IADC Well Control Committee
Meeting Minutes
8th June 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:

- Texas Railroad Commission Well Control Orientation Seminar on 25th May
- Ocean Energy Safety Institute Barriers Workshop at UH on 18th May
- Ballots/comments on API Standard 53 regarding kill lines
- Operator requirements for higher levels of WellSharp training
- Supervisory well control required for subsea technicians
- Presentation on shear rams from OEMs as possible topic at next meeting

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.

Presentation -- New & Better Barriers

Robert Ziegler of Weatherford said that he had originally been slated to provide a presentation on Mud/Gas Separators. However, since that work is not complete he elected to make a presentation titled “Deepwater Well Control in the 21st Century: New & Better Barriers and Natural Barrier Verification & Assurance.”

He stated that data collected over a 5-year period from a sampling of 5,000+ wells drilled with a subsea BOP yielded the following conclusions:

- Of 10 percent percentage of wells that experience a well control event, only ½ are actual “kicks”
- (i.e. inflow of formation contents). 2-3 is the maximum number of well control events a driller sees in a decade
- While most kicks are manageable, (low in volume & intensity), too many contain large bbl volume and several ppg intensity.
- A riser unloading event happens about once every 2 rig decades (or, 1:5 actual kicks): Subsea BOP “efficiency” is 80%.....

He also noted that for onshore drilling operations, consistent statistical evidence proves that Rotating Control Devices (RCDs) decrease the incidence of blowouts. This suggests that

blowouts do not increase when existing rig crews are drilling more wells, but they do increase when new rigs and crews are brought into service.

He stated that offshore wells have longer reaction time – three minutes. As an example, he showed a dramatic video of an assistant driller being swept off the rig floor in an actual riser gas event that occurred off coast of Vietnam.

He noted that while the video was impressive:

- It was a small event
- The rotary bushing stayed in place
- It involved very low pressure
- Many unloading events are larger volume

He stated that this was typical of many riser gas events, in that they are low pressure but high volume, and that they occur suddenly and without warning making timely human reaction unlikely. Calling these events "grey swans," he noted that they are low probability and frequency events yet can have high impact, and tend to occur in conventional open-to-atmosphere drilling systems.

He noted the best riser gas handlers have a 5 second closing time, but questioned whether this event offered any reaction time to close the riser gas handler. He stated it would be better to have a permanently closed system, and that the risk management question is whether the well can be drilled safety without a RCD.

He noted three items he hoped the group would take away from the presentation:

- Relying on human reaction/intervention to stop a riser gas event is not recommended. A closed drilling system for deepwater drilling is a requirement.
- The moment the objective of well control is no longer to maintain overbalance across a potential flow zone in the well, it becomes a lot simpler.
- Closing the riser at the mud line and treating a finite volume of gas in the riser is low pressure work and can be done with ample safety margins using MPD equipment.

WellSharp Update

Brenda Kelly of IADC provided an update on the IADC WellSharp program. She noted that development of the well servicing curriculum is now underway. She also stated that she had noted increased interest in developing an Engineer (Level 5) course and updating/refreshing of the WellCAP Plus program.

Ms. Kelly said that the WellSharp Portuguese exam translation had been expedited since it was coordinated by Petrobras. She said the exam will be pilot tested before being launched to all WellSharp providers. When asked about the Spanish translation of the WellSharp exam, she stated that this had not yet begun. She added that WellSharp additional instructor requirements are now ready to launch. Also, she said that WellSharp training locations may be added to the IADC website.

She noted that IADC facilitator certification courses for 2016 are scheduled for13-16 June, 1-4 August, 12-15 September and 7-10 November.

Ms. Kelly said that the WellSharp database is allowing IADC to monitor and provide feedback to training providers, sometimes immediately. The database allows real time monitoring of classes, displays flags for test scores outside the norm, course feedback, and proctor issues. She noted that some WellSharp programs had been closed down due to quality assurance issues.

She noted that the number of WellSharp supervisory courses was down from 77 to 71 percent; this was commensurate with an increase in driller courses. She stated this was an indicator more companies are sending their drillers to the driller course rather than the supervisory course.

Due to retirements and normal Panel rotations, the WellSharp Review panel was in need of four replacement members: one drilling contractor, two operators, and one well servicing representative. Mark Venetozzi of BP volunteered for one of the the operator slots and Richard Grayson of Nabors volunteered for the contractor positions.

