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WellSafe Initiative– Chevron’s Well Control Assurance Program

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Abstract

Background

Well Control events are nothing new to the Oil and Gas Industry. Two of the more famous well control events took place more than 110 years apart; Lucas Gusher at Spindletop Jan 10, 1901 and Macondo April 20, 2010.

Whereas Spindletop was a welcomed event, Macondo was a catastrophe. Macondo was an event that cost 11 lives, the loss of a rig and billions of dollars in damages, and the untold cost associated with the Public’s negative view of blowouts and the Oil & Gas Industry’s inability to prevent them.

Shortly after the Macondo blowout, Chevron began looking inward to see what well control gaps existed in our operations. In late 2011 and early 2012 Chevron had two well control events of our own, Frade and Funiwa respectively. Through its review Chevron identified key opportunities to improve and standardize its well control practices.

The Creation of WellSafe

The creation of WellSafe began in the Fall of 2011 with an idea. That idea took shape In March of 2012, when the Chevron Drilling and Completions Leadership Team unanimously endorsed the WellSafe vision, “Design for Control, Guarantee Containment.”

WellSafe is an assurance program that was created by Chevron’s D&C community for Chevron’s D&C community. WellSafe has one and only one focal point and that is Well Control. It is patterned after the United States Navy SUBSAFE program.

The Objective of WellSafe

The objective of WellSafe is to provide maximum reasonable assurance that well control is maintained at all times, on all operations under the direct control of the Chevron Drilling and Completions organization.

To provide this high level of assurance WellSafe encompasses all aspects and phases of well work. WellSafe is comprised of four Certification Types: 1) Business Unit Certification, 2) Rig Certification, 3) Well Design & Planning Certification, and 4) Well Execution Certification.

WellSafe Business Unit Certification

The foundation for WellSafe is Engineering Standards. Within the Chevron system there are two types of Engineering Standards, D&C Process Standards and D&C Technical Standards. The Process Standards define the necessary steps and sequence for process used by Chevron. For example, the Planning Standard defines the timing and nature of information for the cross functional team to exchange in the planning sequence. It establishes, phase gates, hard lines for changes to objectives, after which MOC's are required. The objective of this standard is to ensure the D&C team is developing a plan that will meet the objectives of the Asset Team while optimizing the time and efforts of the D&C team. Another example of process standards is the Management of Change standard which details steps, required supporting documentation and approval level for changes in the plan at various points in the planning and execution of a well. Technical Standards, on the other hand, define the various design requirements specific to the equipment included in the standard. An example is the casing and tubing design standard which dictates, among other things, required design factors and confirmation testing requirements.

To achieve WellSafe Business Unit Certification a business unit or profit center must establish standard operating procedures that align with the Chevron D&C Engineering Standards. Exceptions are allowed only after being clearly defined, risk assessed and approved through the D&C Management of Change Process. The business unit must also establish systems for tracking of well control certification and specialized training, a system to induct personnel coming into the business unit and a system to on-board personnel as they are assigned to specific rigs. Also required are well control procedures for special operations, a defined review and approval process for well program, and all inflow tests (negative test). Defined processes for pre-tour checks, site supervisor handover, well control roles and responsibilities for 3rd party personnel where applicable. A program of well control drills is required. And a program for tracking defined metrics, quarterly rig assessments, annual rig audits, business unit self-audit and self-assessment processes must be in place.

WellSafe Rig Certification

The first pillar of WellSafe Certification is Rig Certification. To achieve WellSafe Certified a rig must have in place systems or processes related to well control that include; a well control bridging document and a system for tracking contractors well control certification. Also required



are rig specific procedures for hole monitoring and shut-in for the various activities the rig will or may regularly encounter, procedures to avoid or mitigate well control events, and procedures to comply with Chevron's specifications for, maintenance, calibration and documentation of,

well control equipment must be in place. Compliance with Chevron's requirement for well control drills must also be met, well control information must be posted on the rig floor, and driller's daily well control pre-tour checks must be completed.

Well Design & Planning Certification

The Second Pillar of WellSafe Certification is Well Design Certification. Requirements to achieve design certification include; definition of Value Based Well Objectives and listing of specific Design Uncertainties Impacting Well Control and the Potential Impact of All Uncertainties, an offset well review, Well Design Alternatives, Risk Assessments and Peer Review at specific points in the planning process, G&G Operations Review. Additionally, information for maintaining well control during construction and service life is required. The Well Specific requirements and success definitions are logged in Execution Assurance Requirements (EAR) Checklist. The contents of the EAR Checklist are reviewed and approved by a WellSafe Examiner who is external to the business unit.

Well Execution Certification

The final pillar of WellSafe Certification is satisfactory completion of the components in the well specific EAR Checklist. Each well's EAR Checklist serves as a roadmap through the WellSafe Well Execution Certification process. The WellSafe Well Execution Certification requirements define the verification criteria for each activity in the EAR Checklist. The WellSafe Examiner ensures compliance with the EAR Checklist by comparing the WellSafe Well Execution Certification requirements against the Morning Report, which serves as the OQE. The WellSafe Examiner signs off each activity in the EAR Checklist after final verification that the requirement has been fully satisfied during the execution phase. The BU shall initiate a management of change for any deviation from the EAR Checklist in accordance with the MOC process

WellSafe Authority

The WellSafe Authority is the organization within Chevron that is charged with maintaining the WellSafe Process and assisting each BU in compliance. The group consists of two parts: Firstly, the System Team which maintains the process and conducts regularly scheduled Assessments of each Business Unit to assist with compliance with the BU and Rig Certification Requirements. The second part of the WellSafe Authority is the Examination Team. This team is comprised of two region managers each with independent examiners assigned to individual Business unit. This portion of the WellSafe Authority is focused on assisting with compliance with the Well Planning and Execution requirements. The WellSafe Authority reports to Chevron's VP of D&C, through the General Manager of D&C Assurance.

Conclusion

WellSafe is a process designed and implemented by Chevron with one and only one focal point and that is Well Control. The WellSafe Program is built upon four Certification Types, Business Unit Certification, Rig Certification, Well Design & Planning Certification, and Well Execution Certification. Each certification is comprised of clearly defined requirements and objective definitions of compliance. When all components of the process are satisfied the well is deemed WellSafe Certified.