National Oilwell Varco, Inc.

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NOV Wellbore Technologies

MIKE MATTA
President, NOV Wellbore Technologies

Fadi "Mike" Matta joined NOV in 1991 as a design engineer. Mike relocated to Dubai in 1997 and established National Oilwell's operations in the Middle East and North Africa, where he built a multifunctional, multinational team that drove exponential growth for NOV Rig Solutions. Upon returning to the U.S., Mike became President of Downhole and consolidated a product line structure within the organization, setting them on a growth path. In 2014, Mike became President of NOV Wellbore Technologies.

Ladies and gentlemen, it gives me great pleasure to introduce you to the newly established Wellbore Technology Segment. Established on April 1, something special about that date. The Wellbore Technology segment consists of six industry leading business units. Each business unit is a market leader on its own right. We partner with our customers for faster, better, and improved drilling time.

Who we are?, As you heard Joe earlier talk, we complete that rig system process by completing the drilling process. In fact, we touch every critical element in the wellbore construction. Yesterday, we heard that the top drives made possible the horizontal drilling applications. Well, I'm here to tell you also that downhole motors and premium drill pipes made unconventional drilling also possible. We're the only independent provider in the industry that designs, manufacturers, services and supports our own wellbore and well site solutions, and our commitment to innovation continues to break new grounds and drill pipe and waste management and automation systems, which I am going to talk about later.

Everything we do focuses on drilling faster. We focus on designing solutions that help our customers improve performance, improve safety, uptime and reduce the environmental impact. In that regard, our business model ensures our incentives are aligned with those of our customers. We are global with more than 500 locations in 69 countries and you'll know why when we talk about this. We deal with our customers, operators through local expertise. Manufacturing capacity-wise, globally we have more than 2,500 machines and in 2013 alone, we logged more than 10 million production and manufacturing hours, ensuring a consistent and reliable supply of solutions and tools.

We prioritize our people. People are truly our DNA. We have more than 24,000 employees in this segment. 2,000 of those are engineers and more than 4,200 service technicians. They create a direct line of communication with our customers, we listen to their needs, and we innovate. That's the essence of what we do. We design solutions that help our customers to save time, resources and money.

In the following few slides, we will show you how we get involved in every aspect of the building of the wellbore construction. Our technology, in fact, is in virtually every wellbore around the world. You cannot drill a well without drill pipe. Our involvement begins with our premium tubulars and services. Before pipe goes in the hole, we inspect it, we coat it to protect it and to extend the life expectancy of the drill string. At the end of the drill pipe is what we call the bottom hole assembly. That consists mainly of drill bits, downhole motors and other downhole technologies suitable for the application. Once drilling is underway, we help our customers manage their drilling fluids, manage bleeding the waste, manage the cutting disposal to ensure improved process during the drilling operation. Throughout the process, we view the latest sensor technology to make sure rigs are operating within their designed wells and safety. Throughout this combined integrated approach, we touch every aspect of the drilling process, and we were able to deliver in 2013 more than $5 billion of revenue.

Now, you have seen this slide a lot, and we pursue excellence and success, building leadership the NOV way. In Wellbore, we put together a lot of strong brands and technologies, and we integrated them through smart integration. Right now, we're moving through the transformation, which is to us really around automation, drilling automation, which I'm going to talk about later.

Going forward and through 2019, we expect to grow approximately 75% on revenue and more than 300 basis points on margin. This provided, we see consistent growth in rig count activity and growth in unconventional and deepwater drilling.

The vertical drilling techniques of the past was easy to use to reach the sources of oil near the surface of the earth. Drillers used these techniques. It was not efficient, but it was suitable for the application. Once reserves started moving deeper, horizontal drilling was needed. These techniques did not work. Drilling horizontal wells, as you know, requires a transition of mechanical rotary rig power at the surface, to downhole hydraulic power, delivered primarily by downhole motors. Now, in addition to maintaining high level of fluid cleanliness, coating the drill pipe ensures smooth transitional fluids with minimal friction to maximize the performance of the bottom hole assembly, downhole motors and agitators. Throughout the whole process, sensors tell us where we are horizontally and where we go in, more importantly. That's why I keep saying, we are in every aspect of the wellbore construction, horizontal or vertical.

