.00%, in each case, depending on the Company’s leverage ratio. The applicable interest rate at December 31, 2018 was 5.88%.

The obligations of the U.S. Borrower under the U.S. Facility are guaranteed by the Parent Guarantors and each of the other existing and future direct and indirect restricted subsidiaries of the Company organized under the laws of the United States (subject to certain exceptions) and are secured by substantially all of the assets of the Parent Guarantors, the U.S. Borrower and such other subsidiary guarantors, in each case, subject to certain exceptions and permitted liens. The obligations of the Canadian Borrower under the Canadian Facility are guaranteed by the Parent Guarantors, the U.S. Borrower and each of the future direct and indirect restricted

NCS MULTISTAGE HOLDINGS, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

subsidiaries of the Company organized under the laws of the United States and Canada (subject to certain exceptions) and are secured by substantially all of the assets of the Parent Guarantors, the U.S. Borrower, the Canadian Borrower and such subsidiary guarantors, in each case, subject to certain exceptions and permitted liens.

The Credit Agreement contains financial covenants that require (i) commencing with the fiscal quarter ending June 30, 2017, compliance with a leverage ratio test set at (A) 3.00 to 1.00 as of the last day of each fiscal quarter ending prior to March 31, 2018 and (B) 2.50 to 1.00 as of the last day of each fiscal quarter ending on or after March 31, 2018, (ii) commencing with the fiscal quarter ending June 30, 2017, compliance with an interest coverage ratio test set at 2.75 to 1.00 as of the last day of each fiscal quarter, (iii) if the leverage ratio as of the end of any fiscal quarter is greater than 2.00 to 1.00 and the amount outstanding under the Canadian Facility at any time during such fiscal quarter was greater than \$0, compliance as of the end of such fiscal quarter with a Canadian asset coverage ratio test set at 1.00 to 1.00 and (iv) if the leverage ratio as of the end of any fiscal quarter is greater than 2.00 to 1.00 and the amount outstanding under the U.S. Facility at any time during such fiscal quarter was greater than \$0, compliance as of the end of such fiscal quarter with a U.S. asset coverage ratio test set at 1.00 to 1.00. As of December 31, 2018, we were in compliance with these financial covenants. The Credit Agreement also contains customary affirmative and negative covenants, including, among other things, restrictions on the creation of liens, the incurrence of indebtedness, investments, dividends and other restricted payments, dispositions and transactions with affiliates. The Credit Agreement also includes customary events of default for facilities of this type (with customary grace periods, as applicable). If an event of default occurs, the lenders under each of the U.S. Facility and the Canadian Facility may elect (after the expiration of any applicable notice or grace periods) to declare all outstanding borrowings under such facility, together with accrued and unpaid interest and other amounts payable thereunder, to be immediately due and payable. The lenders under each of the U.S. Facility and the Canadian Facility also have the right upon an event of default thereunder to terminate any commitments they have to provide further borrowings under such facility. Further, following an event of default under each of the U.S. Facility and the Canadian Facility, the lenders thereunder will have the right to proceed against the collateral granted to them to secure such facility.

Direct costs of \$1.0 million were incurred in connection with the Senior Secured Credit Facility. The costs were capitalized as an asset as they represent the benefit of being able to access capital over the contractual term. The costs are being amortized over the term of the Senior Secured Credit Facility using the straight-line method. Amortization expense of the deferred financing charges of \$0.3 million and \$0.2 million was included in interest expense, net for the years ended December 31, 2018 and 2017, respectively.

Promissory Note

On February 27, 2017, Repeat Precision entered into a promissory note with Security State Bank & Trust, Fredericksburg, for an aggregate borrowing capacity of \$3.8 million. It bears interest at a variable interest rate based on prime plus 1.00%. The promissory note is secured against equipment, inventory and receivables. The promissory note was renewed on February 16, 2018 for an aggregate borrowing capacity of \$4.3 million and was renewed again on February 15, 2019. The note is scheduled to mature on February 16, 2020. No other terms were changed. As of December 31, 2018, we had no outstanding indebtedness under the promissory note. As of December 31, 2017, the outstanding balance on the promissory note was \$3.3 million.

Equipment Notes

In February 2017, Repeat Precision entered into an equipment note in the amount of \$0.8 million with Security State Bank & Trust, Fredericksburg. The equipment note bears interest at prime plus 1.00%, matures on February 27, 2021 and is collateralized by certain property. As of December 31, 2018 and 2017, the outstanding balance on the equipment note was \$0.4 million and \$0.6 million, respectively.

In April 2017, Repeat Precision entered into an equipment note in the amount of \$0.8 million with Security State Bank & Trust, Fredericksburg. The equipment note incurred interest at prime plus 1.00% and was collateralized by certain property. The note matured on December 21, 2018 and was paid in full. As of December 31, 2017, the outstanding balance on the equipment note was \$0.7 million.

In September 2018, Repeat Precision entered into an equipment note for an aggregate borrowing capacity of \$3.8 million with Security State Bank & Trust, Fredericksburg. The equipment note bears interest at prime plus 1.00%, matures on June 7, 2023 and is collateralized by certain property. As of December 31, 2018, the outstanding balance on the equipment note was \$2.0 million.

NCS MULTISTAGE HOLDINGS, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Future principal payments on the Senior Secured Credit Facility, promissory note and equipment notes for each of the years ending December 31, are as follows (in thousands):

2019	\$	666
2020		21,195
2021		551
	\$	<u>22,412</u>

Capital Leases

We have entered into various capital lease agreements which expire at various dates through 2022. Total capital lease amortization expense was \$1.1 million, \$0.4 million and \$0.2 million for the years ended December 31, 2018, December 31, 2017 and 2016, respectively. Future minimum lease payments under capital leases at December 31, 2018, together with the present value of the minimum lease payments, are as follows (in thousands):

2019	\$	1,768
2020		973
2021		686
2022		198
Subtotal		<u>3,625</u>
Less: amount representing interest		(346)
Present value of payments	\$	<u>3,279</u>

Property under capital leases included within property and equipment consisted of the following at December 31, 2018 and 2017 (in thousands):

	December 31, 2018	December 31, 2017
Vehicles	\$ 5,265	\$ 3,584
Assets under capital leases	5,265	3,584
Less: accumulated amortization	(1,411)	(785)
Net assets under capital leases	<u>\$ 3,854</u>	<u>\$ 2,799</u>

Note 10. Commitments and Contingencies

Litigation

In the ordinary course of our business, from time to time, we have various claims, lawsuits and administrative proceedings that are pending or threatened with respect to commercial, intellectual property and employee matters.

On July 24, 2018, we filed a patent infringement lawsuit against Kobold Corporation, Kobold Completions Inc. and 2039974 Alberta Ltd. (“Kobold”) in the Federal Court of Canada, alleging that Kobold’s fracturing tools and methods infringe on several of our Canadian patents. We previously filed a breach of contract lawsuit on March 16, 2018, against Kobold Corporation in the Court of Queen’s Bench of Alberta, alleging breach of a prior settlement agreement. Both of these lawsuits seek unspecified monetary damages and injunctive relief.

