

IADC DEC Q1 2023 Tech Forum, “Why We Do What We Do”

Tuesday, 28 March, 8:30-12:35pm

Drillers find ways to get things done. They also find ways to break things like they’ve never been broken before! Technologies and techniques have been deployed with great promise, expecting to revolutionize the industry, only to meet insurmountable challenges. What lessons learned would we all want to tell our younger selves?

This forum is meant to share things we’ve learned along the way so the next generation can benefit from hard roads traveled. It is designed to be informal, social and fun. Understanding from our past incidents and ability to fail, as well as learn fast, is key to finding agile ways of working and creating a culture of innovation.

The event will be held in person at Weatherford, 2000 St. James Place, Houston, TX 77056. An online option via Zoom will be offered for those who can’t attend in person. Register on the IADC website for either in-person or online attendance.

Special thanks to our event host Weatherford!

Agenda:

- 08.30-08.40** Welcome – Matt Isbell, Chairman; facility and safety briefing, Tracy Cummins, DEC Board member; and introduction to event – Todd Fox, DEC Board member
- 08.40-09.00** “Western Gas Delays in Starting Up Remote Operations Center,” Todd Fox, H&P
In the late ‘90s, Western International Gas & Cylinders, an acetylene wholesaler, had three remote facilities within the Dow/Union Carbide Ethylene plants that were used to compress acetylene and fill trailers with approximately 100,000 cubic feet of acetylene per trailer. They had previously suffered a detonation when filling a trailer and were heavily focused on technology to prevent reoccurrence. The story details the fear, hesitation, technical leadership, and ultimately trust of the owners to transition to fully autonomous compressor stations/filling plants that are still in use today as well as lessons learned.
- 09.00-09.20** “The Rise, Fall and Recovery of Drilling in the ‘90s,” John de Wardt, DE WARDT AND COMPANY
Published in 1990 as a new style of outcome-based contract, the program envisaged an intention of the operator to shift from “doing” to “supervising,” through suppliers taking greater responsibility for their results. The IADC Drilling Contracts Committee requested the operator present themselves to debate contractor issues published in a newsletter under the title “Playing the Shell Game.” We did.
Successes with drilling contractors performing on turnkey, footage and bonus schemes were followed by service companies offering integrated services with bonus schemes. These contracts went out of vogue in the late ‘90s, only to return again in the 2000s as Integrated Project Management schemes. Meanwhile alliances followed the same roller coaster. Lessons will be drawn as well as the observations from a post-mortem review after the fall. [View the presentation](#) [View the video recording](#)

09.20-09.40 “Early RSS – Technology for the Desperate?,” Blaine Dow, SLB
In the late 1990s, Rotary Steerable technology was still in its infancy. Some projects had reached directional drilling technical limits, however, and a Hail Mary was required. Two projects in Eastern Canada, both with uniquely different challenges, represent examples. Harsh conditions stressed the tools to their limits. Survivability...and recovery....were not guaranteed. But through perseverance, both projects helped break ground for what the technology has become today. This discussion will be a reflection of the drilling challenges that ultimately led to the need for RSS trials, and the ensuing learnings that led to its evolution. [View the video recording](#)

09.40-10.00 “Origins of Managed Pressure Drilling,” Dennis Moore
MPD has gained a lot of traction over the last several years. There is a large body of literature giving many examples of where and how it has been used successfully. It is interesting to examine where it came from and how it evolved into what we see today. This discussion will follow its development from one first-hand perspective. [View the video recording](#)

10.00-10.20 “History of Hard Rock PDC’s: The Yucca Mountain Project,” Roy Long
The Iranian Revolution concluded in February 1979; and oil reached its first inflation-adjusted high of \$100/bbl the following year. In response, interest significantly increased in the U.S. for development of unconventional resources and expanding the use of nuclear power. Characterization of Yucca Mountain, Nevada, as being suitable for long-term storage of high-level nuclear waste was an essential first step toward any nuclear solution. [View the presentation](#) [View the video recording](#)

Site Characterization required air coring brecciated volcanics to approximately 2,000 feet while leaving the borehole as close to an in-situ condition as possible. Yucca Mountain was one of the first extensive uses of PDC’s for drilling/coring hard volcanic rock. This was the beginning of the development of advanced PDC’s and other technologies that would positively impact drilling capabilities in the oil and gas industry. This discussion will focus on the PDC coring and the Dual-wall drilling system that enabled the sampling for studies that led to a successful license application.

