

IADC DEC Q2 2023 Tech Forum, “Safety Technologies and Systems”

Tuesday, 27 June, 8:30am-12:30pm



Activity in the industry continues to increase, introducing many new people to the workforce. At the same time, new technologies and tools have enhanced the drilling team’s capabilities and provided greater visibility into field operations. This forum will focus on how drilling engineers can use safety systems in well construction and harness efforts to improve safety, reduce turnover, and improve competency.

The event will be held in person at SLB MI Swaco, 5950 N Course Dr, Houston, TX 77072. 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. A light lunch will be provided for in-person attendees at the conclusion of the event by our host SLB MI Swaco.

Special thanks to our event host SLB MI Swaco!

Agenda:

08.30-08.35 Welcome – Matt Isbell, DEC Chairman, Hess; facility and safety briefing, Calvin Carter, SLB; and introduction to event – Todd Fox, H&P, and Rob Nordlander, Wellbore Integrity Solutions, DEC Board members

08.35-08.40 Safety Moment, Robert Nordlander

08.40-09.10 **Opening presentation, “The Next Step for Safety,”** by Andrew Dingee *Presentation not available for posting*

As lagging safety metrics decrease throughout our industry, the ability for a safety system to learn is decreasing, as well. However, it is widely accepted that less than 10% and perhaps less than 5% of incidents that fit the corporate definition for reporting are actually reported. But what if your workforce trusted leadership with reporting these near-misses into a digital program? What if your safety department would standardize the contributing causes which highlights a safety map? A digital program that uncovers actionable weaknesses, identifies new hazards and analyzes the effectiveness of your safety controls. Is it possible to become a learning organization through digital safety tools?

09.10-09.40 **“Utilizing Computer Vision Technology to Enhance Operational Safety and Exclusion Zone Management,”** Cole Carpenter, Helmerich & Payne *Presentation not available for posting*

Dropped tubulars can have life-altering consequences. Numerous industry advances, including iterative procedural development focused on buffer zone and barricade management of hazardous areas, have improved the operational safety of the rig's Pipe Delivery System (PDS). However, there exists a possibility that personnel may still inadvertently enter restricted areas unbeknownst to the operator, potentially leading to severe injury or fatality (SIF) events. To further support and enforce JSA and barricade procedures, the PDS is being retrofitted with computer vision technology to create a digital barricade, establishing an actively monitored

exclusion zone with automated hazard alerts and risk mitigation. When operational conditions satisfy the specified logic criteria, the system automatically activates an audible alarm and strobe to alert the individual(s) while triggering an e-stop of the PDS hydraulics. These safety measures remain in place until the system detects it is safe to resume operations. After resolving unsafe conditions and ensuring the red zone is clear, the system automatically resets, reducing the level of human intervention necessary for system recovery. The application of this technology has the potential to identify patterns in buffer zone activity and provide feedback on employee behavior and equipment operation, thereby improving safety protocols and enhancing the safety of drilling operations by actively monitoring for breakdowns in PDS buffer zone management.

09.40-10.10 **“Automation and Path to Autonomy,”** Kevin Scherm and Kevin Guidry, NOV [View the presentation](#) [View the video recording](#)

Automation has been part of the oil and gas industry for decades. This means, in short, that automation and process controls are not new. As technology advances, the theory of dominant design dictates that a design by nature becomes the de facto standard for a time. Automation and autonomy are at the precipice of change. A test rig in Navasota, Texas, is pushing the boundaries, mirroring available technologies with the push toward a new defined autonomy built on three pillars: removing personnel from red zone areas of drilling, providing additional situational awareness for crews, and building upon process control platforms in the management of drilling and well processes. This presentation aims to illustrate a continued pathway toward fully realizing this premise, that the rig of tomorrow exists today or, at the very least, the inception of it is feasible and within reach.

10.10-10.30 Break

10.30-11.00 **“Wellbore Anticollision Risk Management,”** Ryan Sardjono, SLB [View the presentation](#) [View the video recording](#)

As the energy transition continues, future investment challenges require our industry to stretch more reservoir access from fewer and fewer installations. This applies to factory drilling in unconventional through to aging fields offshore. From a directional drilling perspective, this means anti-collision challenges continue to be more extreme. On the other end of the risk spectrum, industry expertise is in decline, both with directional drilling and drilling engineering. More and more, directional drilling work happens remotely. Additionally, standard best practices for survey database management were put to the test through the pandemic, as companies shifted to remote work models and data stewardship processes were interrupted. This presentation is intended to raise awareness of this risk and discuss digital tools and practices that will assure minimum exposure to well collisions.

11.00-11.30 **“Turnover vs Retention for Safe Operations,”** Brandon Benedict, Patterson-UTI Drilling Company *Presentation not available for posting*

How do we retain employees? What learning and successes have we seen or implemented to increase retention and further develop our employees. This talk will focus on what Patterson-UTI is doing to reduce incidents to deliver safe consistent and performance.

11.30-12.00 **“Enhancing Safety and Efficiency Through Technology: Electronic PJP Checklists in the Oil and Gas Industry,”** Daniel Stone, Helmerich & Payne IDC [View the presentation](#) [View the video recording](#)

The cyclical nature of the oil and gas industry brings new challenges, increasing SIF (serious injury or fatality) exposures as employees enter the workforce, new to their positions or the industry in general. Electronic PJP (pre-job planning) checklists improve efficiency and HSE accountability, lessening the learning curve. Completed immediately prior to starting any SIF-critical task, electronic PJP checklists consolidate the multiple necessary resources for effective PJP meetings. Integration with existing applications and data sources enables pre-population of a filtered list of tasks specific to each rig class while displaying the current crew members on tour. Highlighted names indicate their first time performing a task, allowing rig site leadership to customize the PJP session according to the crew's composition. Following the review of a JSA and an accompanying video bringing critical steps to life, rig site leadership facilitates the review of critical verifications essential for ensuring task safety, assigned to specific employees using a dropdown menu pre-filtered for on-site personnel. Data aggregation and calculation capabilities of electronic PJPs streamlines processes and notifies crew members of safety issues in real-time. For example, for tasks involving caliper the ID/OD of elevators and tubulars, measurements falling outside of allowable tolerances are automatically flagged, significantly reducing the risk of using out-of-spec elevators.

12:00-12.30 **“Active Buffer Zone – A Technological Approach to Keep People Out of the Line of Fire,”** Baruc Morales, Nabors [View the presentation](#) [View the video recording](#)

The concept of a buffer zone was incorporated into Nabors’ management system in 2015 to restrict access and protect workers from potential hazards, such as pipe falling, high pressure and high voltage. The buffer zone’s dimensions vary based on rig location but comply with our safety management system (EQD) recommendations. However, human supervision and administrative controls are still necessary to ensure compliance. To address this, we are leveraging computer vision to enhance workers’ safety. Computer vision is increasingly relevant in all industries, with self-driving cars being the most common example. The oil and gas industry is no exception. We will review a technological approach currently available to protect Nabors’ most valuable asset: our employees. Using open-source algorithms, Nabors is developing and testing a new tool called Active Buffer Zone (ABZ), an active protection system that detects potential trespassers in restricted areas. Using the Open CV library in Python, we are developing the concept of active detection application to identify and alert facility supervisors of interactions between employees and hazards present in restricted areas. By doing so, we aim to avoid risk exposure and potential involvement in incidents with undesired consequences. ABZ is a technological advantage that adds value to our operation, akin to having 6 or 8 extra set of eyes with motion detect.

12.30 Adjournment + lunch