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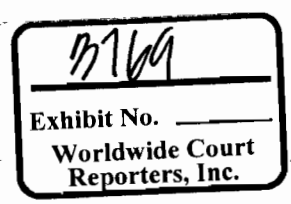

2010 Cementing Reliability Audit

Audit Detail

Audit Type	Country	Region	Primary Audit Location	Actual Audit Location	Auditors	Participants	Audit Start Date	Audit Closeout Date	Country / Operations Manager
Lab	United States	US Gulf Coast	Lafayette, La	Broussard, La	Perry Boudreaux Richard Mcdonald	Tim Quirk Richard Dubois	20-Jan-10	5-Feb-10	Mike Gouner

Numbering System	
12	In evidence and functioning as designed.
9	In evidence and in use but needs improvement.
3	In evidence but not in use as designed.
0	No evidence of being in use and/or in design.

Each question is given a 12,9,3,0, or N/A and then multiplied by a built in weighting factor. N/A answers are not included in the scoring tabulation.

Action Plan
Action items are MANDATORY for each question scored 0 or 3
Action items are preferred for questions scored 9
Action items should be well defined, realistic, fully understood, assigned specifically to the person(s) responsible and accompanied by a reasonable due date.
Action Plan to be finalized within 14 days of Audit close-out date

Audit Report
Audit Report to be finalized within 90 days of Audit close-out date

2010 Cementing Reliability Audit

20-Jan-10

United States **Country**
Lafayette, La **Primary Audit Location**
Broussard, La **Actual Audit Location**

Lab

Topics	Question Number	Question	Actual Score	Weight Factor	Total Weighted Score	Total Possible Score	Evidence/Source/Comments PLEASE NOTE BEST PRACTICES	Notes
0.0 Prior Action Plan	0.10							
0.1 Action Plan Completion		0.1 Have the action items from the last audit been completed? (If this is a first time audit, enter N. If an action plan for the last audit was never created, enter NO.)	**N**	316	316	316		
1.0 Appearance								
	1.01	Is the laboratory orderly and uncluttered?	**12**	3	36	36	Laboratory was found to be in exceptional state of order and uncluttered.	
	1.02	Based on appearance, would you trust test results from this lab?	**12**	3	36	36	Without question.	
	1.03	Would you feel comfortable bringing a customer here?	**12**	3	36	36	Without question - world class facility.	
		SECTION 1	**SUBTOTAL**		**108**	**108**	**100%**	
2.0 General / HSE								
	2.01	Does the Lab have old or obsolete equipment still in operation. (HPHT Consistometer older than 25 years, Atm Consistometer older than 25 years, UCA's older than 15 years.)	**12**	3	36	36	No HPHT Consistometer older than 25 years, Atm Consistometer older than 25 years, or UCA's older than 15 years.	

Lab

	2.02	Is laboratory HSE information available and clearly displayed in prominent locations?	**12**	3	36	36	HSE information clearly displayed throughout interior of lab work area. Sign on outside of lab entrance stating **" Safety Glasses Required Before Entering"**	
	2.03	Are Global Lab Best Practices manuals available either in hard copy or via computer?	**3**	3	9	36	Global Lab Best Practices manuals were available, but not current versions.	
	2.04	Does all laboratory equipment appear functional? If not operable, has LOTO been applied?	**9**	3	27	36	All lab equipment appeared to be functional, except for 1 Autoclave which had a LOTO on the control valve, but the unit had the power cord attached and was functioned on and off. Power cord should be LOTO as well to prevent any use of equipment.	
	2.05	Is a chemical hygiene plan available? Do employees understand the plan?	**12**	3	36	36	A very complete Chemical Hygiene Plan is present, understood, and practiced by all employees.	Check with Jack Gilbert on Hascom covering this as all inclusive.
	2.06	Is PPE. available and being used? Goggles, glasses, rubber aprons, gloves, etc.?	**12**	3	36	36	All required PPE is available and in use.	
	2.07	Are the ventilation hoods in place and operational? (vent velocity at the calibration point should be 80 ft/min to 120 ft/min or 24.38 M/min to 36.57 M/min as per ANSI/AIHA Z9.5-2003, Laboratory Ventilation)	**3**	3	9	36	Three blending stations are in use. One has required ventilation in place and meets ANSI/AIHA Z9.5-2003, Laboratory Ventilation code.	Steve Hill - ANSI/AIHA Z9.5-2003, Laboratory Ventilation. In there, it states that that 100 fpm is the optimal rate. Also, it discusses that 80-120fpm is the range that needs to be achieved for recommended flow rates.
	2.08	Are fire extinguishers readily available and readily located?	**12**	3	36	36	Yes, By exits to Warehouse and Conference Room. Also, by HPHT Consistometer room.	

