



Flowback Audit
Sample Oil Company
Boots & Coots

Well Number: Weldon Cox Gas Unit 2H



Sample Oil Company

Date: Thursday, January 14, 2010

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Audit Report

Audit Name: Sample Oil Company, Flowback Audit, Well Number: Weldon Cox
 Gas Unit 2H
Audit Type: Flowback Audit
Audit Date: 2010/01/14
Completed By:
Comments: imported audit

Client: Sample Oil Company
 Company Man: Nelson James
 Flowback Supervisor: Michael Griffin
 Flowback Contractor: B&C
 Country: Limestone County Texas, U.S.A.
 Field: Bear Grass
 Well Number: Weldon Cox Gas Unit 2H
 Activity at Time of Audit: RIH E-line
 Chock Manifold Size: 2 1/16"
 Pressure Rating: 15M
 Number of Manual Chokes: 2 positive test manifold
 Number of Hyd. Chokes: 2 (T3) hydraulic choke manifold
 Hyd. Closing Unit Type: Koomey. Electric motor only, no secondary air pump
 No. of Bottles: 4 X10 gal.ea.=20 usable gals.
 Wellhead Size: 7 1/16"
 Press. Rate-Lower Conn.: 15M
 Plug Catcher: 7 1/16" 15M. 4" Screen. 2" By-Pass.
 Sand Trap: 13 5/8" I.D. 15M
 Power Source: Rental generator and air compressor
 Frac Tree Config./Specifications: 7 1/16" 15M (Wood Group) manual lower master, flowcross with dual gate ea. side & outside remote. 7 1/16" 15M Swab Valve. No lower masterr valve.

Auditors: Freeman, Mike

Executive Summary

Customer: Sample Oil Company
Location: Flowback Audit, Well Number Weldon Cox Gas Unit 2H
Audit Name: Flowback Audit V1.1
Audit Date: 2010/01/14

Executive Summary:

Audit Comments:

Identification of risks associated with any business, and the management of those risks, are important aspects of business management in today's competitive world. It is even more relevant when we talk about the oil and gas exploration and production field. Our Flowback Audit services help in addressing identified risks and it is used as a risk analysis tool to proactively prevent loss of well control. It helps to visualize and measure the present condition of the Flowback components by mitigating damages and taking corrective actions to have the Flowback equipments readily available in proper conditions when trying to handle an event. Boots & Coots Flowback Audit can help reduce the likelihood and consequences of an incidents and ensure the integrity of your facilities, improve productivity and protect your assets, your employees and the public. Our Flowback Audit has allowed many operators around the world to save time and money by reducing the frequency of critical well events.

Boots & Coots Risk Management Services personnel evaluated the Weldon Cox Gas Unit 2H in Limestone County Texas. The scope of the evaluation was to assess the Flowback Package components and determined if they are correctly configured according to the needs of the well being serviced. A post audit meeting was conducted with the Company Representative Nelson James and Service Supervisor Michael Griffin and Operations Manager Glen Hendrix to review findings and recommendations. There were nine Critical non-compliant findings which are listed immediately below.

Overall, the majority of the working components were all in good shape and in working order. The general working environment was positive although as you will find in our findings and recommendations there are some areas for improvement. Observations were listed as Non Compliant Items. The Recommendations Section offers our solutions to the Non Compliant Items.

Critical Items that are in Non Compliance identified in this report have the potential to lead to a catastrophic event such as a Blowout with injury to personnel, environmental destruction, and equipment damage. Detailed observations and recommendations for the rig are listed below.

The findings in this report are defined and weighted as follows for Non Compliance items:

Critical Findings

Critical findings are based on shortcomings found during an audit which have the potential to lead to loss of well control in the event of a kick. The critical points found in the audit have a weight of 15 points per question.