As the industry moved forward between 2005 till today, reserves moved from easy sources to deeper. It's more challenging applications. We saw the growth of unconventional and deepwater drilling, which basically led the comeback of North America as the premier worldwide producer of hydrocarbons and that's why we're having the challenges today in commodity pricing, which is temporary I think. That meant more rigs, longer laterals and an increase of horizontal drilling in the United States by 71%. More equipment, more tools, more solutions for Wellbore Technologies.

Our customers were facing these risks as reserves moved to new challenges and new areas, new unchartered territories, but our brands and our technologies earned their trust. With our global footprint and infrastructure, we were ready to meet the industry's challenging demands, and we're going to show you how.

Grant Prideco is the largest supplier of premium drill pipes. We delivered more than 130 million feet of pipe during this period alone. That's driving more than Atlantic City from New York. Tuboscope brand became the de facto certification mark of reliability and quality. In fact every day, any given day, Tuboscope touches more than 26,000 joints of drill pipe, tubulars and sucker rods. That's a lot of pipes. Horizontal drillers and extended reach drillers logged on more than 10 million hours using our downhole motors. That's estimated about 200,000 runs, our downhole motors were in the hole. Grant led the industry in solid controls and waste management, processing more than 8 million tons of waste materials. MD Totco was the industry leader in instrumentation and surface instrumentation solutions, used on close to 1,000 rigs today. When our customers needed it, we delivered it and we did that through strong brands and innovation.

Increasing demand as you know stresses the pipe. Increasing load and weight capacity and torque basically wears pipe faster. To meet these new challenges, Grant Prideco developed more than 100 new connections, premium drill pipe connections, similar to this. This is an example of the Turbo Torque. It makes up pipes faster by 50% at double the torque. This saves our customers considerable rig time on the well. Increasing hydraulic demand and load bearing capacity also enables drilling the deep offshore wells, as you know. Nine out of 11 of the longest wells in the world were drilled using our premium connections and drill pipes. In fact, most of the drill ships that Joe talked about were commissioned in this period, using our Grant Prideco drill pipe.

Our global integrated mill-to-rig capacity, manufacturing capacity, is unmatched in this business. We have three times the manufacturing capacity of our nearest worldwide competitor; two times their repair and maintenance capacity, and we have a licensing network that stretches over the 52 countries and integrated manufacturing capability in China. We're the only company ready when worldwide pipe demand increased in this period.

Pipe integrity is essential to ensure the success of a drilling operation. We have more than 200 locations worldwide that inspect and coat pipe to ensure extending the lifespan of drill pipes. Also, our mobile inspection capabilities stretch to pipe yards, steel mills and even to the rig sites with our mobile inspection trucks. 75 years ago, Tuboscope has been leading the industry in wear and corrosion solutions. We pioneered the internal pipe coating, which extends the life of the pipe up to 10 times, and we continue today to evolve this technology. In fact, we lead the technology of inspection and coating in the industry today. We also protect the outside of the drill pipe by our market-leading hard banding material. This helps extend the life of the tool joint and also, more importantly, protect the casing in the wellbore.

In view here is one of our proprietary inspection machines, which gives a complete detailed view of every joint of pipe going through that machine. This helps us place the joint exactly where we need to in the drill string while drilling the well, and helps avoid any disruptions while drilling. Having premium tools downhole is essential to ensure a drilling operation is cost effective or even possible. Throughout the years we acquired some of the most respected brands like Vector, Griffith, Bowen, ReedHycalog, and Robbins & Myers. With tools from these companies and technologies and our own capacity and advances in innovation, we've become the backbone of the bottom hole assembly. Downhole manufactures and designs premium tools needed in an increasing rate of penetration and enhancing drilling performance. These include downhole motors, agitators, reamers, jars, and bits. We invented the deep leach technology on the cutters, which is designed with synthetic diamonds that we manufacture, and these extend the life and performance of fixed cutter drill bits.

In fact every major manufacturer in the world relies on and uses this technology to extend the performance of their fixed cutter drill bits.