Lab

	2.09	Are all exits clearly marked?	**12**	3	36	36	Yes, illuminated signs above exit doors.	
	2.10	Are emergency evacuation routes clearly posted?	**12**	3	36	36	Yes	
	2.11	Is an emergency eyewash station available, accessible and operational? If rinse bottles are in use, are they within their expiration date?	**12**	3	36	36	A centrally located emergency eyewash station is available, accessible and operational.	
	2.12	Is an emergency drench shower available, accessible and operational?	**12**	3	36	36	A centrally located emergency drench shower is available, accessible and operational.	
	2.13	Are showers, eyewash, and fire extinguishers clearly labeled with signs and routinely inspected?	**12**	3	36	36	Emergency drench shower - eyewash station and fire extinguishers are all clearly labeled with signs. Fire extinguishers are within expiration dates. All are routinely inspected with documentation provided.	

Lab

	2.14	Are refrigerators marked either "food only" or "chemical storage only"?	**12**	3	36	36	No refrigerator in main lab work area. Refrigerator in kitchen is labeled "food only". No chemicals were found in kitchen refrigerator.	
	2.15	Is all glassware free of chips or breakage?	**9**	3	27	36	2 Free water cylinders were found to have glass chips at base of unit.	
	2.16	Do all liquid containers in excess of 5 gallons have satisfactory secondary containment?	**3**	3	9	36	Two 55 gallon drums are in use and placed in side a somewhat larger metal drum container. One drum captures waste mineral oil and the other captures waste mud. A third rectangular metal tank stores seawater for the testing of SW slurries. The two 55 gall drums do not have adequate secondary containment to prevent a spill, while the salt water tank does not have any secondary containment in place.	
	2.17	Are compressed gas cylinders secured, properly labeled and properly located?	**12**	3	36	36	Yes, an excellent compressed gas cylinder cage and rack in in use. All cylinders are well isolated away from employees and primary work area. **A BEST PRACTICE**	
	2.18	Are Health, Safety and Environmental inspections performed regularly and a record maintained?	**9**	3	27	36	Yes, a weekly lab inspection is performed by assigned lab personnel. Quarterly lab inspections are also performed, but conflicting observations exist between the weekly and quarterly reports. Also, follow-up details with sign off (as "addressed" or "current status") on items which required attention was not found.	Prior assigned HSE representative never performed an audit and present HSE representative made his first on Dec 31, 2009.
		SECTION 2	**SUBTOTAL**		**540**	**648**	**83%**	
3.0 Chemical Samples and Handling								
	3.01	Are chemicals stored in proper containers and properly sealed?	**12**	3	36	36	Yes, All chemicals are stored in proper containers and properly sealed.	

Lab

	3.02	Are there identification labels on all storage containers?	**12**	3	36	36	Yes, Viking prints identification labels that are on all storage containers.	
	3.03	Do cements and additives have specific information on labels (contents, date, batch no., lot no., etc.)? Are labels legible?	**12**	2	24	24	Do cements and additives have specific information on labels (contents, date, batch no., lot no., etc.)? Are labels legible?	
	3.04	Are customer cement blends isolated, properly labeled, logged and stored appropriately in proper containers?	**12**	2	24	24	Yes, customer cement blends are isolated, properly labeled, logged and stored appropriately in proper containers. They are placed on a tiered rack alphabetically.	
	3.05	Is there a documented procedure in place to ensure cement and additive samples are reflective of current Bulk Plant inventory and regularly replenished?	**3**	2	6	24	**Retarders are tracked** - No procedure is in place to ensure that **all** lab cement and additive samples are reflective of current bulk plant or remote field storage location inventories. The Lab does maintain a cement and additive list for all items in their position, but can not be sure if they are reflective of current items inventoried in the GoM. The lab has no way to validate whether chemical additive samples should be held in their inventory or disposed of.	
	3.06	Is a Customer blend/water/cement additive sample log available and up to date?	**12**	2	24	24	Yes, Viking logs all Customer blend/water/cement additive samples.	
	3.07	Are MSDS sheets available and readily accessible for all chemicals in lab? (Select a random list of 10 chemicals in the Lab and request MSDS.)	**12**	3	36	36	Yes, both electronic and hard copy MSDS sheets were available and readily accessible for all chemicals in the lab. This was determined by randomly selecting 10 chemicals and viewing the associated MSDS sheet.	

