

Oil & Gas Operators

**THE  
TALENT  
WELL  
HAS RUN DRY**

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Structural changes in supply curves, fueled largely by technical innovation, have created an unprecedented downturn in oil and gas markets. These changes have also led to massive workforce reductions and laid the groundwork for significant talent gaps in the future.

The consequences of the talent shortage won't be fully realized until the market rebounds. When it does, it will usher in a new reality for upstream players. Oil and gas operators simply won't have the petrotechnical skills they need to scale up their operations. Worse, the approaches they've used to manage talent shortages in the past won't work.

To avoid the looming talent crisis that could cripple their businesses, it's critical for operators to devise new talent strategies for tomorrow's future workforce.

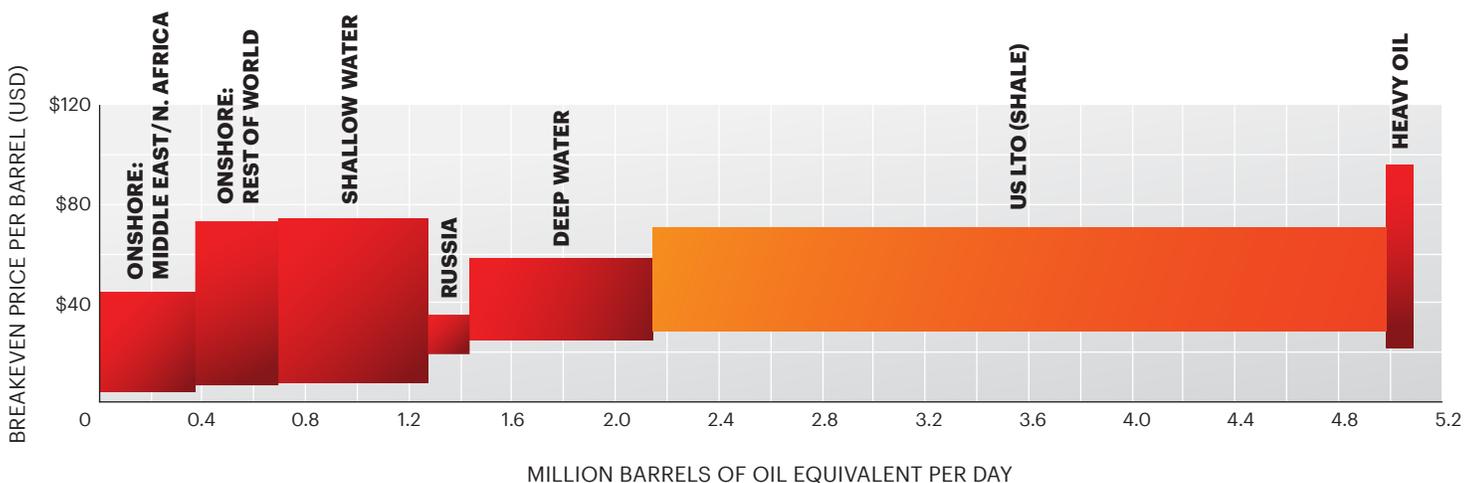
# THE **NEW REALITY** FOR UPSTREAM OPERATORS

The US shale boom has fundamentally changed the nature of global oil supplies and industry economics.

The abundance of US light tight oil (LTO) locked in shale formations, along with technological advances in exploration and production, have not only made this asset class more competitive, but also positioned it as the global swing producer that will set price floors and ceilings for the next five years (see Figure 1). Moreover, given the speed at which LTO production can be scaled up and down, it is likely that the oil market will transition from relatively long cycles of price fluctuation to shorter, more volatile cycles. Successful operators will be those that can quickly and efficiently adjust production in response to this market volatility.

**FIGURE 1**  
**US LIGHT TIGHT OIL (SHALE) IS THE NEW SWING PRODUCER**

Medium term incremental yearly supply curve



Source: Accenture Strategy, Energy analysis

# THE **TALENT PIPELINE** HAS RUPTURED

During the 2014–2016 crisis, oil and gas companies understandably focused on containing costs, including downsizing their workforces.

Through layoffs or job cuts, they've shed some 440,000 jobs globally since 2014.<sup>1</sup> Retirements among workers who started their careers in the 70s and early 80s have winnowed the workforce by tens of thousands more.