In early February 2019, we filed a lawsuit against Diamondback Industries, Inc. (“Diamondback”) in the United States District Court for the Western District of Texas, Waco Division, alleging patent infringement, breach of contract and related claims stemming from Diamondback’s breach of an exclusive license, granted by Diamondback to Repeat Precision, to a patent necessary for the manufacture and sale of a disposable setting tool. Around the same time, Diamondback filed a lawsuit against Repeat Precision and various NCS entities in an effort to invalidate the exclusive license agreement and requested monetary damages. We believe the exclusive license is enforceable and there is no basis to support the claims asserted by Diamondback and we intend to vigorously enforce our rights under the license agreement.

While the outcome of any legal proceedings cannot be predicted with any certainty, based on a consideration of relevant facts and circumstances, our management currently does not expect that the results of these legal proceedings would have a material adverse effect on our financial position, results of operations or cash flows.

On March 3, 2017, we received \$0.9 million resulting from an arbitration case that was decided in our favor in February 2017. This was recorded as other income (expense), net in our consolidated statements of operations for the year ended December 31, 2017.

NCS MULTISTAGE HOLDINGS, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Operating Leases

We have entered into certain operating lease commitments for buildings and office equipment, which expire at various dates through May 2028. Total rental expense charged to consolidated statements of operations was \$3.4 million, \$2.4 million and \$2.1 million for the years ended December 31, 2018, 2017 and 2016.

Minimum rental payments under non-cancelable operating leases which have terms in excess of one year as of December 31, 2018, are as follows (in thousands):

2019	\$	2,867
2020		1,276
2021		757
2022		434
2023		292
Thereafter		398
Total payments	\$	<u>6,024</u>

Note 11. Stockholders' Equity

Initial Public Offering

On May 3, 2017, we completed our IPO of 9.5 million shares of our common stock, \$0.01 par value, at a price to the public of \$17.00 per share pursuant to a Registration Statement on Form S-1, as amended (File No. 333-216580). The underwriters exercised their option to purchase an additional 1.425 million shares of our common stock from certain selling stockholders and the closing of the over-allotment option occurred on May 3, 2017, concurrently with the closing of the IPO. We received \$148.9 million in net proceeds after deducting underwriting discounts and commissions and other offering expenses of \$12.6 million. We used a portion of the net proceeds from the IPO to repay our indebtedness under our prior credit agreement. We used the remaining net proceeds from the IPO to acquire Spectrum on August 31, 2017 (see "Note 4. Acquisitions").

Stock Split

On April 13, 2017, our board of directors ("Board") and stockholders approved an amendment to the amended and restated certificate of incorporation effecting a 3.00 for 1.00 stock split of our issued and outstanding shares of common stock. The stock split was implemented on April 13, 2017. The par value of the common and preferred stock was not adjusted as a result of the stock split. All other issued and outstanding shares and per share amounts included in the accompanying consolidated financial statements have been adjusted to reflect this stock split for all periods presented.

Authorized and Outstanding Shares

We currently have common stock and preferred stock outstanding. On April 27, 2017, our certificate of incorporation was amended and restated and the number of shares of common stock authorized to be issued by us was increased from 54,000,000 to 225,000,000 and the number of our authorized shares of preferred stock was increased from one share to 10,000,000 shares. As of December 31, 2018 and 2017, 45,072,463 and 43,913,136 shares of common stock were outstanding, respectively. Additionally, one share of preferred stock, designated as the "Special Voting Share" in our amended and restated certificate of incorporation, was issued and outstanding as of December 31, 2018 and December 31, 2017.

Voting

The holders of common stock are entitled to one vote for each share of common stock held. The holder of the Special Voting Share shall be entitled to vote on all matters that a holder of common stock is entitled to vote on and shall be entitled to cast a number of votes equal to the number of exchangeable shares of NCS Multistage Inc. ("NCS Canada"), a subsidiary of the Company, then outstanding that are not owned by us, multiplied by the exchange ratio (as defined in the articles of incorporation of NCS Canada). In connection with our stock split, the exchange ratio was adjusted to three from one. As of December 31, 2017, the number of shares of common stock issuable for the exchangeable shares totaled 1,769,247 and was held by the preferred stockholder. On February 14, 2018, we issued 442,312 shares of common stock to the preferred stockholder in exchange for shares of NCS Canada. As of December 31, 2018, the number of shares of common stock issuable for the exchangeable shares totaled 1,326,935. The exchangeable shares are convertible upon demand at the stock price on the conversion date.

NCS MULTISTAGE HOLDINGS, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Dividends

The holders of common stock are entitled to receive dividends as declared from time-to-time by our Board. The holder of the Special Voting Share is not entitled to receive dividends. No dividends were declared during the periods ended December 31, 2018 or December 31, 2017.

Note 12. Share-Based Compensation

Equity Incentive Plans

We maintain three equity incentive plans for the benefit of our employees, directors and other service providers: our 2011 Equity Incentive Plan (the “2011 Plan”), our 2012 Equity Incentive Plan (the “2012 Plan”) and our 2017 Equity Incentive Plan (the “2017 Plan”). The following is a summary of certain features of the 2011 Plan, 2012 Plan and the 2017 Plan.

2011 Plan

The 2011 Plan provided awards to employees, directors and consultants of NCS Energy Holdings, LLC. In connection with Advent’s acquisition on December 20, 2012, we assumed the options under the 2011 Plan and converted them into options to purchase shares of our common stock. No options remain outstanding and exercisable that were granted pursuant to the 2011 Plan as all 649,047 options were exercised during the year ended December 31, 2018.

2012 Plan

The 2012 Plan provided awards to our employees, directors and consultants prior to our IPO. We no longer grant awards under the 2012 Plan. The 2012 Plan is administered by the Compensation, Nominating and Governance Committee of our Board. The 2012 Plan has a total of 2,463,501 shares authorized for issuance. Awards granted under the 2012 Plan will remain outstanding until the earlier of exercise, forfeiture, cancellation or expiration. There remain 2,410,048 options outstanding and 1,414,200 options exercisable that were granted pursuant to the 2012 Plan as of December 31, 2018.

2017 Plan

The 2017 Plan was adopted in connection with our IPO and provides for awards of stock options, stock appreciation rights, restricted stock awards, RSUs, stock awards and performance awards. Awards under the 2017 Plan may be granted to any employee, non-employee director, consultant or other personal service provider to us or any of our subsidiaries. The 2017 Plan is administered by a plan administrator, which is the Compensation, Nominating and Governance Committee or such other committee of the Board or the Board as a whole, in each case as determined by the Board. The 2017 Plan was established with the authorization for grants of up to of 4,532,523 shares of authorized but unissued shares of common stock. As of December 31, 2018, the total number of shares available for future issuance under the 2017 Plan is 3,634,419.

Stock Options

Stock options granted under the 2012 Plan and the 2017 Plan generally vest annually in equal increments over three or five years and have a 10-year term. Before our IPO, we issued certain stock options that were to vest only in connection with a change of control (the “Liquidity Options”). In connection with the IPO, the Liquidity Options were amended for 22 employees to provide that such awards will vest in three equal installments on each of the first three anniversaries of the consummation of our IPO, which occurred on May 3, 2017, subject to certain requirements including, as applicable, the recipient’s continued employment on the vesting date. The modified Liquidity Options are still subject to accelerated vesting upon a company sale, as defined in our 2012 Plan.