Ms. Kelly outlined proposed changes in WellSharp requirements: identifying courses as "recommended" rather than "required"; prerequisites as "recommended" rather than "required"; and a change to training provider administrative processes for prerequisites. The proposed change in language to "recommended" rather than "required" sparked a great deal of discussion. Mr. Mueller proposed that IADC send out a recommendation for this modification to the Well Control Committee for a vote on the matter.

ORM Presentation

Scott Randall of PlusAlpha Risk Management gave a presentation on the Operational Risk Management (ORM) Advisory Board. As an introduction, he defined ORM as the process through which operational and asset integrity is ensured through the risk management of major hazards. These efforts are focused on preventing low frequency / high consequence events and apply to health, safety, environment, and security related issues in upstream operations

He stated the ORM Advisory Board had been established with the intent of acting as a subject matter resource on ORM within in IADC. The Board's primary objectives are to define, publicize, and advocate ORM resources, determine gaps in knowledge / expertise, and to develop programs to eliminate such gaps. The Board will also provide recommendations for operational risk identification, elimination, or mitigation, and promote continual improvement and learning for managing operational risks.

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Mr. Randall noted the following drivers for improving well control training using ORM concept and the resources of the ORM Advisory Board:

- Develop a standardized language on ORM
- Act as the IADC focal point for ORM
- Collaboration with other industry organizations
- ORM interface arrangements
- Develop metrics to measure ORM events / incidents
- Sharing of best practices / knowledge

Mr. Randall stated the ORM Advisory Board's engagement with the Well Control Committee and other IADC stakeholder Committees would be reported periodically to the IADC Executive Committee.

The group took a short break

Update – BSEE Well Control Rule

Alan Spackman of IADC gave an update on the BSEE Well Control Rule, which had been published as a final rule on 29th April. The provisions of the rule become effective on 28th July 2016. He noted that responding to the rule had posed an exceptional challenge for IADC and other trade associations involved in the Joint Industry Team, which also included API, IPAA, NOIA, OOC, PESA and USOGA.

Mr. Spackman reviewed the timeline with which the JIT had prepared for and responded to the proposed rule. This included numerous meetings with BSEE and other government agencies, though Mr. Spackman said that the JIT would have like to have seen more focused workshops to address the key industry concerns over the rule.

He stated that on May 11, the General Accounting Office had reported that BSEE had followed all procedural requirements for the issuance of the rule, an action that significantly dampened the prospects of legal challenges to the rule by industry.

Mr. Spackman stressed that uncertainty remains about certain provisions in the rule. In late May, the JIT sent a letter to BSEE identifying 27 areas where interpretations and clarifications were required. They requested a response from BSEE by 17th June. In addition, over 150 individual requests from outside the JIT were also reportedly submitted.

He said that BSEE had acknowledged JIT letter and was in the process of answering questions on its website. He displayed the page at http://www.bsee.gov/Regulations-and-Guidance/Well-Control-Rule/ where BSEE had posted answers to the questions it had received. He also noted that anyone who had questions about the rule could send these to BSEE at: wellcontrolrule@bsee.gov.

Questioned as to whether industry could still contest the rule, Mr. Spackman stated that the best prospect for a legal challenge may be as a takings issue for operators who will be limited in the types of wells they can drill.
Mr. Spackman stated that in most cases, BSEE has gone to API Standard 53 requirements rather than what was in proposed rule. He said this is generally good for contractors, but perhaps not so much for operators.

Mr. Spackman concluded by mentioning that the next big challenge for the industry is the BOEM Air Quality Rule published on 5 April 2016. He stated this has the potential to be an offshore version of EPA's Title 5 air permitting rule. This has the potential for numerous indirect impacts on drilling rigs and drilling operations, including identification and quantification of potential emissions sources and a case-by-case application of Best Available Control Technology. IADC is coordinating its efforts with other trade associations, including OMSA and IMCA, to respond to the proposed rule.

UH/BSEE Incident Investigation Report

Zohair Memon of the University of Houston gave a presentation on Gulf of Mexico Barriers Analyzis that had been performed by Cougar Investments, a team project conducted by four Petroleum Engineering undergraduate students at the University of Houston.

Examined Gulf of Mexico loss of well control data from BSEE and Operators to determine the underlying cause(s) and establish a system of commonly failed barriers.
Utilize the Tripod Beta investigation method to account for human errors and to help create the perfect work environment.
BSEE agreed to sponsor the project and provide all incident data and guidance.

Showed diagram of failure involving four things
The group had hoped to analyze 30-40 events, but due to difficulties obtaining the data, they were able to analyze only eight events.