10.20-10.35 **Break**

10.35-10.55 **“The Vital Role of Non-destructive Testing (NDT),” Kelly Northcutt, Wellbore Integrity**
Non-destructive testing plays a vital role providing dimensional, wear, corrosion and cyclical fatigue information. Over the last 40+ years, operators, drilling contractors and service companies have worked together to improve the overall life span/performance of rotary drill strings. Prior to 1992, inspection service companies performed inspections as per API RP7G-2, API Spec. 7-2, API 5A5, API 5CT, various other API procedures, and company-written procedures. Around 1988, an engineer discovered inconsistencies in the inspection process as it related to using various inspection companies performing standard BHA inspection services. He discovered a gap in procedural compliance and began to build an inspection standard that today we know as the DS-1 Standards. When you make a site visit in today’s oil and gas fields, almost all inspectors can produce appropriate certification documents ensuring a baseline level of competency; 20 years ago, that was not the case. [View the video recording](#)

10.55-11.15 “Improving Product Development Procedures and Testing Matrixes,” Justin Gauthier, AES Drilling Fluids [View the video recording](#)

While attempting to break into a new market, we developed a new product to help with torque reduction that proved successful in the lab at a highly competitive price. After several months of lab testing and strategy meeting with a targeted customer, we were finally given an opportunity on a single pad with a new customer.

On the first well of the trial pad, the product was added and after roughly 72 hours of drilling, the drilling fluid system became very thick, contaminated, and unpumpable. This resulted in the rig having to completely displace the mud system and start from scratch which resulted in getting ran off the job. After conducting an after-action review of the lab testing and investigation, it was proven that there were contaminants in the field brine that weren't accounted for in the initial phase of product R&D. The financial implications and resources that were allocated in attempt to solve this problem were not only impactful internally but made it difficult to provide further services to the subject customer.

While this event proved challenging at the time, we quickly realized that we needed to improve our product development procedures and testing matrixes. Following the subject event, we have successfully deployed similar technology with a very high success rate, which has ultimately led to increasing market share with the very same customer that we had the failure with.

11.15 -11.35 “Lessons Learned to Prove Casing Drilling,” Kyle Fontenot [View the video recording](#)

Early in his 33-year career, Kyle convinced his boss to give him five wells to prove casing drilling would be the game changing technology needed to make their wells cost effective. Battling internal politics, naysayers, and “we tried that already” folks, Kyle will share the results and lessons learned from this pivotal time in his career. He will also share other lessons learned and advice learned along the way; including the importance of goal setting, finding the right mentor, and seeking help when you need it.

11.35-11.55 “Pushing the Boundaries of Available Technology to Support Robust Condition Monitoring of Equipment,” Alec Spedding, Seadrill [View the presentation](#) [View the video recording](#)

We started an internal shift within Seadrill in 2015 to move our critical assets into a proper Condition Based Maintenance (CBM) program, and away from the legacy calendar-based approach. This shift obviously drove the need for robust condition monitoring of equipment. The technology and programs available at the time (in our opinion) were not good enough for what we envisioned as a robust system. So we decided to build our own. Holistically, this journey has been a success with regards to the engineering, data analytics, class approvals, and building an internal program. However, the product development side ultimately failed. Nevertheless, the journey taught us some invaluable lessons, and has allowed us to re-focus our efforts. This presentation will share this journey of failure and success in product development and technology from a drilling contractor's perspective.

11.55-12.15 “ How a Field Failure Changed My Career and Helped Reveal My Purpose,”
Aron Deen, Varel Energy Solutions [View the video recording](#)

In the spring of 2008, I overheard a Drilling Manager say, “It’s never been done before.” That comment inspired me to invest 6 months of my professional life, succeed beyond expectations, and simultaneously fail so miserably it sent me into a depression. The failure revealed a profound question that changed the trajectory of my career and life. In this talk, I will share this story about drilling performance and product development – and others like it – to teach how to apply its lessons to improve the ROI of every project you work on.

12.15-12.35 “A Destructive Hidden Downhole Dysfunction Arises with The New Generation of Power Drilling – HFTO,” Luis Felipe Gonzalez, SLB Drilling Domain Head [View the presentation](#) [View the video recording](#)

Since 1960 Esso Research in UK reported drillstring accelerations measured downhole. Since then, the oil industry has made huge efforts understanding drilling dynamics dysfunctions due to its detrimental impact into drilling performance. Many tools have been developed to measure drilling dynamics, and thanks to that we discovered that the BHA and bit rotation is coupled with complex lateral, axial, and torsional vibrations. New terminology was introduced in the world of drilling trying to describe complex BHA motions, such as stick-slip and whirl. As a matter of fact, these were not that difficult to understand and acknowledge as they are of low frequency and therefore visible in their effect on the drillstring dynamics at the rig floor.

The typical consequences of these low frequency dynamics disfunctions were also well understood, over-torqued connections, BHA wear patterns and bit damages to mention some of them. However, over the past decade new BHA severe damages, directional and logging tools parted in half and decoupling of internal components, urgently led to deeper studies when drilling tougher formations. The discussion will focus on summarizing what the industry knows about high-frequency-torsional-oscillations (HFTO) as the main cause of such BHA damages and the challenges around identifying the cure of this complex dysfunction.

12.35 Adjournment + lunch