Determining fair market value

We estimate the fair value of each option grant using the Black-Scholes option-pricing model. The Black-Scholes option pricing model requires estimates of key assumptions based on both historical information and management judgment regarding market factors and trends. Determining the appropriate fair value model and calculating the fair value of options requires the input of highly subjective assumptions, including the expected volatility of the price of our stock, the risk-free rate, the expected term of the options and the expected dividend yield of our common stock. These estimates involve inherent uncertainties and the application of management’s judgment. If factors change and different assumptions are used, our share-based compensation expense could be materially different in the future.

Expected volatility—As we were a private company prior to our IPO, we estimate our expected volatility by using the historical volatilities of our peer group of public companies for a period equal to the expected life of the option by taking the median of the

NCS MULTISTAGE HOLDINGS, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

annualized weekly ten-year standard deviation of their stock prices. We will continue to use this method until we have adequate historical data regarding the volatility of our own traded stock price.

Risk-free interest rate—The risk-free interest rates for options granted are based on the constant maturity Treasury bond rates whose term is consistent with the expected life of an option from the date of grant.

Expected term—As we do not have sufficient historical experience for determining the expected term of the stock option awards granted, we based our expected term for awards issued to employees on the “simplified” method under the provisions of ASC Topic 718-10, Compensation-Stock Compensation. The expected term is based on the midpoint between the vesting date and contractual term of an option. The expected term represents the period that our stock-based awards are expected to be outstanding.

Expected dividend yield—We do not anticipate paying cash dividends on our shares of common stock; therefore, the expected dividend yield is assumed to be zero.

The weighted average assumptions used to estimate the fair value of stock options granted in 2017 and 2016 were as follows:

	2017	2016
Expected volatility	44.4 %	42-44.7%
Average risk free interest rate	2.0 %	1.7 %
Expected term (in years)	6.0	6.5
Expected dividends	— %	— %

As a result of the modification of the terms of the Liquidity Options, we estimated the fair value of the Liquidity Options on April 27, 2017, the amendment date, using the Black-Scholes option-pricing model. The total unamortized compensation expense was valued at \$17.2 million at April 27, 2017, the amendment date, compared to \$10.1 million at December 31, 2016. The weighted average assumptions used to estimate the fair value of the Liquidity Options were as follows:

Expected volatility	44.4 %
Average risk free interest rate	1.7 %
Expected term (in years)	4.6
Expected dividends	— %

The following table summarizes stock option activity during the year ended December 31, 2018:

	Service Based Options	Liquidity Options	Total Options	Service Based Weighted Average Exercise Price	Liquidity Based Weighted Average Exercise Price	Service Based Weighted Average Remaining Contractual Life (Years)	Liquidity Weighted Average Remaining Contractual Life (Years)
2012 Equity Plan and 2017 Equity Plan							
Outstanding at December 31, 2017	1,002,017	1,472,631	2,474,648	\$ 6.15	\$ 6.19	5.24	5.19
Granted during the year	—	—	—	—	—		
Exercised during the year	(27,503)	(13,704)	(41,207)	6.22	7.59		
Forfeited during the year	(1,080)	(9,666)	(10,746)	9.56	6.57		
Outstanding at December 31, 2018	973,434	1,449,261	2,422,695	\$ 6.14	\$ 6.18	4.21	4.17
Unvested as of December 31, 2018	32,191	972,088	1,004,279	11.89	6.19		
Exercisable as of December 31, 2018	941,243	477,173	1,418,416	\$ 5.95	\$ 6.15	4.11	4.14

The weighted average grant-date fair value of service-based option awards granted during the years 2017 and 2016 was \$7.61 and \$4.58, respectively. The weighted average grant-date fair value of the Liquidity Options at the amendment date of April 27, 2017 was \$11.69.

Aggregate intrinsic value represents the difference between our estimated fair value of common stock and the exercise price of outstanding in the money options. As of December 31, 2018, our outstanding and exercisable aggregate intrinsic values were each \$0.1 million. The unvested aggregate intrinsic value had no value at December 31, 2018. The total intrinsic value of options exercised during the years ended December 31, 2018 and 2017 for all three equity incentive plans was \$9.8 million and \$14 thousand, respectively. No shares were exercised during the year ended December 31, 2016. The income tax benefit realized from stock options exercised was \$0.5 million for the year ended December 31, 2018.

As of December 31, 2018, there was \$7.7 million of total unrecognized compensation cost related to options, which we expect to recognize over approximately one year.

NCS MULTISTAGE HOLDINGS, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Restricted Stock Units

Upon completion of our IPO and pursuant to the 2017 Plan, we began granting RSUs. We account for RSUs granted to employees at fair value on the date of grant, which we measure as the closing price of our stock on the date of grant, and recognize the compensation expense in the financial statements over the requisite service period. RSUs generally vest over a period of three years from the date of grant other than those issued to members of our Board. The RSUs for the members of our Board generally vest over a period of one year but settle for shares of common stock on a one-for-one basis within thirty days following the earliest of (i) one year following the termination of the person's service for any reason other than cause, (ii) a change of control or (iii) the fifth anniversary of the grant date.

The following table summarizes RSU activity during the year ended December 31, 2018:

	Number of Awards	Weighted Average Grant Date Fair Value
Non-vested at December 31, 2017	167,494	\$ 18.78
Granted	586,832	14.55
Vested (including 45,585 shares that have not been released)	(82,306)	18.21
Forfeited	(25,385)	14.53
Non-vested at December 31, 2018	646,635	\$ 15.18

The total value of shares vested and released was \$0.6 million during the year ended December 31, 2018. For 2018, the income tax benefit recognized for RSUs was \$0.1 million. No RSUs vested during the years ended December 31, 2017 and 2016. As of December 31, 2018, there was \$6.9 million of total unrecognized compensation cost related to RSUs, which we expect to recognize over approximately two years.

Performance Stock Unit Awards

During the first quarter of 2018, we granted 156,516 of PSUs with a performance period from January 1, 2018 to December 31, 2020. The fair value of the PSUs of \$17.37 was measured using a Monte Carlo simulation on the date the PSUs were granted. PSUs provide the recipient the ability to earn a number of shares of stock between 0% and 200% of the number of units granted based on our Total Shareholder Return ("TSR") relative to our performance peer group. The threshold performance level (25th percentile relative TSR) starts to earn PSUs, the mid-point performance level (50th percentile relative TSR) earns 65% of the target PSUs and the maximum performance level (90th percentile relative TSR) or greater earns 200% of the target PSUs. Payments are calculated by linear interpolation for performance between the threshold and mid-point and between the mid-point and maximum. In no event shall the participant earn more than 200% of the target PSUs.

The weighted average assumptions for the PSUs granted in 2018 are as follows:

	2018
Grant date	March 1, 2018
Performance period	January 1, 2018 to December 31, 2020
Volatility	54.3%
Risk-free interest rate	2.3%
Expected dividends	— %
Grant date price	\$ 14.53

As of December 31, 2018, there was \$1.9 million of total unrecognized compensation cost related to PSUs, which we expect to recognize over approximately two years.

Employee Stock Purchase Plan

On August 3, 2017, our Board adopted our ESPP. Before the issuance of shares in January 2019, there were an aggregate of 2,000,000 shares of our common stock reserved for issuance and sale pursuant to the ESPP as of December 31, 2018. The first offering period under our ESPP began on October 16, 2017 and ended on December 31, 2018. In January 2019, we issued 156,486 shares of our common stock to our employees in connection with the settlement of the purchase of shares for this offering period, which increased our common stock outstanding. Starting with the offering period beginning January 1, 2019, offering periods run for six months, with a new offering period beginning on the first day of January and July each year.

