IADC Well Control Committee
Meeting Minutes
7th December 2016
IADC Crown Center
Houston, TX USA

Contractor roundtable

An informal discussion of drilling contractors was held prior to the Well Control Committee meeting. Key topics discussed included the following:

- HSE for MPD in the Gulf of Mexico
- Fatality in west Texas due to misunderstanding of pressure loss in drill string; possible topic for WCP subcommittee
- Hiring as rig count increases
- Challenges of experienced offshore people working in onshore environment
- Possible division of API Standard 53 into separate documents for offshore and onshore
- Short-term tenders for West Africa offshore work
- Deepwater Equipment Group
- Contractor involvement in blowout control
- U of H Drilling Course
- Involvement with other industry/regulatory groups
- Limits to change from an MPD operation to a well control operation

Well Control Committee Meeting

Welcome & Introductions

Chairman Aaron Mueller of Independence Contract Drilling opened the meeting and welcomed the attendees. Steve Kropla of IADC provided a building safety briefing and reminded everyone the meeting was subject to the IADC Antitrust Policy and Guidelines. Mr. Mueller asked those present to introduce themselves and their companies.

Assessment of Human Factors in Well Control

Mike Harris of HTK International discussed a Research Partnership to Secure Energy for America (RPSEA) project to assess human factors in well control. For the project, RPSEA had partnered with HTK International, Lloyds Register, and Pacific Science.

Mr. Harris stated human error is implicated in a majority of deepwater well control incidents. But, he said, so called “human errors” do not address the underlying human

factors issues in deepwater drilling such information overload, situation uncertainty, and communications.

The project was divided into three phases:

- Phase 1 Incident Analysis
- Phase 2 Development of the assessment tool
- Phase 3 Pilot test the assessment tool

Complete reports from each phase and the final report are available on the RPSEA website (http://www.rpsea.org/).

A blowout based on a BSEE panel investigation was used for the incident analysis. In this event, 14 people indicated they had responsibility to monitor the trip tank, but nevertheless the trip tank indicated flow with no one responding. It turned out that none of those responsible were monitoring because of distractions with other activity on the rig floor. Work schedules and possible handover issues between hitches for the company men may also have been factors.

Development of the assessment tool focused primarily on questions to measure policy, training, equipment, and decision cycles, as well as pore pressure, hydrostatic pressure management, pit management and kick detection.

The pilot test was conducted on two deepwater drillships contracted by an anonymous operator. A total of 15 shore-based and offshore personnel were assessed between two rig teams, including rig superintendents, drill site supervisors, toolpushers, drillers and mudloggers. The primary focus was to look for gaps such as missing or weak barriers and inconsistent knowledge among the crew. The purpose was not to evaluate the crew but to reconsider or strengthen how these matters are handled. Overall, the human factors posture was found to be "good," although the test resulted in 39 specific recommendations for improving policy and procedures.

Among the recommendations were three findings that were considered of key importance:

- **Data monitoring policy.** The operator should have a visible and actively used Data Monitoring Policy for both the onshore and offshore teams so that both have a common, shared situation awareness of optimal data and layout for each phase of the operation.
- **Lessons learned.** The operator should compile deepwater well control lessons learned into a database that is easily accessible by the offshore drilling team so that risks and solutions are readily available and can be applied consistently throughout the organization for every drilling operation.
- **Pit management.** The operator should review the ability of the data logger to monitor the pit line up on the rig. The data logger is critical to tracking volumes both on the surface and downhole.

Mr. Harris stated the pilot test resulted in some revisions to the tool to provide more concise and consistent questions. He said the next step would be to do more assessments and to develop a database of anonymous findings to establish industry baselines.

WellSharp Update

Gerardo Barrera of IADC gave a presentation on WellSharp, substituting for Brooke Polk who could not attend the meeting. He noted that over 39,000 assessments had been given so far, with an average passing rate of 93.6% and an average score of 84/100. On average 94 assessments are given a week, with about 410 classes a month. The average class size is 4.4 students.

IADC launched the WellSharp instructor exam in August, with 136 assessments given so far. Mr. Barrera stated many instructors had expressed apprehensions about the test, but passing rates have been 89.7% with an average score of 91. The instructor exam is required for new instructors and those who need to recertify.

