

DRIL-QUIP INC
Form 10-K
February 27, 2019

Table of Contents

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 001-13439

DRIL-QUIP, INC.
(Exact name of registrant as specified in its charter)

Delaware	74-2162088
(State or other jurisdiction of incorporation or organization)	(IRS Employer Identification No.)

6401 N. Eldridge Parkway	77041
Houston, Texas	
(Address of principal executive offices) (Zip code)	
Registrant's telephone number, including area code: (713) 939-7711	

Securities registered pursuant to Section 12(b) of the Act:
Title of Each Class Name of Each Exchange On Which Registered
Common Stock, \$.01 par value per share New York Stock Exchange
Securities registered pursuant to Section 12(g) of the Act: None

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined by 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 regulations 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 is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements

Edgar Filing: DRIL-QUIP INC - Form 10-K

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 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 Accelerated filer
Non-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 Exchange Act). Yes No

At June 29, 2018, the aggregate market value of the registrant's Common Stock held by non-affiliates of the registrant was approximately \$1,909,500,000 based on the closing price of such stock on such date of \$51.40.

At February 25, 2019, the number of shares outstanding of registrant's Common Stock was 36,387,703.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the Registrant's Proxy Statement for its 2019 Annual Meeting of Stockholders to be filed pursuant to Regulation 14A are incorporated by reference in Part III of this Form 10-K.

Table of Contents

TABLE OF CONTENTS

PART I

<u>Item 1. Business</u>	<u>5</u>
<u>Item 1A. Risk Factors</u>	<u>15</u>
<u>Item 1B. Unresolved Staff Comments</u>	<u>26</u>
<u>Item 2. Properties</u>	<u>26</u>
<u>Item 3. Legal Proceedings</u>	<u>28</u>
<u>Item 4. Mine Safety Disclosure</u>	<u>28</u>

PART II

<u>Item 5. Market for Registrant’s Common Stock, Related Stockholder Matters and Issuer Purchases of Equity Securities</u>	<u>29</u>
<u>Item 6. Selected Financial Data</u>	<u>31</u>
<u>Item 7. Management’s Discussion and Analysis of Financial Condition and Results of Operations</u>	<u>32</u>
<u>Item 7A. Quantitative and Qualitative Disclosures About Market Risk</u>	<u>46</u>
<u>Item 8. Financial Statements and Supplementary Data</u>	<u>47</u>
<u>Item 9. Changes in and Disagreements With Accountants on Accounting and Financial Disclosure</u>	<u>79</u>
<u>Item 9A. Controls and Procedures</u>	<u>79</u>
<u>Item 9B. Other Information</u>	<u>79</u>

PART III

<u>Item 10. Directors, Executive Officers and Corporate Governance</u>	<u>79</u>
<u>Item 11. Executive Compensation</u>	<u>79</u>
<u>Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters</u>	<u>79</u>
<u>Item 13. Certain Relationships and Related Transactions, and Director Independence</u>	<u>79</u>
<u>Item 14. Principal Accountant Fees and Services</u>	<u>79</u>

PART IV

<u>Item 15. Exhibits and Financial Statement Schedules</u>	<u>80</u>
<u>Item 16. Form 10-K Summary</u>	<u>84</u>
<u>Signatures</u>	<u>85</u>

Table of Contents

FORWARD-LOOKING STATEMENTS

This Annual Report on Form 10-K includes certain statements that may be deemed to be “forward-looking statements” within the meaning of Section 27A of the Securities Act of 1933, as amended (the “Securities Act”), and Section 21E of the Securities Exchange Act of 1934, as amended (the “Exchange Act”). Statements contained in all parts of this document that are not historical facts are forward-looking statements that involve risks and uncertainties that are beyond the control of Dril-Quip, Inc. (the “Company” or “Dril-Quip”). You can identify the Company’s forward-looking statements by the words “anticipate,” “estimate,” “expect,” “may,” “project,” “believe” and similar expressions, or by the Company’s discussion of strategies or trends. Although the Company believes that the expectations reflected in such forward-looking statements are reasonable, no assurance can be given that these expectations will prove to be correct. These forward-looking statements include the following types of information and statements as they relate to the Company:

