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ACADEMY

We are delighted to share with you the 7th issue of our bi-monthly newsletter.

In this edition ...

- We re-introduce TRUE, a comprehensive training course delivered as bite-sized learning
- Regional projects completed
- We discuss the Benefits of the Virtual Simulator with Clive Battsby - COO, 3t Drilling Systems
- Share latest updates from IWCF's Well Control in Design and Lifecycle Management
- Key points from the recent International Regulators Forum (IRF) 2023, held in Perth Australia

Back to Basics - Rediscovering TRUE

In the mid 1990's Amoco's Technology and Training Team developed an educational tool to address the entire drilling operation titled - Training to Reduce Unscheduled Events (TRUE). Topics included and still apply today:

- Teambuilding
- Well plan
- Stuck pipe
- Lost circulation
- Rig repair
- Downhole equipment failure
- Drill string failure
- Drilling jars
- Well control
- Casing and cementing
- Horizontal drilling
- Investigation package

Welltrain, pre Well Academy delivered countless TRUE training courses. Our TRUE training taught by David Pollock, dramatically reduced incidents and improved operator and crew awareness on the rig.

Crew competency remains one of the biggest concerns globally. We believe our new adapted TRUE course, can fill the gap and equip crew with the necessary theoretical and practical knowledge.

To ensure sustained knowledge and practical retention our updated and immersive TRUE training course, can be tailor-made, into a campaign specific course, where topics of interest can be delivered within two to five days or as bite-sized learning, virtually.

For additional information contact: training.au@moduresources.com

Well Operations Crew Resource Management - Decision Making

Decision making is the third non-technical skill we will focus on to improve safety and efficiency and reduce the risk of an incident.

Decision making is the ability to make a choice between various options when dealing with a particular situation. Reaching a sound decision is critical, it is therefore important that your decision has:

- Clear and organised objectives
- Considered alternative actions
- Anticipated potential consequences
- Managed time stress and not rushed into action



Poor Decision Making - Confirmation Bias - Macondo

Confirmation bias can be defined as the process of actively seeking out information that reaffirms our past choices and discounts information that contradicts them.

During the Macondo incident -

- the return of cement and inflow test completed, clearly indicated that the cement had not been placed and set correctly
- experienced rig crew attributed the increasing pressure to be “bladder effect”, which was accepted as a plausible explanation

Poor Decision Making - Task Fixation - Macondo

Task fixation is using early, first received information as the basis for decision making, regardless of new and contradictory information.

During the Macondo incident -

- the cement design was changed to ensure there were no losses, by reducing the volumes, foaming the system and dropping the pump rate, without a full risk assessment of the possible outcomes of failure.
- the float auto-fill tube pump out procedure didn't go according to plan, with a possible rupture of the string occurring, leaving the status of the float and the string in ambiguity.
- insufficient mud pumped for correct cement displacement resulting in a lower than expected FCP (Final Circulation Pressure).
- No one stopped the job at any of these stages, as they were all focused on pumping the cement and getting on with the next stage.

Decision Making - Lessons Learned from Industry

Delayed and flawed decision making processes were observed in each of the following three major blowouts:

1. Inaction by Piper Alpha installation manager to evacuate the burning platform, and the reluctance of the installation managers of adjacent platforms to shut down oil production.
2. Flawed decision making by the installation manager on Ocean Odyssey to order the radio operator to return to the control room instead of remaining on the lifeboat, resulting in the fatality of the radio operator.
3. Delayed decision making to activate the BOP resulted in the Macondo blowout.

IWCF Update - Well Control in Design and Lifecycle Management (previously Level 5)

IWCF recently released their updated Well Control in Design and Lifecycle Management (previously level 5) updated course guidelines. The updates are in accordance with IOGP's 476 Report - Recommendations for enhancements to well control training, examination and certification released in April 2023.

The programme is recommended for experienced candidates who play a key role in well design and planning for Well Operations. The programme recognises the impact that design, planning and programming has on the construction phase and on well integrity assurance throughout the lifecycle of a well.

- Knowledge in basic well design, planning and programming and/or well intervention gained through a combination of formal training and work experience.
- Understanding of well incidents/loss of well integrity, causes and prevention methods.
- IWCF Level 2 (or higher) training and assessment (drilling well control or well intervention pressure control) or equivalent introductory course.
- An awareness of well operations crew resource management (WOCRM).

The course addresses skills to identify and to specify actions to be taken when stepping outside of the normal operating envelope, particularly actions required to maintain well control and integrity. The course consists of 9 compulsory topics and a choice between minimum 2 and maximum 4 optional topics.

Compulsory Topics: -

- Subsurface Impact - Rock behaviour on Well Control
- Holistic Design - primary, secondary barrier elements and envelopes
- Design Uncertainties - well design, construction, operational processes
- Barrier Management
- Cement Integrity
- Verification Methods
- Dealing with Pressure Influx
- Lifecycle Well Integrity
- Risk Management

International Regulators Forum (IRF) 2023

Perth, played host to the IRF 2023 Forum, offering an opportunity for regulators, operators, contractors and service providers to network, discuss issues of importance and to encourage collaboration and alignment within the Energy sector.

Key discussion points were:

- Social licence to operate and regulate
- Asset Integrity - aging assets, new operators entering the market with older assets
- Decommissioning - plan for decommissioning, plug and secure
- Transition - energy, technology and engaging with a collective workforce
- Well Control - prevention and mitigation of high potential well control events
- Managing and Reducing Risks - common thread Pore Pressure Fracture Gradient, IOGP is developing industry guidance to manage this well control hazard
- Responsibilities - industry, regulators and society
- Sharing of lessons learned

Benefits of the Virtual Simulator

The Covid pandemic changed the core nature of our training business, we needed a rapid shift from a face-to-face business model to a digital business model. In November 2020, we introduced Drilling Systems iDrillSIM virtual simulator to our simulator range.