Mr. Barrerra noted a mismatch still results between personnel who should be taking the driller exam taking the supervisory exam instead. (IADC's statistics are based on the position the students held at the time they took the examination.) Asked why this was a concern, he stated that the course content includes of lot of information that students might miss by skipping a level.

Some discussion followed over ways to require drillers to obtain a driller certificate before being allowed into supervisory course, such as the possibility of denying the student a certificate. Another solution suggested is to have a central online registration system for all courses accredited by IADC. Mr. Barrera stated IADC doesn't have funds available at this time to develop such a system.

IADC is currently pilot testing the Spanish online exam. He stated testing should be complete by mid-December, with the exam launched in February. In addition, the draft well servicing curriculum will be available for review and comment in January and February. The stated the Engineering course development has not yet begun.

There was some discussion about changes to some of the math questions contained in the exam. Mr. Barrera stated that IADC's practice is to not inform providers of any specific changes that are made to questions that have been flagged for review. However, providers are be notified of any changes to WellSharp curriculum or learning objectives.

The group took a short break.

Application of RFC-HSE in Managed Pressure Drilling in Gulf of Mexico

Mark Sokolow, David Gaitan, and Jerry Lee of the University of Houston Petroleum Engineering Program made a presentation on the winning entry in the UH Capstone Project. The team (including team leader Michelle Delaney, who was not at the meeting), was one of 18 groups who worked on a one-year senior project. Mr. Mueller had participated as one of the judges of the Capstone Project.

One of four main variants of Managed Pressure Drilling (MPD), MPD Returns Flow Control (RFC-HSE) is used with statically overbalanced fluids to improve process safety during drilling operations and to mitigate many pressure-related drilling scenarios. The

team focused on analyzing Eugene Island Block 302, owned by Talos Energy LLC, due to Talos' recent award of areas 2 and 7 off the southeast coast of Veracruz, Mexico. These areas were specifically chosen because of the geological similarities shared with Eugene Island, where they have produced over 1.8 billion BOE in the last 50 years.

The team's objective was to simulate and analyze a Eugene Island well site with SafeKick's SafeVision software to show the applicability of RFC-HSE MPD on the Talos wells, where drilling challenges such as kick/loss scenarios, loss circulation, risk of sidetracks, etc. can be mitigated. SafeVision will simulate wellbore hydraulics during drilling operations and allow the team to highlight where RFC-HSE could be used. Using RFC-HSE, a closed-loop system can be created, and in conjunction with a choke manifold, surface back pressure (SBP) can be used to manipulate the pressure in the wellbore. This potentially reduces non-productive time and improves drilling efficiency

Using BSEE data from multiple wells on Eugene Island, there were a minimum of 19 instances (tripping pipe, pressure testing, sweeping, circulating, and squeezing) where the crew was required to watch the mud/trip tanks for flow, two FIT's in the middle of drilling operations, uncertainty concerning the top-of-cement for the 13.375 inch casing, unsuccessful wellbore strengthening attempts, and losses throughout the drilling operations for the 8.5 inch and 6 inch sections. During these events, NPT accumulated as well as loss of expensive drilling materials.

The team concluded such events could have been mitigated by applying RFC-HSE, including Coriolis flow meters at the inlet and outlet of the system, simplification of FITs, and circulation of drilling fluid while reducing the choke-SBP. Significant advantages could have been realized if RFC-HSE MPD were applied during drilling operations.

Talos, having chosen areas 2 and 7 offshore Mexico due to their geographical and geological similarities to their US GOM wells, may experience similar issues. As a result, the team recommended that Talos utilize RFC-HSE MPD when planning and executing their exploration wells in Mexico

Concluding their presentation, the team wished to acknowledge the contributions of Don Hannegan, retired MPD specialist from Weatherford; Erdem Catak, VP-Operations of Safekick; Dennis Moore, Senior Technical Consultant at Marathon Oil Corp.; and Scott Randall, Project Executive Sponsor.

Formation of Well Control Practices Subcommittee

Mr. Mueller reviewed the request that was made as the result of the discussion at the September Committee meeting and the responses that had been received by IADC.