- future operating results and cash flow;
- scheduled, budgeted and other future capital expenditures;
- working capital requirements;
- the need for and the availability of expected sources of liquidity;
- the introduction into the market of the Company’s future products;
- the Company’s ability to deliver its backlog in a timely fashion;
- the market for the Company’s existing and future products;
- the Company’s ability to develop new applications for its technologies;
- the exploration, development and production activities of the Company’s customers;
- compliance with present and future environmental regulations and costs associated with environmentally related penalties, capital expenditures, remedial actions and proceedings;
- effects of pending legal proceedings;
- changes in customers’ future product and service requirements that may not be cost effective or within the Company’s capabilities; and
- future operations, financial results, business plans and cash needs.

These statements are based on assumptions and analysis in light of the Company’s experience and perception of historical trends, current conditions, expected future developments and other factors the Company believes were appropriate in the circumstances when the statements were made. Forward-looking statements by their nature involve substantial risks and uncertainties that could significantly impact expected results, and actual future results could differ materially from those described in such statements. While it is not possible to identify all factors, the Company continues to face many risks and uncertainties. Among the factors that could cause actual future results to differ materially are the risks and uncertainties discussed under “Item 1A. Risk Factors” in this report and the following:

- the volatility of oil and natural gas prices;
- the cyclical nature of the oil and gas industry;
- uncertainties associated with the United States and worldwide economies;
- uncertainties regarding political tensions in the Middle East, South America, Africa and elsewhere;
- current and potential governmental regulatory actions in the United States and regulatory actions and political unrest in other countries;
- uncertainties regarding future oil and gas exploration and production activities, including new regulations, customs requirements and product testing requirements;
- operating interruptions (including explosions, fires, weather-related incidents, mechanical failure, unscheduled downtime, labor difficulties, transportation interruptions, spills and releases and other environmental risks);
- project terminations, suspensions or scope adjustments to contracts reflected in the Company’s backlog;
- the Company’s reliance on product development;
- technological developments;

Table of Contents

the Company's reliance on third-party technologies;
acquisition and merger activities involving the Company or its competitors;
the Company's dependence on key employees and technical personnel;
increases in price or decreases in availability of raw materials;
impact of environmental matters, including future environmental regulations;
competitive products and pricing pressures;
fluctuations in foreign currency, including those attributable to the Brexit;
the ability of the Organization of Petroleum Exporting Countries (OPEC) to set and maintain production levels and pricing;
the Company's reliance on significant customers;
creditworthiness of the Company's customers;
fixed-price contracts;
changes in general economic, market or business conditions;
access to capital markets;
negative outcome of litigation, threatened litigation or government proceedings;
terrorist threats or acts, war and civil disturbances; and
changes to, and differing interpretations of, tax laws with respect to our operations and subsidiaries.

Many of such factors are beyond the Company's ability to control or predict. Any of the factors, or a combination of these factors, could materially affect the Company's future results of operations and the ultimate accuracy of the forward-looking statements. Management cautions against putting undue reliance on forward-looking statements or projecting any future results based on such statements or present or prior earnings levels. Every forward-looking statement speaks only as of the date of the particular statement, and the Company undertakes no obligation to publicly update or revise any forward-looking statement.