Initial teething problems arose, candidates experienced anxiety, stress, and resistance to completing a virtual Well Control practical assessment. We had to find a way to get candidates comfortable with the new virtual simulator. Monthly virtual workshops and one on one sessions; showed a gradual shift towards virtual simulator acceptance by our candidates.

Today our virtual candidates outperform face to face candidates in practical assessments and candidates have noted the beneficial nature of a virtual simulator.

Well Academy recently chatted to Clive Battsby, COO of 3t Drilling Systems to learn more about upcoming upgrades to the virtual simulator.

What changes have been made to the virtual simulator since 2020?

“Several significant features have been added. We now offer a multi-language option our most popular Chinese and Spanish. We have a new user interface; this allows the instructor to control the icons for each workstation allowing (read only) access. For instance, a driller will not be able to operate the choke during read only access.”

Can we expect any future upgrades?

“3t Drilling Systems have taken the core of the iDrillSIM and built this into the DrillSIM-Academy, thus allowing user familiarization linked to self-paced well control learning with a guided instructorless design. This is the perfect tool for supporting continuous learning. In addition we have linked the iDrillSIM to the DrillSIM-Educator allowing 3d graphics to be connected to the iDrillSIM if required. Managed Pressure Drilling (MPD) is expected to be added to the iDrillSIM shortly.”

We've had some candidates ask if we could incorporate a standalone choke. Do you think this is something that could be added to a virtual simulator?

“There is always a challenge when you do everything virtually. Some rigs today only have a touch screen button. We have looked at several options, a joystick is a good option at a relatively low cost. However, training centers will need to ensure that each student has access to a joystick.”

In addition, we have added a physical mini choke to use with the iDrillSIM cloud software, this can be used in classrooms who utilise the virtual simulator in class”



Source: 3t Drilling [Systems](#)

We have used the iDrillSIM for various scenarios including Drilling Well on Simulator (DWOS), could we talk about additional uses that we are not aware of?

“The iDrillSIM can perform most exercises required by IWCF and IADC. In addition, but not limited to the list below we are able to complete the following:

- Oil-based mud, bubble point and gas flash out
- Gas expansion and migration
- Dynamic pressures during well control
- Formation fluid type and permeability
- Bottom hole effects – equivalent circulating density, surge and swab
- Horizontal and deviated wells
- Rock strength and abrasiveness
- Choke washout and plugging
- Drilling and tripping”



3t Drilling Systems' continued engagement and innovation assisted Well Academy in adopting this technology early, allowing us to reshape the very nature of our training business.

The iDrillsIM continues to offer great flexibility, allowing us to build a comprehensive practical drilling experience for all our candidates.

Projects Completed

MR Group Asia Pacific and Middle East now offer a selection of in-house Masterclass sessions, topics include:

- Reservoir Engineering
- Carbon Capture and Storage
- Geothermal Drilling

Our Asia Pacific team recently completed rig inspections for the following clients:

- Medco Indonesia
- Hibiscus Petroleum Malaysia
- Chevron Thailand
- PGPC Philippines

Our colleagues Peter Wilke and Jerry Pei are currently visiting China, showcasing our Smartflow inspection software and offering our expertise to enhance rig reactivation process



Third Quarter Results 2023

Course Results Q3 2023

We are extremely proud of the results our candidates achieve when they train with us!



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|--|-----|
| Average Pass Rate - Level 2 Drilling Well Control (Face to Face) | 96% |
| Average Pass Rate - Level 3-4 Drilling Well Control (Face to Face) | 88% |
| Average Pass Rate - Level 3-4 Drilling Well Control (Virtual) | 93% |
| Average Pass Rate - Level 3-4 Well Intervention (Face to Face) | 84% |
| Average Pass Rate - Level 3-4 Well Intervention (Virtual) | 85% |
| Average - Overall Positive Course Feedback | 94% |

The Well Academy AU/AP/ME team is extremely proud to have achieved another successful quarter.

Our performance is on par with our annual KPI's and we would like to thank our candidates for choosing us.

Our results speak for themselves, join us for your next Well Control or Well Intervention training course!

Our Full Bottle 100 Club Members



Andrew Kirk



Daniel Stroud



Sara Marshall

Course Calendar October / November 2023

9-13 October 2023

- Drilling Well Control Level 3,4 (VIRTUAL)
- Well Intervention Pressure Control Level 3,4 (VIRTUAL)

16-20 October 2023

- Drilling Well Control Level 3,4 (PERTH)

23-27 October 2023

- Well Intervention Pressure Control Level 2 (PERTH)
- Drilling Well Control Level 3,4 (VIRTUAL)

30 Oct-3 Nov 2023

- Drilling Well Control Level 3,4 (VIRTUAL)
- Well Intervention Pressure Control Level 3,4 (VIRTUAL)

6-10 November 2023

- Drilling Well Control Level 3,4 (VIRTUAL)

13-17 November 2023

- Drilling Well Control Level 3,4 (PERTH)
- Well Intervention Pressure Control Level 3,4 (PERTH)

20-24 November 2023

- Plug & Abandonment (20-21 Nov PERTH)
- Drilling Well Control Level 3,4 (VIRTUAL)

Classroom Photos



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ModuResources supports the upstream industry in drilling wells more safely and efficiently reducing non-productive time and establishing a safe work environment. ModuResources Group are the Parent Company of Well Academy, WellSpec, Deepwater Subsea and Horizon Resources.

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