The group had chosen this task for its project because these incidents cost operators millions of dollars in costs, cause loss of life, and make it difficult for BSEE to issue permits when regulating these operations. Their thesis was that a proven system of barrier-based incident prevention would greatly increase efficiency for operators and the regulators (BSEE) when auditing operators.

He explained that the Tripod Beta Method is an incident investigation and analysis methodology that accounts for human factors and behavior. It was created to help accident investigators model incidents and to understand the influencing environment and to create the perfect work environment.

To apply the Tripod Beta Method, create a timeline of the events, along with all actors involved. Begin to organize the event into trios of the following: agent, object, and event.
Determine the barriers in place within the trio. For all failed barriers, determine the immediate cause and preconditions for failure. Determine the underlying factor of failure and categorize it into the appropriate risk factor "bucket."

The preliminary results conclude that communications, maintenance management, training and organization factors are common problem areas within operations. SEMS Elements are lacking in the areas of CO and OR, SEMS also does not account for human factors. Mr. Memon noted that the basic risk factors utilized by Tripod Beta are different from the elements required under SEMS, particularly in communications, organization, and human factors.

Mr. Memon outlined the following general findings:

- For an ideal operation to take place a continuous feedback loop must be created and all parties must be involved.
- Improper maintenance of key equipment and improper training can lead to loss of well control.
- Operators/Service companies need to create more roles to monitor operations more closely and to intervene during errors.
- Operators/Service companies can sometimes have trouble drawing the line between and safe and cost effective operation.

In conclusion, he stated that implementation of a new form of accident investigation could provide a fresh new look at analyzing operational and organizational deficiencies. Future research and resulting trends could yield a set of worthwhile organizational barriers that would improve operational efficiency.

Subcommittee Reports

Curriculum Subcommittee – Gary Nance, Chevron – No report

Simulator Subcommittee -- Earl Williams, Diamond Offshore

Mr. Williams reported the group has had a couple of meetings so far this year and has identified some issues of importance. Unfortunately, Earl needs to step down as chair following this meeting. Volunteers to fill this spot are welcome.

Gas in Riser Subcommittee -- Paul Sonnemann, Safekick

Mr. Sonnemann was not present. However, Mr. Mueller said the subcommittee is currently creating a work group to study influx management

Barriers Subcommittee – Scott Randall, Plus Alpha Risk Solutions

Mr. Randall noted that since the subcommittee was formed a couple of years ago it has formed a strong bond with the University of Houston. That has resulted in the subcommittee having an ongoing link to the University to work on barrier based issues. He noted that it would be possible for a new group of students to be utilized as resources for a barrier-focused project every semester though UH Capstone program.

General Discussion

The following were suggested as possible topics for the next Committee meeting:

- IWCF/WellSharp Comparison Presentation from WCI
- WellCAP Plus and Level 5 Courses
- Robert Urbanowski's presentation on mud/gas separators planned for IADC Well Control Europe Conference
- Robert Carvell of Stellar Well Control -- work his company has done with Cobalt on choke drills
- API 16TR technical reference document – Ricky Cummings possible presenter

Mr. Mueller stated that Independence Contract Drilling may sponsor lunch to enable more time to be built into the next meeting for presentations and follow-up discussions.

Next Meeting

The next meeting of the Well Control Committee will be at IADC's Crown Center on Wednesday, 21st September. A contractors-only roundtable will take place from 08:00 to 09:00, with the full Well Control Committee meeting beginning at 09:00. A forum for WellSharp training providers will take place immediately following the Committee meeting.

Upcoming IADC events

- IADC Asset Integrity & Reliability Conference & Exhibition, 30-31 August, Norris Conference Center, Houston TX
- IADC Advanced Rig Technology Conference & Exhibition – 13-14 September, Moody Gardens Hotel, Galveston TX
- IADC Human Factors Conference & Exhibition – 4-5 October, Moody Gardens Hotel, Galveston TX
- IADC Well Control Europe Conference & Exhibition – 19-20 October, Scandic Hotel, Copenhagen, Denmark

New business

Alex Sas-Jaworsky (SAS Industries, Inc.) provided an update regarding the status of API Standards development which will directly impact well control activities in the oil and gas Industry.

a. **API Spec 16C *Choke and Kill Equipment*** (2nd Edition) Addendum 1 closed Letter Ballot voting on May 27, 2016. This Addendum 1 document was adopted (no negative comments) and comment resolution is expected to be completed by June 15, 2016. API will make the Spec 16C 2nd Edition Addendum 1 document available to the industry shortly.