Table of Contents

PART I

Item 1. Business

General

Dril-Quip, Inc., a Delaware corporation (the “Company” or “Dril-Quip”), designs, manufactures, sells and services highly engineered drilling and production equipment that is well suited primarily for use in deepwater, harsh environment and severe service applications. Dril-Quip’s products are used by major integrated, large independent and foreign national oil and gas companies and drilling contractors throughout the world. The Company’s principal products consist of subsea and surface wellheads, subsea and surface production trees, subsea control systems and manifolds, mudline hanger systems, specialty connectors and associated pipe, drilling and production riser systems, liner hangers, wellhead connectors, diverters and safety valves. Dril-Quip also provides technical advisory assistance on an as-requested basis during installation of its products, as well as rework and reconditioning services for customer-owned Dril-Quip products. In addition, Dril-Quip’s customers may rent or purchase running tools from the Company for use in the installation and retrieval of the Company’s products.

Dril-Quip has developed its broad line of subsea equipment, surface equipment and offshore rig equipment primarily through its internal product research and development efforts. The Company believes that it has achieved significant market share and brand name recognition with respect to its established products due to the technological capabilities, reliability, cost effectiveness and operational timesaving features of these products.

The Company’s operations are organized into three geographic segments—Western Hemisphere (including North and South America; headquartered in Houston, Texas), Eastern Hemisphere (including Europe and Africa; headquartered in Aberdeen, Scotland) and Asia Pacific (including the Pacific Rim, Southeast Asia, Australia, India and the Middle East; headquartered in Singapore). Each of these segments sells similar products and services, and the Company has major manufacturing facilities in all three of its regional headquarter locations as well as in Macae, Brazil. The Company maintains additional facilities for fabrication and/or reconditioning and rework in Australia, Norway, Denmark, Nigeria, Indonesia, China, Ecuador, Egypt, Ghana, Hungary, Mexico, Qatar and Venezuela. The Company’s major operating subsidiaries are Dril-Quip (Europe) Limited, located in Aberdeen with branches in Denmark, Norway and Holland; Dril-Quip Asia Pacific PTE Ltd., located in Singapore; and Dril-Quip do Brasil LTDA, located in Macae, Brazil. Other operating subsidiaries include TIW Corporation (TIW) and Honing, Inc., both located in Houston, Texas; DQ Holdings Pty. Ltd., located in Perth, Australia; Dril-Quip Cross Ghana Ltd., located in Takoradi, Ghana; PT DQ Oilfield Services Indonesia, located in Jakarta, Indonesia; Dril-Quip (Nigeria) Ltd., located in Port Harcourt, Nigeria; Dril-Quip Egypt for Petroleum Services S.A.E., located in Alexandria, Egypt; Dril-Quip Oilfield Services (Tianjin) Co. Ltd., located in Tianjin, China with branches in Shenzhen and Beijing, China; Dril-Quip Qatar LLC, located in Doha, Qatar; Dril-Quip TIW Mexico S.A. de C.V., located in Villahermosa, Mexico; TIW de Venezuela S.A., located in Anaco, Venezuela and with a registered branch located in Shushufindi, Ecuador; TIW (UK) Limited, located in Aberdeen, Scotland; TIW Hungary LLC, located in Szolnok, Hungary; and TIW International LLC, with a registered branch located in Singapore.

Dril-Quip markets its products through its offices and sales representatives located in the major international energy markets throughout the world. In 2018, the Company generated approximately 61% of its revenues from foreign sales compared to 55% and 66% in 2017 and 2016, respectively.

The Company makes available, free of charge on its website, its Annual Report on Form 10-K and quarterly reports on Form 10-Q (in both HTML and XBRL formats), current reports on Form 8-K and amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Exchange Act as soon as reasonably practical after it electronically files such reports with, or furnishes them to, the Securities and Exchange Commission (SEC). The Company’s website address is www.dril-quip.com. Documents and information on the Company’s website, or on any other website, are not incorporated by reference into this Form 10-K. The SEC maintains a website (www.sec.gov) that contains reports the Company has filed with the SEC.

The Company also makes available free of charge on its website (www.dril-quip.com/govern.html) its:

• Corporate Governance Guidelines,

• Code of Business Conduct and Ethical Practices,

Audit Committee Charter,
Nominating and Governance Committee Charter, and
Compensation Committee Charter.