Upstream petrotechnical professionals (PTPs) have been particularly hard-hit.<sup>2</sup> This workforce—which includes geoscientists and engineers in a variety of disciplines (reservoir, drilling, completion, production and maintenance)—is the lifeblood of oil and gas companies' exploration and production operations. Due to demographic factors, many of these professionals have left the industry in recent years without being replaced, hence oil and gas companies will likely face a serious PTP shortage when oil production rebounds and investments in exploration and production grow. Given present levels of PTP productivity and hiring, we predict a deficit of 10,000 to 40,000 PTPs by 2025 (see Figure 2).<sup>3</sup>

## **BABY BOOMER BRAIN DRAIN**

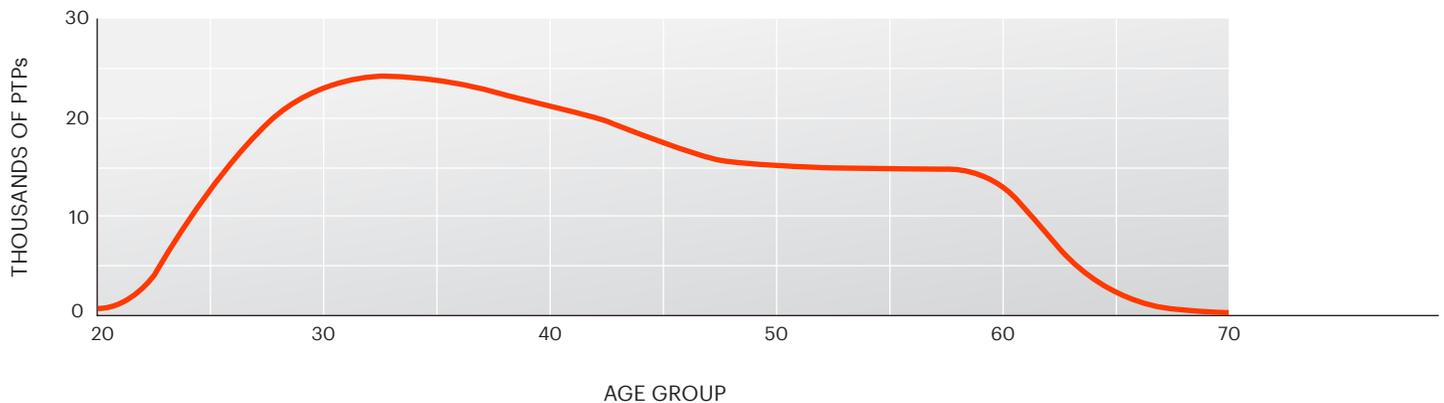
Our research shows that PTPs older than 55 made up 19 percent of the total oil and gas workforce in 2015. By 2025, their numbers will drop to just 7 percent.<sup>4</sup>

The challenge posed by this talent shortfall is significant. Without the necessary PTPs, oil and gas companies will not be able to take optimal advantage of the market rebound. We believe the growing workforce deficit will, in fact, be a greater barrier to oil and gas companies' upturn success than any deficits that might exist in capital, equipment or supplies.

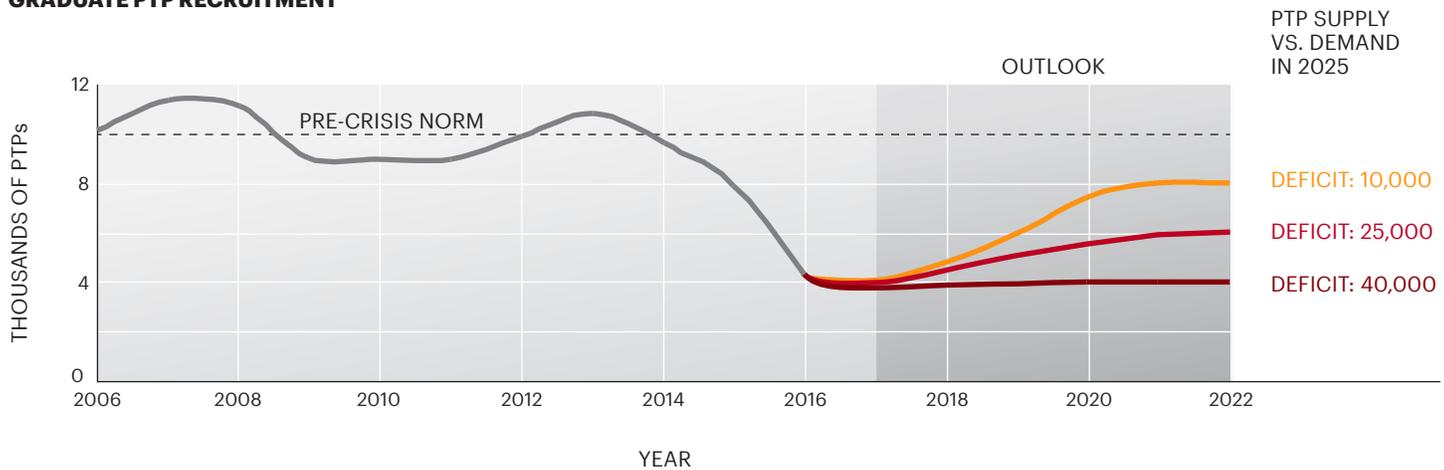
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**FIGURE 2**  
**MULTIPLE TRENDS ARE DRIVING A SHORTAGE OF**  
**PETROTECHNICAL PROFESSIONALS (PTPs) GLOBALLY**