NCS MULTISTAGE HOLDINGS, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

The ESPP allows eligible employees to contribute, subject to any other plan limitations including a maximum share purchase cap of 1,041 shares per offering period, up to 18% of their base salary, up to a maximum of \$12.5 thousand per offering period, toward the purchase of our common stock at a discounted price. The purchase price of the shares on each purchase date is equal to 85% of the lower of the fair market value of our common stock on the first and last trading days of each offering period. The U.S. ESPP is designed to be qualified under Section 423 of the Internal Revenue Code.

The fair value of the ESPP for the October 16, 2017 to December 31, 2018 offering period was estimated using the Black-Scholes model with the following assumptions and resulting weighted-average fair value per share:

Expected volatility	38.8 %
Average risk free interest rate	1.4 %
Expected dividends	— %
Weighted-average fair value per share	\$ 7.16

Total Share Based Compensation Expense

The following table summarizes share-based compensation expense recognized in SG&A expense in our consolidated statements of operations and our related tax benefit for the years ended December 31, 2018, 2017 and 2016, respectively (in thousands):

	Year Ended December 31,		
	2018	2017	2016
Stock options	\$ 5,865	\$ 5,218	\$ 1,354
Restricted stock units	3,672	775	-
Performance stock unit awards	800	-	-
ESPP	593	115	-
Total share-based compensation expense	<u>\$ 10,930</u>	<u>\$ 6,108</u>	<u>\$ 1,354</u>
Related income tax benefit	<u>\$ 1,698</u>	<u>\$ 2,529</u>	<u>\$ 325</u>

Note 13. Employee Benefit Plan

Our U.S. employees are eligible to participate in a 401(k) plan sponsored by us. All eligible employees may contribute a percentage of their compensation subject to a maximum imposed by the Internal Revenue Code. Under the terms of the 401(k) plan, we match 100% of the first 3% of eligible compensation an employee contributes. Additionally, we provide a 50% match on any employee contribution up to 5% of eligible compensation. Similarly, our Canadian employees are eligible to participate in the Group Registered Retirement Savings Program. All eligible employees may make tax deferred contributions to the plan. Contributions made on behalf of Canadian employees by NCS are taxable income to the employee and may not exceed the Canadian Revenue Agency's deduction limit for the given year. Our contributions to these benefit plans were \$1.3 million, \$0.8 million and \$0.6 million for the years ended December 31, 2018, 2017 and 2016, respectively.

Note 14. Income Taxes

The (benefit) provision from income taxes consists of the following for the years ended December 31, 2018, 2017 and 2016 (in thousands):

	Year Ended December 31,		
	2018	2017	2016
Current tax expense (benefit)			
U.S. Federal	\$ 1,241	\$ 11,786	\$ (505)
State	240	628	(145)
Foreign	4,307	7,215	1,098
Total current	<u>5,788</u>	<u>19,629</u>	<u>448</u>
Deferred tax expense (benefit)			
U.S. Federal	\$ (9,525)	\$ (14,389)	\$ (4,190)
State	(599)	(299)	(133)
Foreign	(18,716)	(4,271)	(4,943)
Total deferred	<u>(28,840)</u>	<u>(18,959)</u>	<u>(9,266)</u>
Total income taxes	<u>\$ (23,052)</u>	<u>\$ 670</u>	<u>\$ (8,818)</u>

NCS MULTISTAGE HOLDINGS, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

The following is the domestic and foreign components of our (loss) income before income taxes for the years ended December 31, 2018, 2017 and 2016 (in thousands):

	Year Ended December 31,		
	2018	2017	2016
U.S. Federal	\$ (52,523)	\$ (6,337)	\$ (15,221)
Foreign	(155,760)	8,299	(11,524)
(Loss) income before income tax	<u>\$ (208,283)</u>	<u>\$ 1,962</u>	<u>\$ (26,745)</u>

The following is a summary of the items that caused recorded income taxes to differ from income taxes computed using the statutory federal income tax rate for the years ended December 31, 2018, 2017 and 2016:

	Year Ended December 31,		
	2018	2017	2016
Income tax expense at federal statutory rate	21.0 %	35.0 %	35.0 %
Increase (decrease) in income taxes resulting from			
Impairment expense	(15.7)%	- %	- %
Non-controlling interest losses	0.5 %	35.5 %	- %
U.S. tax on foreign earnings	1.5 %	200.5 %	(3.6)%
Deferred tax adjustment for foreign book value and tax basis differences	- %	(197.3)%	1.8 %
Nondeductible expenses	(0.2)%	36.6 %	(0.2)%
Non U.S. income taxed at different rates	4.5 %	(16.9)%	(3.6)%
Research and other tax credits	0.4 %	(44.0)%	3.0 %
Effect of rate change on deferred tax	- %	(24.3)%	- %
Stock-based compensation	(0.2)%	22.1 %	(0.5)%
Manufacturing deduction	- %	(23.8)%	0.3 %
State taxes	0.2 %	8.6 %	0.8 %
Change in valuation allowance	(0.5)%	(2.3)%	- %
Other	(0.4)%	4.4 %	- %
Income tax	<u>11.1 %</u>	<u>34.1 %</u>	<u>33.0 %</u>

We recorded a tax (benefit) expense of \$(23.1) million, \$0.7 million and \$(8.8) million for the years ended December 31, 2018, 2017 and 2016, respectively. For the years ended December 31, 2018, 2017 and 2016, our effective tax rate was 11.1%, 34.1% and 33.0%. The income tax benefit and effective tax rate for the year ended December 31, 2018 was significantly impacted by the income tax rate change from 35% to 21% and the one time impairment charge which resulted in a corresponding decrease in the effective tax rate of 15.7%. During the year ended December 31, 2017 the income tax expense and effective tax rate differences included several offsetting items, including the effect of recording a tax expense for the enacted U.S. tax reform legislation commonly referred to as the U.S. Tax Cuts and Jobs Act of 2017 (the “2017 Tax Act”) of \$3.9 million, not providing U.S. income taxes on the undistributed earnings of foreign subsidiaries because we intended to permanently reinvest such earnings outside the U.S. and a tax benefit for the reversal of our deferred tax liability due to the change in our foreign unremitted earnings assertion of \$3.9 million. During the first quarter of 2017, we changed our assertion to state that undistributed foreign earnings are indefinitely or permanently reinvested as a result of cash proceeds received from the IPO during May 2017, a portion of which was used to pay off existing debt.

The 2017 Tax Act was signed into law on December 22, 2017. The 2017 Tax Act significantly revised the U.S. corporate income tax by, among other things, lowering the statutory corporate tax rate from 35% to 21%, eliminating certain deductions, imposing a mandatory one-time tax on accumulated earnings of foreign subsidiaries as of 2017, introducing new tax regimes, and changing how foreign earnings are subject to U.S. tax. We recorded a tax benefit of \$0.5 million for the remeasurement of federal net deferred tax liabilities resulting from the permanent reduction in the U.S. statutory corporate tax rate to 21% from 35% and recorded a mandatory one-time tax on the accumulated earnings of our foreign subsidiaries of \$4.4 million. Our preliminary estimate of the 2017 Tax Act and the remeasurement of our deferred tax assets and liabilities is subject to the finalization of management’s analysis related to certain matters, such as developing interpretations of the provisions of the 2017 Tax Act, changes to certain estimates and the filing of our tax returns. U.S. Treasury regulations, administrative interpretations or court decisions interpreting the 2017 Tax Act may require further adjustments and changes in our estimates. Those adjustments may impact our provision for income taxes in the period in which the adjustments are made.