5

Table of Contents

Any stockholder, who so requests, may obtain a printed copy of any of these documents from the Company. Changes in or waivers to the Company's Code of Business Conduct and Ethical Practices involving directors and executive officers of the Company will be posted on its website.

Overview and Industry Outlook

Both the market for drilling and production equipment and services and the Company's business are substantially dependent on the condition of the oil and gas industry and, in particular, the willingness of oil and gas companies to make capital expenditures on exploration, drilling and production operations. The level of capital expenditures has generally been dependent upon the prevailing view of future oil and gas prices, which are influenced by numerous factors affecting the supply and demand for oil and gas, including worldwide economic activity, interest rates and the cost of capital, environmental regulation, tax policies and the ability and/or desire of OPEC and other producing nations to set and maintain production levels and prices. The Brent crude oil price reached a high of \$115.19 per barrel in June 2014 and then began to drop sharply during 2015, and continued to drop in 2016, reaching a low of \$26.01 per barrel in the first quarter of 2016, before rebounding to end the year at \$54.96 per barrel. Oil prices began a slow recovery in 2017, with an average price of \$54.15 compared to an average price of \$43.67 in 2016. During 2018, crude oil prices fluctuated significantly, with a high of \$86.07 per barrel and ending the year at a low of \$50.57 per barrel. According to the December 2018 release of the Short-Term Energy Outlook published by the Energy Information Administration (EIA) of the U.S. Department of Energy, Brent Crude oil prices averaged approximately \$71.34 per barrel in 2018 and the price is forecasted to average \$61.00 per barrel in 2019 and \$65.00 per barrel in 2020.

On November 30, 2016, OPEC met and decided to cut production by approximately 1.2 million barrels per day. The reduced production helped to increase the average price per barrel between 2016 and 2017. Capital expenditures are also dependent on the cost of exploring for and producing oil and gas, the availability, expiration date and price of leases, the discovery rate of new oil and gas reserves, technological advances and alternative opportunities to invest in onshore exploration and production operations. Oil and gas prices and the level of drilling and production activity have historically been characterized by significant volatility. Future declines in oil and gas prices may further adversely affect the willingness of some oil and gas companies to make capital expenditures on exploration, drilling and production operations, which could have an adverse impact on the Company's results of operations, financial position and cash flows. In its December 2018 Short-Term Energy Outlook, the EIA projected United States crude oil production averaged an estimated 10.9 million barrels per day in 2018, with an average of 11.5 million barrels per day in the month of November, and is forecasted to average 12.1 million barrels per day in 2019.

Brent crude oil prices per barrel for the three-year period ended December 31, 2018 are summarized below:

	Brent Crude Oil Prices		
	2018	2017	2016
High	\$86.07	\$66.80	\$54.96
Low	50.57	43.98	26.01
Average	71.34	54.15	43.67
Closing, December 31,	\$50.57	\$66.73	\$54.96

The volatility in Brent crude oil prices over the past three years continues to have a significant effect on major integrated, large independent and foreign national oil and gas companies' capital expenditure budgets. The Company expects continued pressure in both crude oil and natural gas prices, as well as in the level of drilling and production related activities, particularly as they relate to offshore activities. Even during periods of high prices for oil and natural gas, companies exploring for oil and gas may cancel or curtail programs, seek to renegotiate contract terms, including the price of products and services, or reduce their levels of capital expenditures for exploration and production for a variety of reasons. Lower drilling and production activity had a negative impact on the Company's results for the year ended December 31, 2018 and is expected to improve slightly in 2019. A prolonged delay in the recovery of commodity prices could also lead to further material impairment charges to tangible or intangible assets or otherwise result in a material adverse effect on the Company's results of operations. See "Item 1A. Risk Factors—A material or

extended decline in expenditures by the oil and gas industry could significantly reduce our revenue and income.”