The Committee voted to establish the Well Control Practices Subcommittee. About seven people volunteered. It was decided they would elect a chair in the initial meeting following the Committee meeting.

Jay Bruton of ABS suggested that the subcommittee might consider becoming involved in the revision of RP59.

Update on WCC Subcommittees & Workgroups

Curriculum Subcommittee – Scott Shafer nominated Matt Parizi of Chevron to fill the vacancy on the Committee Chair. The nomination was accepted.

Simulator Subcommittee – Michael Arnold, Intertek. Mr. Arnold reported the subcommittee has not met recently but will start up again in January. They have previously proposed three initiatives, one short term and two longer term. The short term initiative would be to develop a standardized simulator scoresheet and recommend changes based on provider feedback. The two long term projects are related to discussions with simulator manufacturers about a "wish list" for enhancements, and an analysis of how simulators can be more effectively used in well control training. He said the group is also looking for data on how simulators might be used to help students with commonly missed questions.

Barriers Workgroup – Scott Randall, PlusAlpha Risk Management. Mr. Randall stated that members of the subcommittee recently participated in an industry CBEE bow tie event. The group's primary focus is to act as a coordinating group with other groups, monitoring SPE work in similar fashion.

General Discussion

Mr. Mueller mentioned that API was considering removing the onshore information contained in API Standard 53 and it strictly as an offshore document. A separate document will be developed specific to onshore operations. The group consensus was that this was a good idea.

Peter Bennett of Pacific Drilling was elected as Vice-Chair to fill the vacancy caused by Ian Barker's departure.

The following were suggested as topics for future meetings:

- Presentation from the MPD Committee to promote coordination between the two groups.
- Mud Gas Separators – Robert Ziegler of Weatherford will make a presentation at next meeting.
- Relations with insurance companies regarding the handover between MPD and well control. How do insurers currently assess well control risk?
- Light well riserless intervention (LWRI) – group of service companies for slickline, wireline, and coiled tubing are running from a vessel with no need for riser or a rig. They are currently working in the North Sea and Brazil.
- 20K BOPs and risers -- Total just drilled Solaris I with Maersk Drilling in the North Sea, other 20K wells being drilled elsewhere.
- HPHT.

The next meeting date was set for IADC Headquarters on Wednesday, 8th March 2017.

The meeting was adjourned, with the initial meeting of the Well Control Practices subcommittee immediately to follow.

Attendance:

Name		Company Name
Jay	Bruton	**AMERICAN BUREAU OF SHIPPING**
Kamela	Watson	**CAMERON A SCHLUMBERGER COMPANY**
Matt	Parizi	**CHEVRON**
Scott	Schafer	**CHEVRON**
Chuck	Boyd	**CS INC**
William	Burch	**HELIX OILFIELD SERVICES LTD**
Albert	Goicochea	**HELMERICH & PAYNE**
Phillip	Harris	**HTK INTERNATIONAL**
Steve	Kropla	**IADC**
Elfriede	Neidert	**IADC**
Michael	Arnold	**INTERTEK CONSULTING & TRAINING**
Jacob	Petz	**MAERSK TRAINING, INC**
Evelyn	Baldwin	**MAERSK TRAINING, INC**
Laura	Murchison Ringler	**MURCHISON DRILLING SCHOOLS, INC.**
John	Bottrell	**NOMAC DRILLING CORPORATION**
Peter	Bennett	**PACIFIC DRILLING**
Victor	Rasanow	**PARKER HANNIFIN CORPORATION**
Felipe	Terra	**PETROLEO BRASILEIRO S.A.**
Scott	Randall	**PLUS ALPHA RISK MANAGEMENT SOLUTIONS**
Paul	Sonnemann	**SAFEKICK**
Larry	Schmermund	**SMITH MASON & COMPANY, LLC**
Mark	Sokolow	**UNIVERSITY OF HOUSTON STUDENT**
Robert	Ziegler	**WEATHERFORD TECHNOLOGY & TRAINING CENTER**
Barry	Cooper	**WELL CONTROL SCHOOL**
Steve	Richert	**WILD WELL CONTROL INC.**
Haris	Qureshi	**WILD WELL CONTROL INC.**
Wesley	Jordan	**WILD WELL CONTROL INC.**