b. **API 16TR 2 *BOP Shear Ram Performance Test Protocol*** (1st Edition) closed Letter Ballot voting on June 3, 2016. This API Technical Report is a new document which outlines the standardized test protocol for performing a BOP Shear Ram and Blind-Shear Ram performance test and defines the data to be recorded for input into an Industry Database. Alex noted that this shear test protocol standard, when published, will likely be adopted by regulatory agencies (onshore and offshore) and strongly recommended that that IADC Members become acquainted with this new Technical Report to make sure that their required shearing tests will meet or exceed the data acquisition and test set-up requirements.

c. **API STD 53 *Blowout Prevention Equipment Systems for Drilling Wells*** (4th Edition) Letter Ballot for Addendum 1 is scheduled to close on June 9, 2016 (tomorrow). Alex encouraged every IADC Member company who is also a Member of API SubCommittee 16 to make sure that they review the 4th Edition version of API STD 53 and vote/comment on the proposed changes to be included in the Addendum 1 document. However, anyone who is not a Voting Member of API SC16 is still allowed to offer comments on the proposed changes and should do so ASAP.

Mr. Randall noted that ISO 17776, a leading process safety standard, is currently in the process of being updated. This document is referenced in the IADC HSE Case Guidelines.

Adjournment

The meeting was adjourned approximately 12:00 p.m.

Attendance

Name		Company Name
Dan	Eby	**BLOWOUT ENGINEERS/ SIERRA HAMILTON**
Charles	Holt	**BP AMERICA, INC.**
John	Broussard	**BP AMERICA, INC.**
Johnny	Aldridge	**CAD CONTROLS**
Scott	Schafer	**CHEVRON**
Chuck	Boyd	**CS INC**
Michael	Williams	**DIAMOND OFFSHORE**
James	Krupa	**DRILLING SYSTEMS**
Tom	Proehl	**ENSCO PLC**
Robert	Kemper	**EXXONMOBIL**
Thomas	Boehme	**FALCK SAFETY SERVICES**
Johnny	Richard	**FALCK SAFETY SERVICES**
Andy	Erwin	**FALCK SAFETY SERVICES**
Lance	Brown	**HERCULES OFFSHORE**
Bob	Burnett	**HERCULES OFFSHORE**
Phillip	Harris	**HTK INTERNATIONAL**
Elfriede	Neidert	**IADC**
Steve	Kropla	**IADC**
Alan	Spackman	**IADC**
Mark	Denkowski	**IADC**
Marlene	Diaz	**IADC**
Brooke	Polk	**IADC**
Brenda	Kelly	**IADC**

Aaron	Mueller	**INDEPENDENCE CONTRACT DRILLING**
Joyclyn	Walker	**INTERTEK CONSULTING & TRAINING**
Michael	Arnold	**INTERTEK CONSULTING & TRAINING**
Kerri	Maurina	**LLOYD'S REGISTER ENERGY**
Laura	Murchison Ringler	**MURCHISON DRILLING SCHOOLS**
Richard	Grayson	**NABORS INDUSTRIES**
John	Bottrell	**NOMAC DRILLING**
Greg	Lahrman	**PACIFIC DRILLING**
Karl	Hilthon	**PARAGON OFFSHORE**
Ian	Barker	**PARAGON OFFSHORE**
Victor	Rasanow	**PARKER HANNIFIN CORPORATION**
Calvin	Pedigo	**PERTROLEUM COLLEGE INTERNATIONAL**
Scott	Randall	**PLUS ALPHA RISK MANAGEMENT SOLUTIONS**
Robert	Urbanowski	**PRECISION DRILLING COMPANY**
Benny	Mason	**RIG QA INTERNATIONAL INC**
Eliot	Doyle	**ROWAN COMPANIES**
Victor	Fleming	**ROWAN COMPANIES**
Alex	Sas-Jaworsky	**SAS INDUSTRIES**
Ahmed	Iqbal	**SAUDI ARABIAN OIL COMPANY (SAUDI ARAMCO)**
Keith	Rappold	**SAUDI ARABIAN OIL COMPANY (SAUDI ARAMCO)**
Larry	Schmermund	**SMITH MASON & COMPANY**
Joshua	Robnett	**SUBSEA SOLUTIONS**
Evan	McLaughlin	**TRANSOCEAN**
Robert	Ziegler	**WEATHERFORD TECHNOLOGY & TRAINING CENTER**
Barry	Cooper	**WELL CONTROL SCHOOL**
Steve	Richert	**WILD WELL CONTROL**