Recent Developments

As a result of continued unfavorable offshore market conditions and low commodity prices, the Company engaged in a strategic review with a third-party firm in 2018. In conjunction with the strategic review, the Company adjusted its forecast for recovery to reflect a more delayed recovery in the offshore industry, with pre-downturn demand not returning until after 2025.

Table of Contents

Additionally, the Company pursued a global transformation, which includes a reduction in workforce, realignment of facilities and restructuring of operations. We expect this transformation to allow us to maintain our global footprint in key markets, while supporting an integrated supply chain model that we expect to create more flexibility and allow us to continue serving our customers. The Company expects to complete the strategic restructuring by the end of 2019.

Products and Services

Dril-Quip's revenues are generated from two sources: products and services. Product revenues are derived from the sale of drilling and production equipment. Service revenues are earned when the Company provides technical advisory assistance and rental tools during installation and retrieval of the Company's products. Additionally, the Company earns service revenues when rework and reconditioning services are provided. In 2018, the Company derived 69% of its revenues from the sale of its products, 19% of its revenues from services and 12% of its revenues from leasing rental tools, compared to 77%, 14% and 9% for products, services and leasing rental tools in 2017, respectively, and 80%, 12% and 8% for products, services and leasing rental tools in 2016, respectively. Service and leasing revenues generally correlate to revenues from product sales because increased product sales typically generate increased demand for technical advisory assistance services during installation and rental of running tools. However, existing customer equipment can be used in certain circumstances, which creates demand for services with no correlating product sales. The Company has substantial international operations, with approximately 61% of its revenues derived from foreign sales in 2018, 55% in 2017 and 66% in 2016. Substantially all of the Company's domestic revenue relates to operations in the U. S. Gulf of Mexico. Domestic revenue approximated 39% of the Company's total revenues in 2018, 45% in 2017 and 34% in 2016.

Product contracts are typically negotiated and sold separately from service contracts. In addition, service contracts are not typically included in the product contracts or related sales orders and are not offered to the customer as a condition of the sale of the Company's products. The demand for products and services is generally based on worldwide economic conditions in the oil and gas industry, and is not based on a specific relationship between the two types of contracts. Substantially all of the Company's sales are made on a purchase order basis. Purchase orders are subject to change or termination at the option of the customer. In case of a change or termination, the customer is required to pay the Company for work performed and other costs necessarily incurred as a result of the change or termination.

Generally, the Company attempts to raise its prices as its costs increase. However, the actual pricing of the Company's products and services is impacted by a number of factors, including global oil prices, competitive pricing pressure, the level of utilized capacity in the oil service sector, maintenance of market share, the introduction of new products and general market conditions.

Products

Dril-Quip designs, manufactures, fabricates, inspects, assembles, tests and markets subsea equipment, surface equipment and offshore rig equipment. The Company's products are used primarily to explore for oil and gas from offshore drilling rigs, such as floating rigs and jack-up rigs, and for drilling and production of oil and gas wells on offshore platforms, tension leg platforms (TLPs), Spars and moored vessels such as FPSOs. TLPs are floating production platforms that are connected to the ocean floor via vertical mooring tethers. A Spar is a floating cylindrical structure approximately six or seven times longer than its diameter and is anchored in place. FPSOs are floating production, storage and offloading monohull moored vessels. The TIW products are used in the drilling and production for oil and gas both onshore and offshore.

Subsea Equipment. Subsea equipment is used in the drilling and production of offshore oil and gas wells around the world. Included in the subsea equipment product line are subsea wellheads, mudline hanger systems, specialty connectors and associated pipe, production riser systems, subsea production trees, liner hangers, safety valves, subsea control systems and subsea manifolds.