**CURRENT DEMOGRAPHIC DISTRIBUTION OF PTPs GLOBALLY**



**GRADUATE PTP RECRUITMENT**



Source: Accenture Strategy Energy—Oil and Gas HR Benchmark  
 Note: Data excludes China

# THIS TIME IT'S DIFFERENT

The oil and gas industry has navigated boom-and-bust cycles in the past. But the workforce challenges accompanying today's structural changes are different.



## ENTIRELY NEW SKILLSETS ARE NEEDED

Digital innovations, coupled with new asset portfolios, will require oil and gas companies to create new PTP roles or refine existing ones. For example:

- **Remote operation engineers** with backgrounds in such disciplines as operational geology or directional drilling will be in high demand.
- **Production engineers** will likely transition their focus from addressing issues that are ongoing or have already occurred (e.g., foaming, liquid loading, ESP failure) to predicting that an issue is likely to happen and choosing the best avoidance or mitigation approach from a pre-defined set of solutions.
- **G&G and reservoir engineers** will augment physics-based earth models with non-physical “big-data” models to improve well placement or well completion decisions and eliminate some of the need for expensive and time-consuming logging and testing.
- **Data scientists** who are able to develop complex algorithms and analyze the petabytes of information pouring in from field sensors will be required. Accenture Strategy estimates that 12,000 data scientists are needed immediately to support the upstream oil industry.<sup>5</sup>



### PTP TALENT WON'T COME BACK

During previous rebounds, operators rehired PTPs who had separated from the company during the preceding downturn. Because of industry demographics, many PTPs have retired or accepted early retirement packages. Even if they were invited back, they have little incentive to answer the call. At the same time, technology advances have accelerated. This means the skills of PTPs rejoining the industry would likely be obsolete.



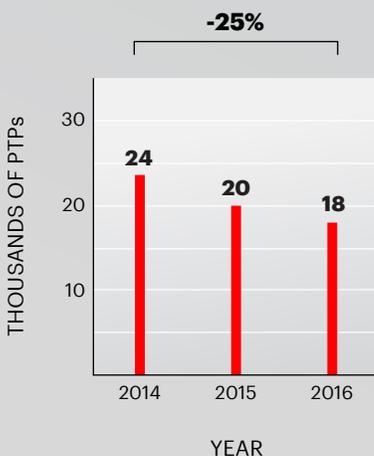
### MILLENNIALS WON'T CLOSE THE GAP

Companies facing a professional talent crunch can usually rely on recent college graduates to fill vacancies. That's not the case for oil and gas operators. Despite evidence to the contrary, many Millennials believe the sector is lacking innovation, agility and creativity, as well as opportunities to engage in meaningful work. In fact, only 2 percent of US college graduates consider the oil and gas industry their top choice for employment.<sup>6</sup> This means upstream operators are in the unenviable position of competing with other, nimbler, more appealing industries for scarce talent. Additionally, it takes several years to adequately train recent graduates for PTP roles. Operators are reluctant to invest the time and resources that are needed—especially given that there's no assurance these new hires will stick around amid the industry's volatility.

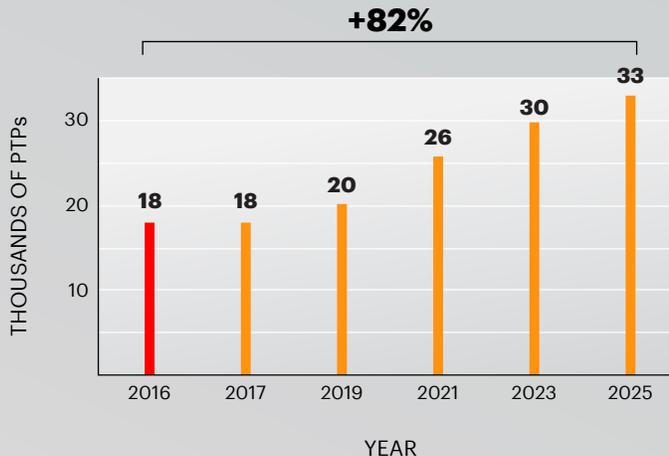
## US OPERATORS WILL FACE THE TALENT CRUNCH FIRST

The shortage of PTPs will be a global phenomenon, although it will emerge first in the United States.<sup>7</sup> US operators experienced a sharper drop in PTP headcount during the recent downturn, and it is expected that demand for PTPs will rebound earlier and more strongly.

