



IADC Well Control Committee  
Meeting Minutes  
14<sup>th</sup> March 2018  
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:

- Status of API RP53 and API request for IADC position on RP59
- Discussion of recent severe well control event
- Tendency by some operators to prematurely pull BOP (possible RP59 issue)
- Seal damage caused by tools used to wash out BOPs
- BSEE regulations regarding cementing as possible model for onshore operations
- BSEE report on subsea bolting issue
- Concern over duplicative industry work groups
- Affect of company reorganizations on ability to staff industry work groups

## **Well Control Committee Meeting**

### **Welcome & Introductions**

Pete Bennett 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](#). He introduced Holly Shock, IADC Committee Coordinator. Ms. Shock welcomed the group and briefly explained her function in working with IADC Committees. She showed a brochure detailing different aspects of IADC's operations, which were distributed to those present.

Mr. Bennett asked those present to introduce themselves. He then introduced Harris LaFleur of SmithMason Co.

### **HPHT Considerations**

Mr. LaFleur explained that SmithMason had been hired by a contractor and operator to put together a High-Temperature High-Pressure training program for drilling in the Haynesville and Bossier Shales. The training was developed to prepare crews for the drilling program that had been developed by the operator for use on properties that had been acquired from another operator. Much of the training focused on the differences between using water based mud and oil based mud.

The result was a two-day course, with the first day focused on classroom instruction and the second day used for simulator exercises. The first part of the simulator exercise used water based mud from the surface to the intermediate casing at 10 thousand feet, then switched to oil based mud. The wells were drilled underbalanced.

Mr. LaFleur said the general definition of HPHT applied to both Haynesville and Bossier shales:

- Maximum anticipated pore pressure > 0.8 psi/ft. (15.4 ppg) or greater
- Pressure control equipment in excess > 10,000 psi is required
- Undisturbed bottom hole temperature > 300 deg F

One of the main concerns with HPHT is that gas entering the well at high temperature and pressure can expand suddenly to very large volumes while circulated to surface. Surface pressures can get extreme very suddenly, and apply sudden stress on surface equipment.

Mr. LaFleur stated that historically, the Bossier Shale has been a problem in about the middle of the shale when the well has reached about 30 degrees of deviation. At this depth, the bit encounters natural fractures which will expel gas into the wellbore. Since water based mud was to be used to drill this section, kick recognition should not be a problem.

If a pit gain is observed the well should be shut in as soon as possible. Monitor surface pressures for stability. After surface pressures have stabilized the gas can be circulated out using Constant Pump Pressure.

Mr. LaFleur basic kill procedure calls for a constant pump rate. The pump rate, however, can be adjusted anytime during the kill operation and a prudent time to do this is prior to the influx arriving at the surface. While slowing down the pump won't change the ultimate annular surface pressure, which is determined hydrostatically, it does give the choke operator more time to make choke adjustments to compensate for gas expansion.

He noted this technique has an advantage if oil based mud is being used. Decreasing the pump rate won't prevent gas from "flashing" out of solution as the gas gets near the surface and reaches vapor point, but it will provide the choke operator with a little more reaction time.

If the pump rate is to be decreased, casing pressure the choke must be used to maintain casing pressure constant while the rate is decreasing. The pump pressure should be allowed to stabilize and this should be used as the new circulating pressure. After the gas is out of the hole, the pump rate can be returned to its initial rate and pressure if desired.

Mr. LaFleur said that much of the training dealt with knowledge of how well control equipment operates, with much emphasis placed on rotating heads, annular and ram preventers, the BOP closing unit, accumulator function, IBOPs and gas busters. He stated that this focus on equipment was designed to address gaps in understanding how the equipment functions. Since most things are now replaced rather than repaired, many personnel lack a good understanding of how some critical equipment functions.

## WellSharp Update

Gerardo Barrera of IADC reviewed the statistics for WellSharp courses that had been delivered since his previous update at the December Committee meeting. Mr. Barrera noted that there had been more than 1800 WellSharp courses conducted since December 2017, more than 50 courses a month with an average class size of five students. A total of 875 trainees had undergone the different types of WellSharp Instructor Exam, with an overall passing rate of 83 per cent and an average score of 90.

