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Digital Innovation in the Oilfield and the Value of Virtual Company Man

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The relationship between operators and suppliers in the oil and gas industry has always been complex. A long-time industry insider was asked to describe the interaction between them. He referenced the parable of the frog and the scorpion. It's a parable most of us know.

In the story, a scorpion asks a frog for a ride across a river. Knowing the scorpion could sting and kill him, the frog refuses at first. The scorpion argues that if he stings the frog, they both will drown and die. Considering this, the frog agrees. Halfway across the river the scorpion stings the frog, dooming them both to drowning. With his dying breath the frog asks the scorpion why he would do such a thing; the scorpion replies, "I can't help it. It's in my nature." The veteran explained, "over the course of every relationship between an oil company and a supplier, at different times each of them will feel like they are the frog." This does speak to the cyclic nature of the industry, and how the realities of supply and demand can drive behavior.

Oilfield Operators, Suppliers and Innovation

The truth remains that suppliers and operators have developed a complex ecosystem that benefits both sides. One of the remarkable things about the oil industry is how efficient operators have become. The top five independent oil and gas companies in the United States average more than $2.5M in revenue per employee. Boeing delivers $663K in revenue per employee. Amazon manages only $314K in revenue per employee. Even Apple, a remarkable success story heavily leveraging third parties, delivers revenues of $1.9M per employee – still 30 percent lower than that of the independents.

Company	Revenue Per Employee 2017 (USD)
Top 5 US Independent Oil and Gas Cos	$2,794,200
Apple	$1,858,309
GM	$808,822
Boeing	$663,295
HP	$438,470
Amazon	$314,251

Source: www.MarketWatch.com

This demonstrates the oil industry's remarkable capability to outsource. Anything that can be more economically delivered by focused providers with subject matter expertise is delivered by the supply chain. Operators used to own their own rigs and invest in in-house research and development arms to develop technologies for virtually all aspects of the upstream process. Today that type of research is provided selectively by the supermajors, and even more likely by the large integrated service companies. Some operators run their own frac units, mainly to ensure supply during volatile activity cycles. But there is absolutely no question suppliers are integral to the success of their customers, as well as industry innovation.

Patent awarding is not necessarily a definitive guide to innovation, but it can provide insight into where an organization puts its focus. The top six upstream energy companies for patent awards are listed below. The suppliers in the list were awarded more than three times the number of patents as the largest operators in the industry.

Company	2017 Patents
Halliburton Energy Services	738
Baker Hughes Inc	496
Schlumberger Technology Corp	434
Saudi Aramco	220
Chevron USA Inc.	161
Exxon Mobil Upstream Research	131

Source: iFi Claims Patent Service, US Patent and Trademark Office

The relative research and development effort devoted to technology is another example of the close relationship between supplier and operator. Suppliers use innovative goods and services to differentiate themselves from their competition but also provide the technology bedrock for the entire industry. The concentration of subject matter expertise in those companies allows them more opportunities to experiment and innovate.

Oilfield Operations – Spreading the Peanut Butter Pretty Thin

Operators have developed methodologies to best manage their operations. The "Company Man" responsible for Drilling and Completions activities is at the wellsite for everything that happens during well construction. The Company Man managing Production and ongoing Operations activities does not have that luxury. An operations group is responsible for a vast number of wells and facilities; typically, their field supervisors are not present for the activities they are responsible for.

One operator with extensive holdings in the US and Canada has 3.9 Million acres of property, with close to 10,000 producing wells. The company employs 310 field supervisors working two weeks on, two weeks off. As a result, on average, 155 company men focused on operations cover 25,000 acres each, managing 64 wells apiece. In addition, there are significant water flood operations, gathering stations, pipelines, fluid hauling, and ongoing well maintenance to oversee.

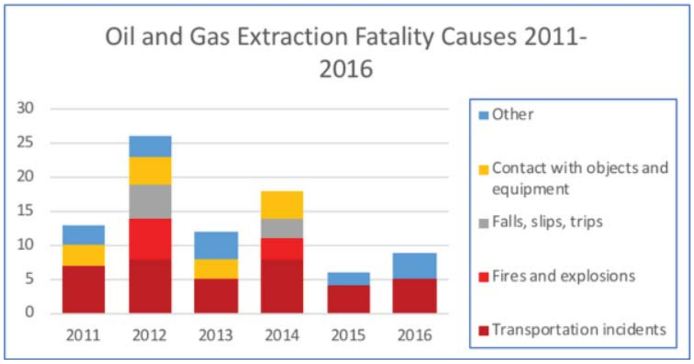
A typical day for a Company Man might go like this: There is a significant workover taking place, requiring him to be at the worksite overseeing a complex hot oil servicing job to remove extensive wax buildup from a producer. If there are issues at the well, it might consume the entire working day. Meanwhile, work in the Company Man's area of responsibility goes on. Fluid haulers move oil, condensate and water from and to batteries, gathering stations and disposal sites. A pumping supplier has a maintenance contract for all the pumpjacks in the field. That vendor undertakes regular service work for a number of them and a decides to swap out the control panel for a particular problem pump. A backhoe has been contracted to develop a new lease in the area. Meanwhile, a grader has been called into another site to repair damage to an access road damaged in a recent storm.

All of these activities are the ultimate responsibility of the Company Man – yet he was monitoring a hot oil service job all day and never had the opportunity to oversee any of it. The various suppliers might have ways of communicating with him directly, but most likely the first he is aware of the details is when the vendor drops off the associated field ticket. This might be at a regional office, it might be at a hotel where he is staying, it might even be in a plastic coke bottle cut in half at the entry gate to the property – taking days or even weeks after the work was done.

Step Change: The Virtual Company Man

A step change in technology has shifted the paradigm. Mobile technology has been broadly adopted by corporations and individuals alike. Water haulers, pump maintenance hands and construction crews can instantly provide operations details once the work is done. Digital field tickets will become the conduit for information flow directly to the operator virtually in real time. Every piece of work being done on a well is understood by the operator the instance the work is completed. The supplier becomes an extension of the oil company's operations group, becoming in effect a virtual Company Man.

Some would argue the most significant benefit relates to safety. Through digital approval of wirelessly transmitted field tickets, the legacy of suppliers chasing the company men for signatures is eliminated. Traffic incidents continue to be the largest single cause of fatalities in the oil and gas industry. Getting vehicles off the road more quickly is a huge benefit for the industry.



US Department of Labor, Bureau of Labor Statistics

Operating companies are already taking advantage of this opportunity. An operator in the Marcellus has equipped 600 of their suppliers with a mobile digital Field Ticketing application. Fluid hauling and disposal tracking takes place daily. Previously, the operator struggled to get monthly data on fluid volume accruals as the state regulatory body mandated. Using the virtual Company Man, the operator can improve accuracy and eliminate an inordinate amount of overhead. In addition, there is instant visibility into spend on operations. All through leveraging the suppliers being onsite and proactive in providing data.

And what's in it for the suppliers? The faster and more accurately they provide field tickets, the shorter the cycle time between service and payment. Providing digital field tickets allows a direct electronic line for line match between the field ticket and the invoice and can even validate contract pricing during the field ticket approval process. This reduces churn during the approval process, eliminating undue effort on both sides.

So, there might not be any scorpions in this parable after all. Just a few well-fed frogs.

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