Subsea wellheads are pressure-containing vessels that are sometimes referred to as a "wellhead housing" and are made from forged and machined steel. A casing hanger, also made of steel, lands inside the wellhead housing and suspends casing (pipe) downhole. As drilling depth increases, successively smaller diameter casing strings are installed, each suspended by an independent casing hanger. Subsea wellheads are utilized when drilling from floating drilling rigs, either semi-submersible or drillship types, or TLPs and Spars. The Company's flagship subsea wellhead, called the

SS-15® Subsea Wellhead System, is rated for 15,000 psi internal pressure and is offered to the industry in a variety of configurations. The Company's newest wellhead product, the SS-20™ BigBore™ II-e Subsea Wellhead System, is designed to contain higher pressures (20,000 pounds per square inch (psi)) and provides the ability to reduce the number of casing strings in the well design by increasing load carrying and pressure capacities of casing hangers and associated installation tools.

Mudline hanger systems are used in jack-up drilling operations to support the weight of the various casing strings at the ocean floor while drilling a well. They also provide a method to disconnect the casing strings in an orderly manner at the ocean floor after the well has been drilled, and subsequently reconnect to enable production of the well by either tying it back vertically to a subsequently installed platform or by installing a shallow water subsea tree.

Table of Contents

Large diameter weld-on specialty connectors (threaded or stab type) are used primarily in offshore wells drilled from floating drilling rigs, jack-up rigs, fixed platforms, TLPs and Spars. Specialty connectors join lengths of conductor or large diameter (16-inch or greater) casing. Specialty connectors provide a more rapid connection than other methods of connecting lengths of pipe. Connectors may be sold individually or as an assembly after being welded to sections of Company or customer supplied pipe. Dril-Quip's weld-on specialty connectors are designed to prevent cross threading and provide a quick, convenient method of joining casing joints with structural integrity compatible with casing strength.

Production riser systems are generally designed and manufactured to customer specifications. Production risers provide a vertical conduit from the subsea wellhead up to a TLP, Spar or FPSO floating at the surface.

A subsea production tree is an assembly composed of valves, a wellhead connector, control equipment and various other components installed on a subsea wellhead or a mudline hanger system and used to control the flow of oil and gas from a producing well. Subsea trees may be used as stand alone satellite wells or multiple well template mounted and cluster arrangements. These types typically produce via a subsea gathering system of manifolds and flowlines to a central control point located on a platform, TLP, Spar or FPSO. The use of subsea production trees has become an increasingly important method for producing wells located in hard-to-reach deepwater areas or economically marginal fields located in shallower waters. The Company is an established manufacturer of complicated dual-bore production trees. In addition, Dril-Quip manufactures a patented single bore (SingleBore™) subsea completion system which features a hydraulic valve mechanism instead of a wireline-installed mechanism that allows the operator to plug the tubing hanger annulus remotely from the surface via a hydraulic control line and subsequently unplug it when the well is put on production. This mechanism eliminates the need for an expensive multibore installation and workover riser, thereby saving both cost and installation time. The patented horizontal bore (HorizontalBore™) subsea production component accommodates numerous completion configuration possibilities and features large vertical access drill-through for passage of drill-bits, submersible pumps, coil tubing strings and Dril-Quip's slimline casing hanger system. Dril-Quip's subsea production trees are used in ultra-deepwater applications. These trees feature remote flowline and control connections, utilizing remotely operated intervention tools. The Company's subsea production trees are generally custom designed and manufactured to customer specifications.

A subsea control system provides control of subsea trees, manifolds, ocean floor process equipment and pipeline protection equipment. Dril-Quip has developed a variety of subsea control systems, including fiber optic based multiplex control systems that provide real time access to tree functions and tree equipment status. The control system can be packaged for shallow water or deepwater applications. Dril-Quip also manufactures control systems used in the installation, retrieval and workover of production equipment.

A subsea manifold is a structure located on the ocean floor consisting of valves, flowline connections and a control module used to collect and control the flow of oil and gas from subsea wells for delivery to a floating production unit or terminal.

Downhole Tools. Downhole tools are primarily comprised of liner hangers, production packers, safety valves and specialty downhole tools. A liner hanger is used to hang-off and seal casing into a previously installed casing string in the well bore, and can provide a means of tying back the liner for prod