For our calendar year beginning in 2018 we are subject to several provisions of the 2017 Tax Act including computations under Global Intangible Low Taxed Income (“GILTI”) and Foreign Derived Intangible Income (“FDII”). We were able to make a reasonable estimate of the impact of each provision of the 2017 Tax Act on our effective tax rate for the year ended December 31, 2018.

NCS MULTISTAGE HOLDINGS, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

The tax effects of temporary differences that give rise to significant portions of deferred tax assets and deferred tax liabilities as of December 31, 2018 and 2017 are as follows (in thousands):

	December 31,	
	2018	2017
Deferred tax assets		
Accruals not currently deductible	\$ 4,045	\$ 3,344
Depreciation and amortization	667	—
Foreign tax credit carryforward	1,120	—
Other	1,587	871
	7,419	4,215
Valuation allowance for deferred tax assets	(1,120)	(18)
Total deferred tax assets	6,299	4,197
Deferred tax liabilities		
Depreciation and amortization	—	(27,404)
Foreign currency translation	(105)	(358)
Other	—	(618)
Total deferred tax liabilities	(105)	(28,380)
Net deferred tax assets(liabilities)	\$ 6,194	\$ (24,183)

The above are included in the accompanying consolidated balance sheet as follows (in thousands):

	December 31,	
	2018	2017
Deferred income tax assets—noncurrent	\$ 9,326	\$ —
Deferred income tax liabilities—noncurrent	(3,132)	(24,183)
	\$ 6,194	\$ (24,183)

No valuation allowances have been provided for the \$9.3 million U.S. deferred tax asset as of December 31, 2018. The Company believes it is more likely than not to realize the benefit of this asset. The Company has historically been a U.S. taxpayer and projects future operations will generate sufficient taxable income. A valuation allowance has been recorded for a foreign tax credit carryforward as of December 31, 2018 in the amount of \$1.1 million. The foreign tax credit carryforward will expire in 2027.

NCS MULTISTAGE HOLDINGS, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Note 15. (Loss) Earnings Per Share

The following table presents the reconciliation of the numerator and denominator for calculating loss (earnings) per share from net (loss) income (in thousands):

	Year Ended December 31,		
	2018	2017	2016
Numerator—Basic			
Net (loss) income	\$ (185,231)	\$ 1,292	\$ (17,927)
Less: (loss) income attributable to participating shares	—	55	—
Less: income (loss) attributable to non-controlling interest	5,086	(810)	—
Net (loss) income attributable to NCS Multistage Holdings, Inc.—Basic	<u>\$ (190,317)</u>	<u>\$ 2,047</u>	<u>(17,927)</u>
Numerator—Diluted			
Net (loss) income	\$ (185,231)	\$ 1,292	\$ (17,927)
Less: income (loss) attributable to non-controlling interest	5,086	(810)	—
Net (loss) income attributable to NCS Multistage Holdings, Inc.—Diluted	<u>\$ (190,317)</u>	<u>\$ 2,102</u>	<u>\$ (17,927)</u>
Denominator			
Basic weighted average number of shares	44,788	40,484	34,008
Exchangeable shares for common stock	—	1,786	—
Dilutive effect of stock options, RSUs, PSUs and ESPP	—	1,313	—
Diluted weighted average number of shares	<u>44,788</u>	<u>43,583</u>	<u>34,008</u>
(Loss) earnings per common share			
Basic	<u>\$ (4.25)</u>	<u>\$ 0.05</u>	<u>\$ (0.53)</u>
Diluted	<u>\$ (4.25)</u>	<u>\$ 0.05</u>	<u>\$ (0.53)</u>
Potentially dilutive securities excluded as anti-dilutive	<u>3,572</u>	<u>—</u>	<u>2,601</u>

Note 16. Segment and Geographic Information

We have determined that we operate in one reportable segment that has been identified based on how our chief operating decision maker manages our business (see “Note 1. Organization and Basis of Presentation”).

Revenue by country for 2018, 2017 and 2016 is attributed based on the current billing address of the customer. The following table summarizes revenue by geographic area (in thousands):

	Year Ended December 31,		
	2018	2017	2016
United States			
Product sales	\$ 67,458	\$ 41,261	\$ 17,595
Services	35,984	22,659	4,747
Total United States	103,442	63,920	22,342
Canada			
Product sales	80,871	96,716	53,088
Services	28,607	31,183	16,994
Total Canada	109,478	127,899	70,082
Other Countries			
Product sales	8,452	6,689	2,537
Services	5,591	3,126	3,518
Total Other Countries	14,043	9,815	6,055
Total			
Product sales	156,781	144,666	73,220
Services	70,182	56,968	25,259
Total	<u>\$ 226,963</u>	<u>\$ 201,634</u>	<u>\$ 98,479</u>

NCS MULTISTAGE HOLDINGS, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

The following table summarizes long-lived assets by geographic area (in thousands):

	December 31, 2018	December 31, 2017
United States	\$ 16,475	\$ 14,714
Canada	15,292	8,710
Other Countries	529	227
	<u>\$ 32,296</u>	<u>\$ 23,651</u>

Note 17. Quarterly Financial Data (Unaudited)

The table below sets forth unaudited financial information for each quarter of the last two years (in thousands, except per share amounts):

	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
2018				
Revenue	\$ 70,686	\$ 43,398	\$ 62,691	\$ 50,188
Cost of sales	33,592	19,912	28,817	25,985
Impairments	—	—	—	227,543
Income (loss) from operations	13,000	(3,291)	11,954	(228,327)
Net income (loss)	11,865	(2,818)	7,766	(202,044)
Net income (loss) attributable to NCS Multistage Holdings, Inc.	10,978	(4,053)	6,323	(203,565)
Earnings (loss) per common share				
Basic (1)	\$ 0.24	\$ (0.09)	\$ 0.14	\$ (4.51)
Diluted (1)	\$ 0.23	\$ (0.09)	\$ 0.13	\$ (4.51)
2017				
Revenue	\$ 58,636	\$ 36,857	\$ 55,957	\$ 50,184
Cost of sales	29,354	18,885	25,958	24,595
Income (loss) from operations	9,924	(5,609)	5,246	(4,602)
Net income (loss)	6,348	(4,745)	3,541	(3,852)
Net income (loss) attributable to NCS Multistage Holdings, Inc.	6,550	(4,491)	3,386	(3,343)
Earnings (loss) per common share				
Basic (1)	\$ 0.18	\$ (0.11)	\$ 0.07	\$ (0.08)
Diluted (1)	\$ 0.18	\$ (0.11)	\$ 0.07	\$ (0.08)

(1) The sum of the individual quarterly earnings per share amounts may not agree with the annual amount reported as each quarterly computation is based on the weighted average number of common shares outstanding during the period.