Downhole motors are another tough, effective solution when it comes to horizontal and extended reach drilling. We have the largest fleet in the world of downhole motor tools and power sections close to our customers' operations. Without our agitator systems, unconventional drilling would be very inefficient. We changed and revolutionized the drilling industry with this tool. It minimizes the friction of pipe while drilling the lateral sections and nothing in the industry matches the performance of this tool, likely more than 40,000 runs or 1.5 million hours downhole.

Shown here are the floaters we use in the power sections that power the downhole motors and the agitators. With the acquisition of Robbins & Myers and our own capacity of power sections, we became the undisputed market leader in providing power sections to our own fleet and to other motors and downhole tools. In fact, we pioneered elastomer technology, as you heard Hege talk yesterday. That continues to increase the envelope of operation for our downhole motors and agitators to new, posher applications like high temperature, high pressure. Reliability is essential in these tools. Every time we put them in the hole, they have to work. There's no choice. So after every run, we have feedback about how many runs we've had with motors and agitators.

After every run, these tools are subject to rigorous inspection criteria by Tuboscope inspectors and equipment, and every power section gets its elastomers realigned. That's a lot of work. We have 160 facilities in 50 countries. We ensure we place our facilities next to our customers worldwide to increase the utilization rate of these tools and reduce transportation. Providing one single downhole solution to our customers can mean a lot of savings to our customers' bottom line. In one application in Central Asia, our fluid hammers improved the rate of penetration and drilled the well in half the time. Now incidentally, this fluid hammer just came out recently. This is a product of the commercialization process that Hege talked about, and today it's making money for us.

One of our premium drilling motors in the United States increased the rate of penetration by 150% compared to the average. One of our directional drill bits in the shale application saved the customer's operator more than $280,000 on that well. BRANDT manufactures, as we said earlier, solid controls and waste management equipment and today they are more than 2,800 rigs in the world. In fact, any given day, we have more than 3,000 service techs on our customers' well sites. We ensure fluid cleanliness and purity, we protect the well bore integrity, and more importantly, we maximize the performance of our downhole products. About 40 years ago, Louis Brandt started the BRANDT Company pioneering the circular shaker, which became an industry standard.

From there, they went and bought Advanced Wirecloth screens, WADECO, Gauthier Brothers, and Rig Tech which introduced the VSM offshore shaker. With these acquisitions and other similar acquisitions, like we never mentioned Sweco, which is a big acquisition too and we should have added. BRANDT became the largest independent solid controls and waste management company in the world. BRANDT designs, manufactures, and delivers every piece of solid control equipment needed to successfully drill a well. That includes shakers, centrifuges, degassers, and shaker screens; and shaker screens as you know, they are a consumable item. We replace those every five to seven days. We introduced the first automated feature on shakers.

In fact, similar to like putting cruise control on shakers and improved the flow capability by 35% for allowing us for installation in high drilling and high-speed applications. We introduced also the high capacity centrifuge for high flow applications which was ideal for offshore and highly mobile rigs. Our thermal desorption units treats and recovers oil for reuse, water and solids with less than 0.5% of oil residue meeting the strictest certifications around the world. We have 55 of these plants spread around the world near our customers' operations to minimize the transportation cost of waste and cuttings to these facilities. Accurate rig data is essential to ensure that rig designs and the drill string are operating within their design well specs.

We brought together two market leaders in data management and instrumentation, Martin-Decker and Totco. Martin-Decker/Totco, are the dashboards that drillers use to drive the rigs. Acquiring and managing data allows us to monitor, control, and measure every aspect of drilling parameter, whether downhole, or in the well bore or at the surface. This is essential to enhance the performance of drilling and enhance the safety of the well site. Well, the drilling revolution continues as you heard earlier from our experts. We conservatively estimate that rig count by 2040 will reach 6,609 and well count will reach 121,000. The explosion of unconventionals will expand internationally.

Countries like Argentina, Russia, Saudi Arabia, China, and Australia will have their own sets of challenges; which will mean more than 1.2 billion feet drilled. This means primarily that we're going to be really busy just like we've been busy before. To meet this demand, our customers will need a real focus and relentless focus on efficiency and most likely will have to change the traditional business model on how they drill wells. They simply need us. Smart integration is the next step in the drilling revolution and we're managing and looking at how we supply pipe with service capabilities at the same time. We are putting together our Tuboscope inspection and coating facilities next to our GRANT PRIDECO pipe yards to allow our customers to have a one, -stop shop approach to drill pipe and pipe service capability.