Brooke Polk provided an update on WellSharp Well Servicing instruction. She noted that bulletins had been sent to training providers on 8<sup>th</sup> March to acknowledge the timeline of transitioning from WellCAP to WellSharp instruction on 1<sup>st</sup> April. After that date, there will be no Well Servicing WellCAP at the fundamental or supervisory levels, though it will still be offered at the introductory level.

Ms. Polk stated that the Oil & Gas Operator Well Site Leader Certificate will be the only one that allows multiple types of certification. Separate courses will be required otherwise.

She explained that this is because the WellSharp Well Servicing courses will be organized differently from the Drilling courses – the main courses and subsea courses will have to be set up with separate own rosters. It will be possible to take the main course and to return at a later time for the subsea supplement – in this case, students will need to have a copy of their original certificate available. Current WellCAP certificates will not be eligible for the WellSharp subsea supplement

Ms. Polk stated IADC is offering a one-time conversion of any remaining WellCAP certificate numbers to WellSharp test codes. Any outstanding WellCAP records should be reported to IADC by 30<sup>th</sup> April.

She noted that IADC had just conducted a Well Servicing pilot with 10 companies, with a review team meeting scheduled to go over 12 pages of comments received during the pilot. IADC anticipate a relatively low pass rate when the system is launched, similar to what was encountered during the WellSharp Drilling course. She estimated that based on experience from the Drilling course launch, it could take five months to refine exam questions. Providers will need to use feedback forms to report apparently problematic questions to IADC.

For providers offering both Drilling and Well Servicing instruction, audits will be combined into same cycle.

Some presented noted that the Drilling instructor requirements to teach five courses for reapproval are causing problems for providers in some areas due to expense and logistics. Ms. Polk responded that IADC is looking into the possibility of having SME's observe mock courses or view courses via Skype.

WellCap Plus is expected to be converted to WellSharp Plus on 1<sup>st</sup> June. This course is intended for more experienced personnel who will undergo scenario based training with a high level of simulation including human factors instruction. The new curriculum has undergone the review process and has been approved.

Ms. Polk concluded by stating that the WellSharp Level five workgroup has been formed and will meet in mid-April, as will the workgroup for Introductory Well Servicing.

The group took a short break.

## **WellSafe – Chevron’s Well Control Assurance Program**

Marcel Robichaux gave a presentation on WellSafe, Chevron’s well control assurance program. He noted that he had hoped to give the presentation at the IADC Well Control Conference last year. He said is currently working with OOC and COS, and plans to meet with BSEE Director Scott Angelle as well.

He noted that WellSafe had not started as Chevron’s response to Macondo, but that the real impetus came from blowouts the company had experienced in Nigeria and Brazil, in addition to a fatal incident in Pennsylvania.

The primary purpose of the Chevron program was how to learn from High Reliability Organizations (HROs). To do this, the company examined practices used by the U.S. Navy, U.S. Air Force, commercial airlines and the nuclear industry, as well as the well examination scheme used in the United Kingdom.

The eventual inspiration for WellSafe was US Navy’s SubSafe program. This program was the Navy’s response to the 1963 USS *Thresher* nuclear submarine incident. The vessel sank during deep-diving sea trials, with the loss of all 129 persons aboard.

The SubSafe program was designed with a narrow focus -- to provide maximum reasonable assurance that sub hulls remain watertight and able to recover from unexpected flooding failures. Prior to implementing Subsafe, the Navy had lost 16 submarines between 1915 and 1963, claiming 473 lives. In the 54 years since the inception of SubSafe, no submarines certified under the program have been lost.

Mr. Robichaux explained WellSafe was launched in 2012, with the goal of providing a certification program that provides assurance that well control will be maintained at all times. It is focused strictly on influx prevention, detection, and control through well control procedures, well control competency, and well control equipment. The stated goal is to “design for control, guarantee containment.”

WellSafe is organized in Chevron’s Drilling & Completions group with a number of regional and system managers reporting the General Manager of Assurance. Each operating unit has at least one well examiner reporting to a regional manager. A number of system engineers and an external assessment advisor report to the system manager.

To obtain WellSafe certification, a number of requirements must be met regarding well design/plan certification, rig certification, and well execution certification. Once a business unit is certified, it is assessed every 18 months by the WellSafe authority.