Note 18. Subsequent Events

On February 15, 2019, we issued 1,326,935 shares of common stock to Cemblend Systems, Inc. in exchange for shares of one of our wholly-owned subsidiaries. There are no remaining exchangeable shares.

Item 9. Changes in and Disagreements With Accountants on Accounting and Financial Disclosure

None.

Item 9A. Controls and Procedures

Disclosure Controls and Procedures

Under the supervision and with the participation of our management, including the Chief Executive Officer and Chief Financial Officer, we conducted an evaluation of the effectiveness of our disclosure controls and procedures (as such term is defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, as amended (the “Exchange Act”)) as of the end of the period covered by this report. Based on this evaluation, our Chief Executive Officer and Chief Financial Officer concluded that, as of December 31, 2018, our disclosure controls and procedures were effective to provide reasonable assurance that information required to be disclosed in the reports we file or submit under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the SEC’s rules and forms and that such information is accumulated and communicated to management, including the Chief Executive Officer and Chief Financial Officer, to allow timely decisions regarding required disclosure.

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 Rule 13a-15(f) and 15d-15(f) of the Exchange Act).

Our management, including the Chief Executive Officer and the Chief Financial Officer, conducted an evaluation of the effectiveness of our internal control over financial reporting based on the framework in "Internal Control - Integrated Framework" (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission. Based on this evaluation, management concluded that the Company's internal control over financial reporting was effective at December 31, 2018.

In addition, because we are an “emerging growth company” under the JOBS Act, our independent registered public accounting firm will not be required to attest to the effectiveness of our internal control over financial reporting for so long as we are an emerging growth company.

Changes in Internal Control Over Financial Reporting

There were no changes to our internal control over financial reporting that occurred during the quarter ended December 31, 2018 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Item 9B. Other Information

None.

PART III

Item 10. Directors, Executive Officers and Corporate Governance

The information required by this Item will be included in the Company's definitive proxy statement for the 2019 Annual Meeting of Stockholders (the "2019 Proxy Statement") to be filed with the SEC and is incorporated herein by reference.

Item 11. Executive Compensation

The information required by this Item will be included in the Company's 2019 Proxy Statement to be filed with the SEC and is incorporated herein by reference.

Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters

The following table shows information relating to the number of shares of common stock authorized for issuance under our equity compensation plans as of December 31, 2018:

	Securities to be Issued Upon Exercise of Outstanding Options, Warrants and Rights (1)	Weighted Average Exercise Price of Outstanding Options, Warrants and Rights (2)	Number of Securities Remaining Available for Future Issuance Under Equity Compensation Plans (3)
Equity compensation plans			
Approved by stockholders	3,427,917	\$ 6.16	5,488,679
Not approved by stockholders	—	\$ —	—

- (1) Includes common stock underlying shares to be issued in connection with the options outstanding under the ESPP and vested RSUs subject to delayed settlement. Also, includes common stock underlying outstanding PSUs, stock options and RSUs. The number of shares subject to outstanding PSUs is based on the target number of shares subject to each award and payments could occur at larger amounts if performance metrics are met.
- (2) RSUs and PSUs are excluded when determining the weighted-average exercise price.
- (3) Includes 1,843,514 shares remaining available for issuance under the ESPP.

The other information required by this Item will be included in the Company's 2019 Proxy Statement to be filed with the SEC and is incorporated herein by reference.

Item 13. Certain Relationships and Related Transactions, and Director Independence

The information required by this Item will be included in the Company's 2019 Proxy Statement to be filed with the SEC and is incorporated herein by reference.

Item 14. Principal Accounting Fees and Services

The information required by this Item will be included in the Company's 2019 Proxy Statement to be filed with the SEC and is incorporated herein by reference.

PART IV

Item 15. Exhibits, Financial Statement Schedules

(a) Documents filed as part of this report

(1) Financial Statements

See “—Index to Consolidated Financial Statements” in Item 8 of this Annual Report on Form 10-K.

(2) Financial Statement Schedules

All financial statement schedules have been omitted since the required information is not applicable or is not present in amounts sufficient to require submission of the schedule, or because the information required is included on the consolidated financial statements and notes thereto.

(3) Exhibits

See exhibits listed under Part (b) below.

(b) Index of Exhibits

Exhibit No.	Description
<u>2.1</u>	<u>Agreement and Plan of Merger by and among Spectrum Tracer Services, LLC, NCS Multistage Holdings, Inc., Pioneer Investment, Inc., Spartan Merger Sub, LLC and STSR LLC, dated as of August 30, 2017 (incorporated by reference to Exhibit 2.1 to the Company’s Form 8-K filed on August 30, 2017).</u>
<u>3.1</u>	<u>Second Amended and Restated Certificate of Incorporation of NCS Multistage Holdings, Inc. (incorporated by reference to Exhibit 3.1 to the Company’s Current Report on Form 8-K (File No. 001-38071) filed on May 3, 2017).</u>
<u>3.2</u>	<u>Amended and Restated Bylaws of NCS Multistage Holdings, Inc. (incorporated by reference to Exhibit 3.2 to the Company’s Current Report on Form 8-K (File No. 001-38071) filed on May 3, 2017).</u>
<u>4.1</u>	<u>Registration Rights Agreement (incorporated by reference to Exhibit 4.1 to the Company’s Current Report on Form 8-K (File No. 001-38071) filed on May 3, 2017).</u>
<u>10.1</u>	<u>Amended and Restated Credit Agreement, dated as of May 4, 2017, by and among NCS Multistage Holdings, Inc., Pioneer Intermediate, Inc., Pioneer Investment, Inc., NCS Multistage Inc., Wells Fargo Bank, National Association, Wells Fargo Bank, National Association, Canadian Branch, and the lenders party thereto (incorporated by reference to Exhibit 10.1 to the Company’s Current Report on Form 8-K (File No. 001-38071) filed on May 4, 2017).</u>
<u>10.2</u>	<u>Amendment No. 1 to Amended and Restated Credit Agreement, dated as of August 31, 2017, by and among NCS Multistage Holdings, Inc., Pioneer Intermediate, Inc., Pioneer Investment, Inc., NCS Multistage Inc., Wells Fargo Bank, National Association, Wells Fargo Bank, National Association, Canadian Branch, and the lenders party thereto (incorporated by reference to Exhibit 10.2 to the Company’s Form 8-K filed on September 1, 2017).</u>
<u>10.3</u>	<u>Amendment No. 2 to Amended and Restated Credit Agreement, dated as of February 16, 2018, by and among NCS Multistage Holdings, Inc., Pioneer Intermediate, Inc., Pioneer Investment, Inc., NCS Multistage Inc., Wells Fargo Bank, National Association, Wells Fargo Bank, National Association, Canadian Branch, and the lenders party thereto (incorporated by reference to Exhibit 10.1 to the Company’s Form 8-K filed on February 16, 2018).</u>
<u>10.4</u>	<u>Amendment No. 3 to Amended and Restated Credit Agreement, dated as of October 9, 2018, by and among NCS Multistage Holdings, Inc., Pioneer Intermediate, Inc., Pioneer Investment, Inc., NCS Multistage Inc., Wells Fargo Bank, National Association, Wells Fargo Bank, National Association, Canadian Branch, and the lenders party thereto (incorporated by reference to Exhibit 10.1 to the Company’s Form 8-K filed on October 10, 2018).</u>
† <u>10.5</u>	<u>NCS Multistage Holdings, Inc. 2017 Equity Incentive Plan (“2017 Equity Incentive Plan”) (incorporated by reference to Exhibit 4.3 to the Company’s Registration Statement on Form S-8 (File No. 333-217516) filed on April 27, 2017).</u>
† <u>10.6</u>	<u>2012 Equity Incentive Plan of NCS Multistage Holdings, Inc. (formerly known as Pioneer Super Holdings, Inc.) (incorporated by reference to Exhibit 4.4 to the Company’s Registration Statement on Form S-8 (File No. 333-217516) filed on April 27, 2017).</u>
† <u>10.7</u>	<u>NCS Multistage Holdings, Inc. Employee Stock Purchase Plan for U.S. Employees (incorporated by reference to Exhibit 4.1 to the Company’s Registration Statement on Form S-8 (File No. 333-220165) filed on August 25, 2017).</u>
† <u>10.8</u>	<u>First Amendment to NCS Multistage Holdings, Inc. Employee Stock Purchase Plan for U.S. Employees (incorporated by reference to Exhibit 10.1 to the Company’s Form 8-K filed on November 19, 2018).</u>