This will minimize pipe handling and transportation and improve the overall cost of pipe ownership. For that same reason, we're putting

together drilling fluids, solid controls, and waste management. Our experts on the rig minimize the creation of drilling fluids and maximize its reuse. Regarding our technologies on the rig and elsewhere, efficiency processes, waste and cuttings, we have disposal methods on the rig sites and elsewhere similar to what we saw earlier with the oil desorption units. We are innovating also and pioneering low cost water based drilling fluid additives that will make our drilling fluid act and perform like mud based, but without environmental impact and challenges that we have with mud base.

Our customers are realizing a lot of savings. In fact, one customer save $300,000 per well using our patented POLYTRAXX technology systems. Comprehensive well site solutions like these help our customers drive down the overall cost and ensure the environmental impact at the well site is attended to from start to finish or from cradle to grave, as one of our Presidents likes to say. Increasing demands require us to continually optimize the bottom hole assembly, and we are able to do that right now with a combination of instrumentation equipment downhole and our downhole technologies. We optimize the bottom hole assembly to improve during performance and pretty much drill wells faster.

So bottom hole assembly optimization projects, we tried that recently on a span of a four-well project and the last well saved 18 trips compared to the first well. By getting accurate data real time from bottom hole, we were able to optimize the performance of the equipment downhole. Those 18 trips saved a tremendous amount of rig time for the operator in the last well. Real-time monitoring on downhole and one project in Africa allowed our customer to drill the well faster by increasing penetration obviously saving 50% of drill pipe. High speed telemetry, using our wiredrill pipe, stream data fast to the rig floor which allowed the geological survey time to be minimized and saved an offshore operator in Europe more than two days of drill time, which translates total cost savings of $50 million.

In projects like these, we closely collaborate with our customers who operate this to design the optimized bottom hole assembly for their particular applications, and the outcome is always improved drilling performances and faster drilling. Our products innovate drilling and our process makes it faster, but the real power behind NOV is its expertise and its people. We continue to change the industry. Our collaboration of NOV experts is the real power behind NOV. As I mentioned earlier, experts from downhole, from rig, from instrumentation, and wired pipe came together and produced the first ever automated drilling approach that will change the way wells are drilled going forward. Automation allows us to do that. We are the only company to automate the entire rig system from crown to bit, and we do that in-house.

We're able to do that because we have bottom hole assembly technologies like wired pipe, and we pioneer with Rig Systems and controls. At the essence of the system, we minimize risks you see downhole like pipe slip, like vibration pressure, or overtorque. At the heart of the system, we have the wired pipe streaming data to the surface at 2000 times the speed of conventional telemetry. This data is collected, controlled by AnswerProducts software, which manages the drilling machinery on the surface and continuously get feedback and new parameters to the bottom hole assembly, which is wired and, in the process, optimize the whole BHA drilling in real time. This proves tremendous cost savings to our customers.

In field tests, we improved the rate of penetration by more than 40% in drilling and 80% while sliding. In our first commercial job ever recently on a land rig, we improved the rate of penetration by more than 46% saving that customer $625,000, and we drilled the fastest curve and allowed the service provider on the job to have the longest rotary steerable on record. Automation gives us the power to view the whole well as one functional system, this is the transformation. Going forward, looking at the slide again and with the same assumptions, we expect to grow by more than 75% approximately on revenue and 300 basis points on margins. In the last 10 years our people, our products, and our technology created the revolution in drilling and in the process, we became the industry's largest independent supplier of products and services.

What sets us apart is that we design, manufacture, service, and support our own product, and we have technology in virtually every wellbore. As the industry's original equipment manufacturer, we have the ability to automate the entire drilling process in-house, and we are prepared to meet the future needs of the industry. Customers know that they can rely on NOV Wellbore Technologies for faster, safer, and better drilling. Our takeaway is that we enable consistently faster drilling, everything we do is around that. We are the largest independent supplier of equipment, tools, and solutions. We design, manufacture, and service all of our wellbore and wellsite technologies and solutions, and we're the only OEM provider to fully automate the entire drilling process in-house, and we have technology in virtually every wellbore around the world. Thank you.