Major Findings

Major findings are based on shortcomings which may lead to damage to essential equipment or have a detrimental effect on well control operations as a result of inadequate use and/or failure of equipment. The major points found in the audit have a weight of 10 points and have the potential for the escalation of well control problems

Minor Findings

Minor findings are based on shortcomings which may lead to situations that contribute to an incident or to circumstances in which the required standards of operation are not met. These have a weight of 5 points.

Critical Non Compliant Findings

- Is the flow equipment (flow iron, adaptors, flanges, etc.) inspected/tested and documented on location?
- During flow back is the wellhead configured using a plug valve downstream of the outside casing valve?
- Is the lower master gate valve designated as closed in as a last resort and used only to allow downstream repairs? NOTE: The lower master should remain open after testing.
- If H2S is expected is all equipment H2S compatible and is equipment and personnel H2S certified with certification and documents available in the command center?
- Are specific procedures / work instructions / forms reviewed and discussed with employees during meetings, training sessions or drills?

Major Non Compliant Findings

- Is the crew current on HSE training?
- Is an equalize loop or auxiliary pump used to equalize the pressure before opening a valve with differential pressure?
- Are Emergency Phone Numbers posted?
- Are JSAs being utilized on a daily basis by the crews?
- Are drills performed weekly of various scenarios (uncontrolled release of pressure from rupture, pipe in hole, injury to personnel and medi-vac, use of fire extinguisher, etc) timed, evaluated, post drill meeting held and event recorded to daily report and training drill form?

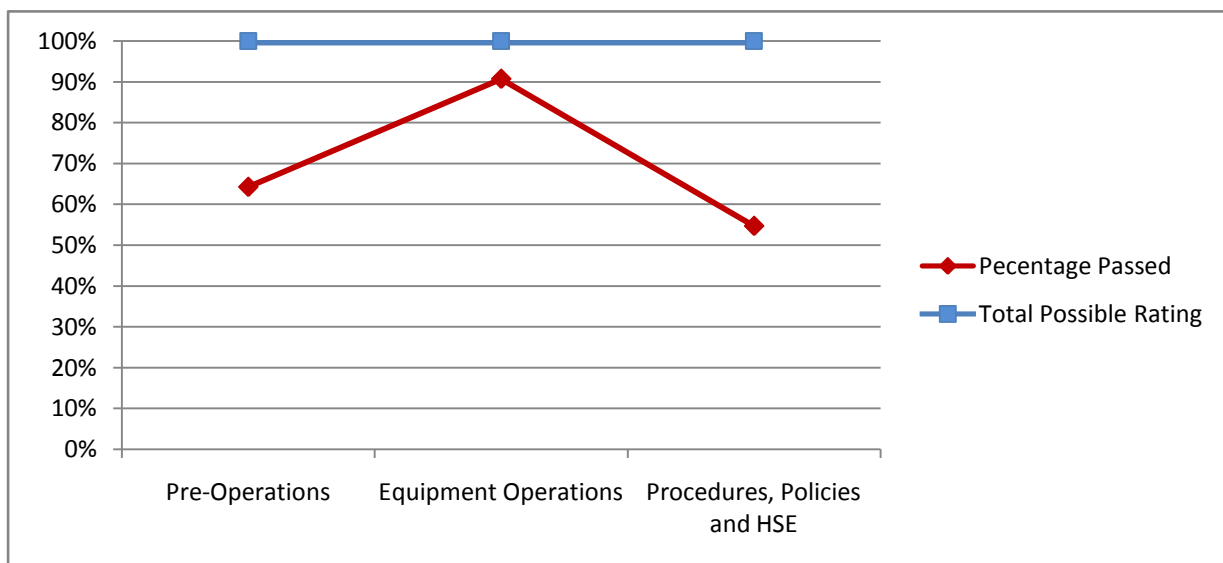
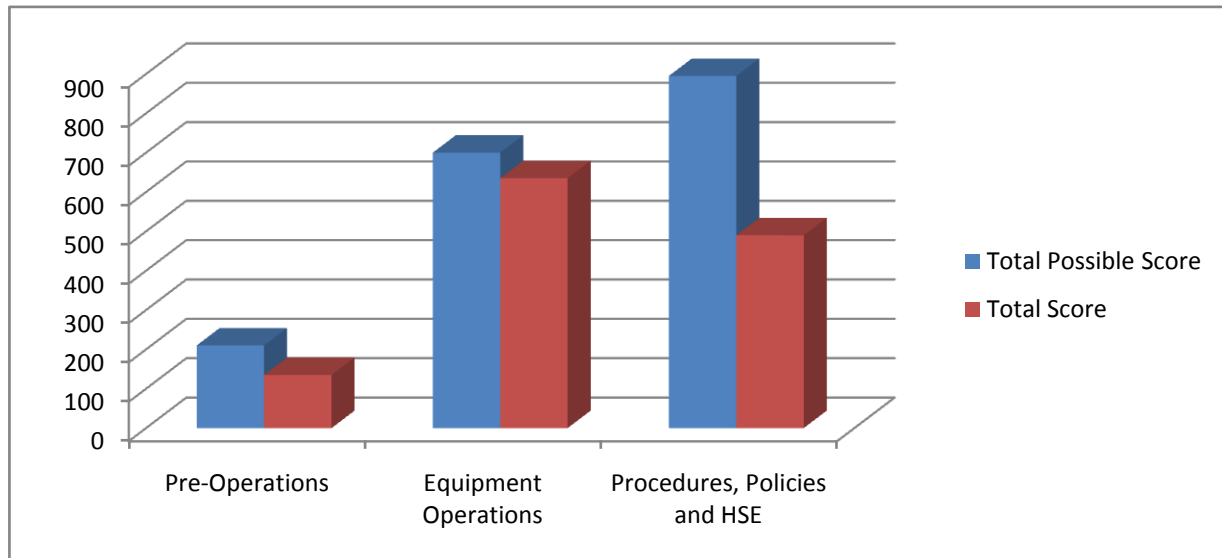
Minor Non Compliant Findings