†	10.9	NCS Multistage Holdings, Inc. Employee Stock Purchase Plan for Non-U.S. Employees (incorporated by reference to Exhibit 4.2 to the Company’s Registration Statement on Form S-8 (File No. 333-220165) filed on August 25, 2017).
†	10.10	First Amendment to NCS Multistage Holdings, Inc. Employee Stock Purchase Plan for Non-U.S. Employees (incorporated by reference to Exhibit 10.2 to the Company’s Form 8-K filed on November 19 2018).
†	10.11	Form of Restricted Stock Unit Award Agreement under the 2017 Equity Incentive Plan for directors (incorporated by reference to Exhibit 10.1 to the Company’s Form 8-K filed on March 4, 2019).
†	10.12	Form of Restricted Stock Unit Award Agreement under the 2017 Equity Incentive Plan for executives (incorporated by reference to Exhibit 10.9 to the Company’s Annual Report on Form 10-K (File No. 001-38071) filed on March 9, 2018).
†	10.13	Form of Performance Stock Unit Award Agreement under the 2017 Equity Incentive Plan for executives (incorporated by reference to Exhibit 10.10 to the Company’s Annual Report on Form 10-K (File No. 001-38071) filed on March 9, 2018).
†	10.14	Form of Stock Option Award Agreement under the 2017 Equity Incentive Plan for executives (incorporated by reference to Exhibit 10.11 to the Company’s Annual Report on Form 10-K (File No. 001-38071) filed on March 9, 2018).
†	10.15	Form of Equivalent Stock Unit Award Agreement under the 2017 Equity Incentive Plan for executives (incorporated by reference to Exhibit 10.2 to the Company’s Form 8-K filed on March 4, 2019).
†	10.16	Form of Restricted Stock Unit Award Agreement under the 2017 Equity Incentive Plan for non-executives (incorporated by reference to Exhibit 10.7 to the Company’s Quarterly Report on Form 10-Q (File No. 001-38071) filed on August 9, 2017).
†	10.17	Form of Stock Option Award Agreement under the 2017 Equity Incentive Plan for non-executives (incorporated by reference to Exhibit 10.14 to the Company’s Registration Statement on Form S-1 (File No. 333-216580) filed on April 17, 2017).
†*	10.17	Form of Equivalent Stock Unit Award Agreement under the 2017 Equity Incentive Plan for non-executives.
†	10.18	Amended and Restated Employment Agreement between NCS Multistage Holdings, Inc. and Robert Nipper, dated as of August 3, 2017 (incorporated by reference to Exhibit 10.1 to the Company’s Form 8-K filed on August 9, 2017).
†	10.19	Amended and Restated Employment Agreement between NCS Multistage Inc. and Marty Stromquist, dated as of August 3, 2017 (incorporated by reference to Exhibit 10.15 to the Company’s Annual Report on Form 10-K (File No. 001-38071) filed on March 9, 2018).
†	10.20	Amended and Restated Employment Agreement between NCS Multistage Holdings, Inc. and Tim Willems, dated as of August 3, 2017 (incorporated by reference to Exhibit 10.2 to the Company’s Form 8-K filed on August 9, 2017).
†	10.21	Form of Director Indemnification Agreement (incorporated by reference to Exhibit 10.6 to the Company’s Registration Statement on Form S-1 (File No. 333-216580) filed on April 17, 2017).
	10.22	Exchange Agreement, dated as of December 20, 2012, by and between NCS Energy Holdings, LLC, NCS Multistage Inc. (formerly known as NCS Oilfield Service Canada, Inc.), Cemblend Systems, Inc. and NCS Multistage Holdings, Inc. (formerly known as Pioneer Super Holdings, Inc.) (incorporated by reference to Exhibit 10.15 to the Company’s Registration Statement on Form S-1 (File No. 333-216580) filed on April 17, 2017).
	10.23	Call Rights Agreement, dated as of December 20, 2012, by and between NCS Energy Holdings, LLC, NCS Multistage Inc. (formerly known as NCS Oilfield Service Canada, Inc.), Cemblend Systems, Inc. and NCS Multistage Holdings, Inc. (formerly known as Pioneer Super Holdings, Inc.) (incorporated by reference to Exhibit 10.16 to the Company’s Registration Statement on Form S-1 (File No. 333-216580) filed on April 17, 2017).
	10.24	Subscription Agreement, dated as of December 22, 2015, by and between NCS Multistage Holdings, Inc. (formerly known as Pioneer Super Holdings, Inc.) and Advent-NCS Acquisition Limited Partnership (incorporated by reference to Exhibit 10.2 to the Company’s Registration Statement on Form S-1 (File No. 333-216580) filed on March 9, 2017).
	10.25	Contribution Agreement by and among NCS Multistage Holdings, Inc. and certain unitholders of Spectrum Tracer Services, LLC, as identified therein, dated as of August 31, 2017 (incorporated by reference to Exhibit 10.1 to the Company’s Form 8-K filed on September 1, 2017).
*	21.1	List of subsidiaries of the Company.
*	23.1	Consent of PricewaterhouseCoopers LLP.
*	24.1	Power of Attorney (included on the signature pages herein).
*	31.1	Certification of Chief Executive Officer Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
*	31.2	Certification of Chief Financial Officer Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
**	32.1	Certification of Chief Executive Officer Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
**	32.2	Certification of Chief Financial Officer Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
***	101.INS	XBRL Instance Document
***	101.SCH	XBRL Taxonomy Extension Schema
***	101.CAL	XBRL Taxonomy Extension Calculation Linkbase
***	101.DEF	XBRL Taxonomy Extension Definition Linkbase

*** 101.LAB XBRL Taxonomy Extension Label Linkbase
*** 101.PRE XBRL Taxonomy Extension Presentation Linkbase

-
- † Management contracts or compensatory plans or arrangements.
 - * Filed herewith.
 - ** Furnished herewith.
 - *** Submitted electronically with this Report.

Item 16. Form 10-K Summary

None.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

Date: March 8, 2019

NCS Multistage Holdings, Inc.