For design/plan certification, the WellSafe Examiner provides assurance that all pertinent information relating to well control has been considered throughout the well design project cycle. Rig certification focuses on a number of factors regarding well control procedures, critical well control equipment, and well control personnel qualification.

Mr. Robichaux said that since implementation of the program, Chevron has not had a Tier 1 or 2 well control incident, no wells drilled without WellSafe. More than 3600 wells have achieved plan and execution certification, with about 200 rigs receiving rig certification.

Well control drills are an essential component to assuring crew well control competency and proficiency in all Chevron operations. To help manage the planning, execution and assessment of multiple well control drills, Chevron has developed a software tool called DrillPad. Mr. Robichaux said that more than 39,000 well control drills have been conducted and assessed using this tool.

Mr. Robichaux said that one benefit of the system is that everyone plans drills together, which provides multiple opportunities for leadership, teaching and learning. Following a drill, debriefing with the crew is critical to the process. Action has been taken in Chevron operations that weren't doing drills.

DrillPad is one of two software aids Chevron uses in the WellSafe program. The second, the **WellSafe Certification Management Program (WCMP)** manages tracking of the certification process, requirement by requirement, well by well.

### **Update on WCC Subcommittees & Workgroups**

Well Control Practices Subcommittee: Paul Sonnemann, SafeKick – Mr. Sonnemann stated there had been no activity of the Subcommittee due to the conference cancellation and schedule change last year. He noted a meeting of the group was planned following the meeting and that he hoped to resume the Subcommittee's activities.

Simulator Subcommittee – Michael Arnold, Intertek – Mr. Arnold noted that the Subcommittee had previously identified four primary areas of focus:

1. A Train-the-Developer course is needed to assist simulation developers to build relevant simulations for Instructor/student use. The committee determined that training providers need to contact their simulator provider for development training.
2. Emphasize that training providers not allow simulator skills assessments to lose their high level of integrity when the oil prices rise and the industry begins to return to normal.
3. Provide simulator assessment alarms so that an alarm notifies the Assessor that a student has exceeded a parameter (e.g. fracture pressure, low bottom hole pressure). Instead of simply using a graph to determine pass/fail, use an alarm.
4. The committee identified a need for a better functioning score sheet for Simulator Skills Assessment. Recommendations were provided by several members. These recommendations were circulated and will be discussed at the next meeting.

Curriculum Subcommittee: Matt Parizi, Chevron – There was no report from this group.

Barriers Subcommittee – Scott Randall, PlusAlpha Risk – There was no report from this group.

## Discussion & Next Meeting

The next Well Control Committee meeting will be at 9 a.m. on Wednesday, 13<sup>th</sup> June 2018 at IADC's Crown Center in Houston. The meeting will be preceded by a Drilling Contractors Roundtable from 8 a.m. to 9 a.m.

### Attendance:

| Name    |            | Company Name                    |
|---------|------------|---------------------------------|
| Frank   | Pearson    | CHEVRON                         |
| Marcel  | Robichaux  | CHEVRON                         |
| Dennis  | Hicks      | CS MANUFACTURING                |
| Chris   | Mills      | DIAMOND OFFSHORE                |
| Jon     | Shoemaker  | DIAMOND OFFSHORE DRILLING, INC  |
| James   | Krupa      | DRILLING SYSTEMS                |
| Euan    | Kennedy    | DRILLING SYSTEMS                |
| Rick    | Cannon     | GATES CORPORATION               |
| Steve   | Kropla     | IADC                            |
| Alan    | Spackman   | IADC                            |
| Bob     | Warren     | IADC                            |
| Keegan  | Mounce     | IADC                            |
| Marlene | Betancourt | IADC                            |
| Gerardo | Barrera    | IADC                            |
| Brooke  | Polk       | IADC                            |
| Felipe  | Terra      | PETROLEO BRASILEIRO S.A.        |
| Paul    | Sonnemann  | SAFEKICK                        |
| Jay     | Lancaster  | SEADRILL                        |
| Bruce   | Humphries  | SIDEWINDER DRILLING             |
| Steve   | Vorenkamp  | VORENKAMP WELL CONTROL TRAINING |
| Matthew | Vorenkamp  | VORENKAMP WELL CONTROL TRAINING |
| Robert  | Rooney     | WELL CONTROL SCHOOL             |