

eGuide

Advice for the next generation of drilling and well engineers

Introduction

The energy industry is ever-evolving. As technologies advance and new generations enter the workforce, it is important that we adapt and learn from the past in order to thrive within such a fast-paced and challenging environment.

In this guide, Add Energy's Geir Karlsen gives an insight into important lessons learned throughout a 35-year career in the oil and gas sector.

After working for the likes of BP and Shell for the majority of his career in various drilling and well-engineering roles, Geir provides honest insights into the industry, how it has changed over the years and offers his recommendations for the future.



Embracing the future - a hybrid approach or breaking down silos

“Over the years I have worked in a variety of roles, not just in drilling and well operations offshore, but also onshore, managing planning, well operations, mooring operations, emergency response, and process safety.

“Being hands-on, and taking advantage of opportunities, spending a lot of time offshore and in the field, meant that I gained well-rounded experience, which helped me a lot throughout my career. I had a very good grasp of the entire wells business, not just the specific area that I was working within at the time. And most importantly - I wasn’t afraid of rolling up my sleeves, speaking out, working hard and getting things done.

“Although many companies are successfully managing their well operations, more often than not, young engineers do not have enough exposure to operations; offshore and on land. This is not a standalone issue - the majority of companies across the globe will have young engineers sitting in an office planning well operations and putting together well programs with very little experience from operations, offshore and on land. More often than not the young staff complete a cut and paste exercise, which is a direct result of a lack of experience.

“For many, figuring out the fast-track to management seems more important than becoming a great drilling and well engineer. I have seen plenty of examples of this before, people being promoted, but not because of their skill sets or their knowledge levels, which can in some cases expose the company to increased risk.

“In my view, it’s poor practice and shortsighted from the leadership team. It sets people up for failure because engineers are put in charge of well programs and in-depth planning without first having the required hands-on experience from working in the field.

“More often than not, new engineers may prefer to work in the office and may see fieldwork as a sidestep to their management career. Although most operators have reasonable training programs in place, it’s often up to each individual engineer how much effort he or she puts into learning field operations. We need to change this approach. New engineers need to be hungry for work, keen to learn, and willing to work in many areas of well operations, both on and offshore by taking a more hybrid approach to their careers.

“By spending time getting their hands dirty on the ground, working with seasoned wells personnel they will gain a better understanding of past incidents. An engineer who is willing to dedicate their own time and learn will be worth their weight in gold. Macondo told us that in my view.

“Without working offshore and having exposure to the wells environment, engineers cannot be expected to fully understand the processes or have a reasonable grasp of well operations, process safety, consequences of failure, risk, and challenges.”

You're only as smart as the people you know - dealing with an ageing industry

“One of the biggest challenges that the industry has faced, and will continue to face if we don't change, is that our experienced staff are retiring and are leaving the force, taking their experience with them. The younger generation joining the teams do not have the required levels of experience or skill sets. If the industry doesn't change, it will be setting up new engineers for failure. They will have to learn the hard way; just as our generation did.

“If I look back at my early days in Alaska, Aberdeen, and Lafayette, a lot of my development came from working with great superintendents and drilling personnel, asking lots of questions, making mistakes, and spending as much time as possible working in the field. We used to head to the field a lot at weekends, and then go back to the office to finish the week. That is how we did business back then but sadly it's a luxury that is no longer available. With depressed oil prices and a laser focus on cost-cutting being at the forefront of everyone's mind, overtime is a thing of the past.

“When I began my career, we didn't have as much, or as in-depth, information as companies have now. From geology and geophysics with state-of-the-art in pore pressure prediction, 3D and superfast data processing to remote well monitoring, and understanding prospects of where you intend to drill are all huge steps forward for the industry. It's essential that operators exploit this information and share as much as possible with staff.

“As technologies advance, the associated challenges increase because we construct more difficult wells. A good example is MPD (Managed Pressure Drilling) where we are now drilling wells that could not be safely drilled in the past. Therefore, it's essential that engineers understand the MPD process, its limitations, consequences of equipment and process failure, have a grasp on the steps required to construct wells safely and efficiently, understand process safety and not just safety around slips, trips, and falls.

“Most people in the industry today have not been exposed to serious process safety issues, or even been involved in major incidents such as Macondo, Oklahoma Pryor Trust, Montara, Mumbai, Texas City, and many of the well-known industrial incidents; and I hope that they never will be.

“But as the workforce ages, we have to plan for what comes next. How do we make sure that the knowledge from the past is shared and that young engineers have access to lessons learned from past incidents? The industry is historically terrible at lessons learned from incidents. That is why we keep repeating variations of the same mistakes over-and-over again.

“I wrote my own paper on “Process Safety in Well Control - The Left-hand Side of the BowTie”, after being through the Deepwater Horizon response and seeing how many people within the industry did not learn from Macondo, I firmly believe that incidents should be things of the past, not just well control. We must stop making excuses and not just accept process safety failures.”

Mistakes happen for a reason - make sure you learn from them

“Mistakes happen, there’s no denying that until we have a change in corporate mindset that incidents are less likely to be prevented. One of the biggest challenges within the industry is accessing the full story and details of the incident, establishing what happened and how it is fixed. By providing staff with a full insight into what happened, teams can work together to assess what went wrong and provide recommendations and lessons learned on how to prevent it from ever happening again.

“Unfortunately, in most instances, this is not the case. We keep having the same incidents over and over again because the information is diluted more and more as it works its way down the chain. By the time an incident report has been passed from legal to the senior management team and then to the frontline workforce, a lot of the critical information has been scrubbed and removed or glazed over. This comes primarily down to corporate embarrassment and concerns for legal consequences in my view. The unwillingness to share sensitive information for the fear of repercussions and the negative impact that the incident could have on the business and its reputation means it is rare that a true representation of what happened is shared. Exceptions are the comprehensive BP Bly report, together with all of the great industrial investigations into the Macondo blowout. This is a treasure trove of information that I feel should be a prerequisite for every engineer to study.

“Incidents are discussed in morning meetings, but full incident reports are often very well protected and any sensitive information will have been removed. It is the reality that the majority of workforces may not really know what has happened and the information available will be massively simplified in many cases. We need to change this behavior. It’s important that we have transparency and that all members of staff are aware of why an incident has occurred and how future incidents can be avoided. I remember one particular case of this after an incident occurred, the leadership gathered the troops for a show-and-tell; with no questions asked...

Today’s take away

“My advice for anyone working within the industry, whether they are experienced or new to their role, is to speak to each other, ask questions, discuss previous incidents to determine how we can prevent repeats. Everyone plays a role in the mitigation of an incident and will have different perspectives and experiences that you can learn from. Come together, collaborate, and find new, safer ways to operate.

“Don’t be afraid to reach out to people in different departments. It is likely that they will be able to learn from you, as well as you learn from them. It’s ok to admit that you don’t know everything but showing a willingness to listen and learn will go a very long way in this industry.



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