- Is the S.T.O.P. program being used successfully?

	Total Possible Score	Total Score	Rating
Pre-Operations	210	135	64.29%
Equipment Operations	700	635	90.71%
Procedures, Policies and HSE	895	490	54.75%
Overall Rig Rating	1805	1260	69.8%

Rig Rating Score

Excellent	90-100
Good	80-89
Fair	70-79
Poor	0-69



Detailed Non Compliance Findings

		Actual Score	Possible Score
1-3-7	Is the flow equipment (flow iron, adaptors, flanges, etc.) inspected/tested and documented on location?	0.00	15.00
	<p>REF: API Spec 7L Procedures to Mfg., Inspect, Repair, and Remanufacture Drilling Equipment.</p> <p>Criteria: "The procedure for testing the BOP stack, drill string safety valves, choke kill lines, and manifold upstream of the buffer chamber are usually similar for most rigs. The mfg. operating and maintenance documents, contractor maintenance programs, and operating experiences should be incorporated into the specific tests procedures." "Documented instructions and procedures for any system assembly, testing, and commissioning that is required to be performed at the installation site shall be available prior to commencing installation."</p> <p>Consequence: Injury to personnel. Faulty equipment leads to inability to control well in critical situation.</p>		
	<p>Recommendation: Recommend archiving testing documentation for reference.</p>		
2-1-2	During flow back is the wellhead configured using a plug valve downstream of the outside casing valve?	0.00	15.00
	<p>REF: Best Industry Practice.</p> <p>Criteria: The use of a plug valve eliminates wear on production valves.</p> <p>Consequence: Loss of well control. Damage to the equipment.</p>		
	<p>Recommendation: Recommend installing a 1" plug valve outboard side of "B" section casing valve to be used to equalize above closed hydraulic upper master valve (see below) when a pump is unavailable.</p>		



2-1-11 Is the lower master gate valve designated as closed in as a last resort and used only to allow downstream repairs? NOTE: The lower master should remain open after testing.