PTP CURRENT SUPPLY TREND



PTP DEMAND FORECAST



- ▲ Complexity
- ▼ Productivity

Source: Rystad for Production forecast, Accenture Strategy Energy for CAPEX and PTP forecast

# THRIVING IN VOLATILITY

To position themselves for the upturn, and thrive over the long term, oil and gas companies must start now by rethinking four main elements of their talent strategy.



## **PIVOT FROM FIRING TO HIRING**

As oil prices plummeted, reducing the workforce size was a logical response, including cutting back hiring of “fresh-outs.” But the lack of jobs has led to fewer students enrolling in PTP-related university programs and this threatens to leave operators under-resourced when the market turns. Leaders of oil and gas companies need to understand not only how emerging technologies and industry economics are changing what they do, but also the long-term impact their hiring decisions will have on their future ability to compete. This is about more than closing the immediate talent gap. It’s about investing in new talent strategies, developing resilient, digitally enabled operating models, and transforming organizational culture to attract and retain the best and brightest in good times and in bad.



## **USE DIGITAL TO ATTRACT AND DEVELOP TALENT**

New technologies can play an essential role in attracting and developing digitally curious talent. Digital platforms, cloud-based collaboration tools, and peer-developed training that is delivered via streaming video can create more engaging, satisfying work environments and accelerate workforce productivity. For example, Airbus recently launched a program equipping workers on the A330 final assembly line with advanced mobile and wearable devices to support them in their daily work. The program is increasing productivity and improving quality of service.<sup>8</sup>

Remote “over-the-shoulder” coaching and augmented reality (AR)—which overcome limitations of time and distance and enable real-time collaboration and guidance—can also be used to shorten time-to-competency for new hires and multiply the skills of the experienced workforce. Combined “over-the-shoulder” coaching and AR training solutions are already being applied to improve workforce safety and productivity, operational response times and service quality across sites globally.



### **WORK SMARTER**

Leaders need to identify and build new capabilities and roles that will allow them to hit the ground running when the market turns. Standardizing processes and prioritizing workloads can drive operational efficiencies and free PTPs to focus on more strategic activities. Digital must be an integral component of new operating models and talent strategies. Digitally enabled asset inspections, subsurface analyses and self-diagnosing/healing wells will transform exploration and production. Opportunities abound for operators to apply these and other new technologies to do more with fewer PTPs.



### **MAKE “AGILITY” YOUR NORTH STAR**

The oil and gas future belongs to those operators who can maneuver seamlessly through periods of high volatility. To achieve the agility that is required, talent strategies must be designed to fully leverage the extended workforce, including employees, contractors and service companies. As a first step, leaders should determine which roles employees should fill, in what proportion, and which can be delegated to contractors. Increasing the ratio of contractors to full-time employees and partnering more closely with suppliers are two ways to inject elasticity into the talent pool. But delegating too much strategic work to contractors and suppliers isn’t always a desirable option. Strategic importance and variability of demand are two criteria that oil and gas operators can use to optimize the talent mix.

# READY. SET. **GO.**

At first blush, right-sizing an organization is not a bad business strategy. But it can be disastrous if it translates into a shortage of skills that stifles an operator's agility and growth in the future.

That's precisely the scenario that is unfolding for many oil and gas operators. It may seem counter-intuitive to invest in acquiring and training PTPs when the oil and gas industry is in such a difficult and volatile state. But in this instance, it is a wise move. Operators that implement resilient talent strategies will be ready to capitalize when the market rebounds.

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## NOTES

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## ABOUT THE RESEARCH

For the last 12 years, Accenture Strategy and Schlumberger Business Consulting (acquired by Accenture in 2015) have been studying the upstream trends and technical talent pools of approximately 40 oil and gas operators representing more than 30 percent of world production. In tandem with our ongoing analysis, we have assembled a unique database and toolset designed to provide insights into how the size, characteristics and productivity of this talent pool has evolved, and will evolve in the future.

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