By: /s/ Ryan Hummer

Ryan Hummer

Chief Financial Officer

POWER OF ATTORNEY

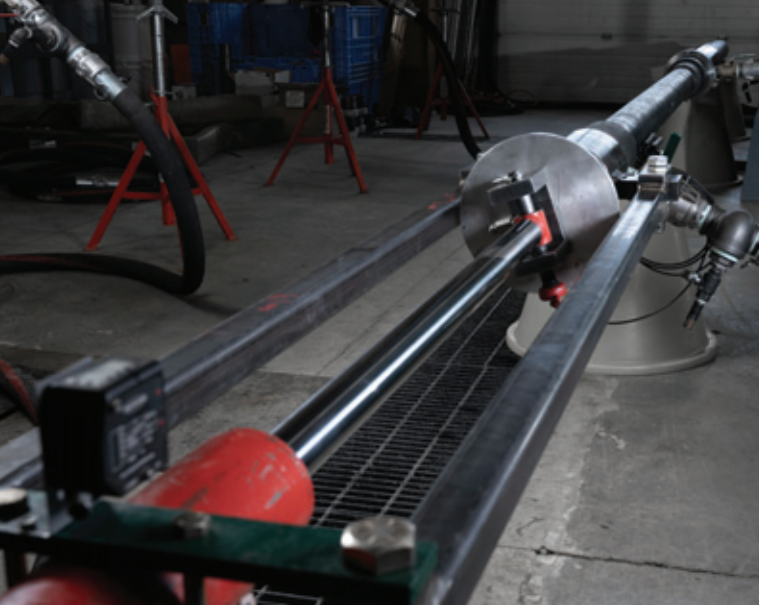
KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints Kevin Trautner and Ryan Hummer, each or any one of them, his true and lawful attorney-in-fact and agent, with full power of substitution and resubstitution, for him and in his name, place and stead, in any and all capacities, to sign any and all amendments to this Annual Report on Form 10-K, and to file the same, with all exhibits thereto, and other documents in connection therewith, with the United States Securities and Exchange Commission, granting unto said attorneys-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing requisite and necessary to be done in connection therewith, as fully to all intents and purposes as he might or could do in person, hereby ratifying and confirming all that said attorneys-in-fact and agents, or any of them, or their or his substitutes or substitute, may lawfully do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities and Exchange Act of 1934, this report has been signed below by the following persons on behalf of the registrant and in the capacities indicated on March 8, 2019.

<u>Signature</u>	<u>Title</u>
<hr/> /s/ Robert Nipper Robert Nipper	Chief Executive Officer and Director (Principal Executive Officer)
<hr/> /s/ Marty Stromquist Marty Stromquist	President and Director
<hr/> /s/ Ryan Hummer Ryan Hummer	Chief Financial Officer (Principal Financial Officer)
<hr/> /s/ Wade Bitter Wade Bitter	Chief Accounting Officer and Treasurer (Principal Accounting Officer)
<hr/> /s/ Michael McShane Michael McShane	Chairman
<hr/> /s/ John Deane John Deane	Director
<hr/> /s/ Matthew Fitzgerald Matthew Fitzgerald	Director
<hr/> /s/ Gurinder Grewal Gurinder Grewal	Director
<hr/> /s/ David McKenna David McKenna	Director
<hr/> /s/ Franklin Myers Franklin Myers	Director
<hr/> /s/ W. Matt Ralls W. Matt Ralls	Director

Frac Simulation Flow Loop

Flow loops like the one below enable us to function test our sleeves and frac-isolation assemblies under various well conditions, including different frac fluids and proppant types and concentrations. This particular test is evaluating the impact of a screen-out on our ability to close a sleeve and unset the downhole frac-isolation assembly.



Enhanced Recovery Flow Loop

A multi-year product-development effort gained momentum in 2018, leading to the first field installation of our new enhanced recovery technology in early 2019. This flow loop simulates dynamic multistage injection conditions to test a proprietary system that continuously and autonomously optimizes injection fluid distribution across the length of a horizontal well. The system diagnoses and mitigates injection fluid “short circuits” that can bypass and strand recoverable oil.



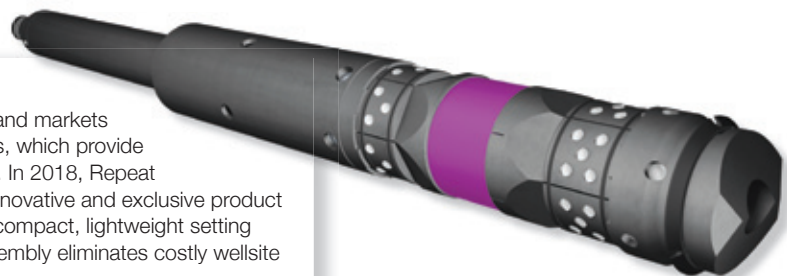
NEW COMPLETION TECHNOLOGY

New-Generation Pinpoint Fracturing Technology

Throughout 2018, we continued developing a new generation of our coiled-tubing-deployed pinpoint fracturing system. The new sleeves are shorter and more economical than our previous versions, and the frac-isolation assembly incorporates numerous improvements that make it even more robust and reliable than our current record-setting system. The new system began field tests in Canada in 2018 and is scheduled to be fully commercialized in 2019.

Single-Use Frac-Plug Setting Tool

Our joint venture, Repeat Precision manufactures and markets high-performance PurpleSeal composite frac plugs, which provide stage isolation for plug-and-perforate completions. In 2018, Repeat Precision introduced the PurpleSeal Express, an innovative and exclusive product that preassembles PurpleSeal frac plugs with our compact, lightweight setting tool that is single-use and disposable. Factory assembly eliminates costly wellsite setting-tool redressing errors.



TRACER DIAGNOSTICS EXPANSION

New Tracer Analytical Laboratory

In October 2018, we commissioned our new Tracer Diagnostics laboratory in Calgary to support our growing tracer customer base in Canada. This facility complements our existing laboratory in Tulsa, Oklahoma. Proper handling of chemical tracers at our laboratories is critical to the reliability of the results we report to our customers. Below, water and oil tracer samples are extracted as the first step in a carefully controlled process encompassing fluorescence detection, liquid chromatography, and high-resolution mass spectrometry, all performed in a single analytical run. Below left, prepared samples are placed in an auto-sampler to begin the analysis sequence.



OUR FIRST OFFSHORE COMPLETIONS

At Work in the North Sea

NCS Multistage performed our first offshore work in 2018, opening a new and promising market for our pinpoint fracturing technology. We worked in both the Norwegian and the Danish Sector of the North Sea, demonstrating that our coiled-tubing-deployed pinpoint fracturing system can also be operated effectively on drill pipe, or e-line to bring new levels of efficiency to multistage completions offshore. In Norway's Valhall field, Aker BP was able to complete four stages in 26.5 hours using our system; with conventional plug and perf, they were limited to a single stage in the same amount of time. In the Danish sector, Total E&P Danmark A/S improved completion performance from one zone in three days to three zones in a single day. At right, the *Noble Sam Turner* (Noble Corporation plc), the rig we worked from in the Danish Sector.

Opposite page: Noble and NCS Multistage personnel inspect the NCS Multistage downhole frac-isolation assembly.







19450 State Highway 249 • Suite 200
Houston, Texas 77070
281.453.2222
ir@ncsmultistage.com
ncsmultistage.com