0.00 / 15.00

REF:

API RP 5C7. 7.6.1.(e).Equipment Rig-Up Considerations. Onshore and Offshore Operations.

Criteria:

The operator should be aware of and have authorized all wellhead operations.

Consequence:

Damage the equipment . Loss of well control.

Recommendation:

Recommend installing a 7 1/16" HCR Gate Valve above the lower master valve. This allows your "last resort" to remain open after initial testing and only closing the lower master valve to make downstream repairs.



2-2-10 If H2S is expected is all equipment H2S compatible and is equipment and personnel H2S certified with certification and documents available in the command center?

0.00 / 15.00

REF:

API RP 5CR. 6.9.1. Applicability. 7.3.7 Documentation and Safety Guidelines

Criteria:

Well control equipment should comply with API Recommended Practice 53, Section 9, when the equipment may be exposed to fluids from hydrogen sulfide gas zones that could potentially result in the partial pressure of hydrogen-sulfide exceeding 0.05 pounds per square inch absolute in the gas phase at the maximum anticipated pressure. Check this for ppm: Documentation and safety guidelines include the following: a. Operator-supplied procedures and guidelines. b. Contractor-supplied procedures and guidelines. c. Health, safety, and environment contingency plans. d. Pre-job and safety meeting.

Consequence:

Death or injury to personnel and or equipment due to lack of proper procedures and requirements when working in an H2S environment.

Recommendation:

Recommend filing or posting, as applicable, documentation of equipment tests and certification, H2S certification of personnel and equipment, meetings held, JSA's, drills performed, emergency response plans, S.T.O.P. cards and footprint of location showing muster points and location of "bleed-off" points of equipment and position of fire extinguishers.

3-3-5 Are specific procedures / work instructions / forms reviewed and discussed with employees during meetings, training sessions or drills?

0.00 / 15.00

REF:

Internal HSE Program

Criteria:

Employees should have a written description of their job obligations and a schedule of training and milestones to be reached for promotion to next higher level of expertise.

Consequence:

Time delays, confusion to work, injury to personnel and incorrect operation of equipment.

Recommendation:

Recommend JSA and S.T.O.P. program, pre-tour meetings and "hand-over meetings" held and documented. A wide variety of crew drills of different scenarios performed and documented.

1-3-1 Is the crew current on HSE training?

0.00 / 10.00

REF:

API RP 54 6.1.6, 7. API RP 55. 5.2,3,4

Criteria:

(6.1.6) "Personnel should receive instruction in correct work methods to reduce chance of injury to themselves or fellow personnel." (7) "A safety program should be established and maintained." The value of training and periodic drills in an oil and gas producing and gas processing plant operations cannot be over emphasized. The uniqueness or complexity of a specific facility or operation will determine the extent of the training deemed necessary for the assigned personnel. Those personnel assigned supervising responsibilities at the site shall have additional training in the following elements: (a) Supervisor responsibilities of the contingency plan. (b) Effects of hydrogen sulfide on components of the hydrogen sulfide handling system. A formal recurring training program shall be implemented to maintain proficiency in the elements listed in the above as appropriate.

Consequence:

Inability to properly perform safely job duties due lack of up to date training, certification.

Recommendation:

It is recommended that the service company HSE representative install the company HSE program ASAP.

2-1-13 Is an equalize loop or auxiliary pump used to equalize the pressure before opening a valve with differential pressure?

0.00 / 10.00

REF:

API 5C7. 6.8.9. Equalizing Valve(s)

Criteria:

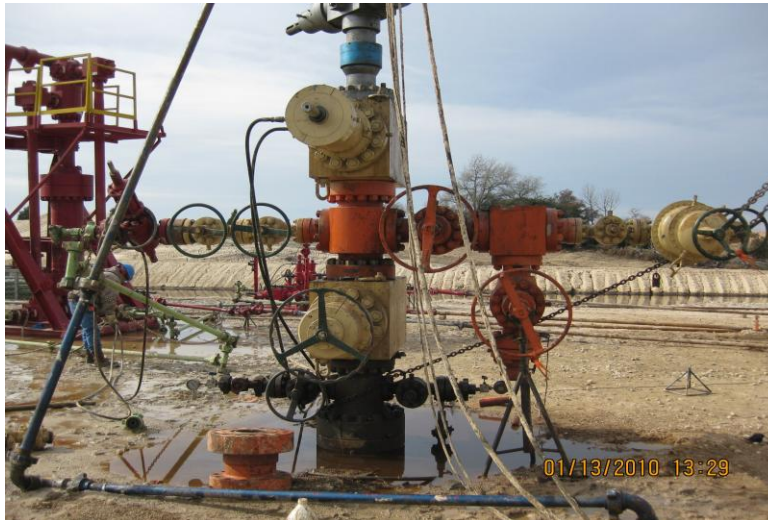
The well bore pressure must be equalized before attempting to open wellbore isolation valve(s). The equalizing system shall remain closed at all times and opened only to equalize the differential pressure in order to open the valve(s) during operations.

Consequence:

Damage to equipment. Loss of well control.

Recommendation:

Recommend installing a 1" plug valve outboard side of "B" section casing valve to be used to equalize above closed hydraulic upper master valve when a pump is unavailable.



3-6-5 Are Emergency Phone Numbers posted?

0.00 / 10.00

REF:

API RP 74 12.2.1

Criteria:

Telephone numbers, location, and other relevant information pertaining to availability of medical personnel, transportation, and medical facilities shall be available.

Consequence:

Danger to all personnel if not complied with standard.

Recommendation:

Recommend implementing emergency response plan from company HSE program.

3-8-1 Are JSAs being utilized on a daily basis by the crews?

0.00 / 10.00

REF:

Safety and Health Guidelines (2) Worksite Analysis (C)

Criteria:

Perform routine job hazard analysis.

Consequence:

Unknown work procedures for employees. Unsafe acts. Unknown risks. Failure to use JSA will create a danger to employees.

Recommendation:

Recommend implementing company JSA program from company HSE program.

3-15-1 Are drills performed weekly of various scenarios (uncontrolled release of pressure from rupture, pipe in hole, injury to personnel and medi-vac, use of fire extinguisher, etc) timed, evaluated, post drill meeting held and event recorded to daily report and training drill form? 0.00 / 10.00

REF:

API RP 54. 6.1.3,6.4.6,7.2.8. American Petroleum Institute 59 Recommended Practice for Well Control Operation, Sec 11.3 MMS 250.408 (a) (3) (4)

Criteria:

Personnel should be trained in basic well control, as needed, in relation to their job duties. BOP drills should be conducted under a variety of conditions.

Crew members shall be familiarized with the location of fire control equipment (such as drilling fluid guns, water hoses, and fire extinguishers) and selected personnel trained in the use of such equipment.

(3) The drill shall be carried out during periods of activity selected to minimize the risk of endangering the operation. In each of these drills, the reaction time of participants shall be measured up to the point when the designated person is prepared to activate the closing sequence of the well control system. The total time for the crew to complete its entire drill assignment shall also be measured. This operation shall be recorded on the driller's report as "Well-Control Drill". This operation shall be performed at least once each week (well conditions permitting) with each crew. The drills shall be timed so they will cover a range of different operations which include on-bottom drilling and tripping.

Consequence:

Confusion to procedures leading to catastrophic event.

Recommendation:

Recommend implementing training program per company policy, performing drills and documenting results after review with crew.

3-14-2 Is the S.T.O.P. program being used successfully? 0.00 / 5.00

REF:

Best Industry Practices

Criteria:

The program shall be reviewed during a Management Rig Visit with an Evaluation Checklist.

Consequence:

Not utilizing safety tool leads to greater potential for accidents. Risk. Hazards.

Recommendation:

Recommend implementing S.T.O.P. program per company policy.