Lab

	3.08	Are fit-for-purpose fire proof cabinets available and labeled for storage of flammable materials / chemicals?	**0**	2	0	24	No, there is no fit-for-purpose fire proof cabinet available and labeled for storage of flammable materials / chemicals. Fiberglass trays are being used as per previous Sr. HSE Technical Professional and not current Region HSE/OE Manager-GoM.	
	3.09	Is a chemical inventory list available, up to date and utilized to manage inventory?	**9**	1	9	12	Yes, but list only shows container size and not volume on hand.	
	3.10	Are Lab tests and results archived for historical review? Is the archive readily searchable?	**12**	2	24	24	Yes, all lab test results are archived with Viking or CARR and is readily searchable. Hard copy test results are also available.	
	3.11	Is a waste disposal plan documented and in place?	**12**	2	24	24	Yes, a comprehensive waste disposal plan is in place and being used.	
	3.12	Is there a storage area available for corrosive materials?	**9**	3	27	36	Yes, but items are not segregated.	
		SECTION 3	**SUBTOTAL**		**270**	**324**	**83%**	
4.0 Calibration Instruments								
	4.01	Is a functioning certified dry block temperature calibration instrument available? Do lab personnel know how to use it? Is there a regularly scheduled calibration plan?	**12**	3	36	36	Yes, Lab has a Techne Ucal 400+ Dri-Block Calibrator Unit that was certified on 4/7/2009. The unit was demonstrated and found to be within the ± 2 degree variation allowance. Regularly skedaddled calibration plan is in place and being used.	Calibration variance ± 2. The preferred method is the dry block, not the bath. Dennis may expand on this but API will remove the bath method from the future publication. This will also be in the GLBP. SAP part numbers and description have been set up to make or[redacted]easy. RRF

	4.02	Is a HPHT potentiometer calibrator available, functioning and certified? Do lab personnel know how to use it? Is there a regularly scheduled calibration plan?	**9**	3	27	36	Yes, a HPHT potentiometer calibrator is available and was demonstrated. A weekly calibration schedule is being used instead of the required monthly standard requirement. The weights being used to calibrate the potentiometer are not certified independently, but are being validated by weighting on a certified balance scale. Documentation of this process is not being done at this time.	
	4.03	Is there a high pressure calibrator being used to test HTHP Consistometer Vessels, Fluid Loss Cells, UCA's Compressive Strength Autoclaves, etc, or is pressure calibrated by an outside source? Check for current calibration certificates.	**12**	3	36	36	Chandler performs all pressure testing and calibrations on a yearly basis (5/19/2009).	
	4.04	Are visual inspection and pressure tests documented and current for all individual pressure vessels according to Global Lab Best Practices procedure # WM-GL-HES-QM 570.030? (Check tags on Consistometer, fluid loss cells, UCA, compressive strength autoclaves, etc.)	**12**	3	36	36	Yes, Chandler performs all pressure testing and calibrations on a yearly basis (5/19/2009) according to GLBP..	
	4.05	Is a rotational viscometer calibrator available (weights), functioning and certified? Do lab personnel know how to use it? Is there a regularly scheduled calibration plan?	**9**	3	27	36	Yes, a rotational viscometer calibrator is available and was demonstrated. The weights being used to calibrate the rotational viscometer are not certified independently, but are being validated by weighting on a certified balance scale. Documentation of this process is not being done at this time.	
	4.06	Is a Tachometer available, functioning and certified for calibrating rpm? Do lab personnel know how to use it? Is there a regularly scheduled calibration plan?	**12**	3	36	36	A Tachometer is available, functioning, and certified (9/14/2010 next due date) for calibrating rpm. The Tachometer was demonstrated and regularly scheduled calibrations were reviewed.	
	4.07	Are there certified weights available for checking balance(s)? Do lab personnel know how to use them? Are all weights certified as required?	**12**	3	36	36	No, Balances are certified quarterly by Allometrics. Last certified on 11/5/2009.	
	4.08	Is an accurate, certified timer available to check equipment timers/clocks?	**12**	3	36	36	Yes, an accurate, certified timer was demonstrated.	

Lab

		SECTION 4	**SUBTOTAL**		**270**	**288**	**94%**	
5.0 Weights and Measurements								
	5.01	Are the laboratory balances clean from obvious residual material?	**12**	2	24	24	Yes	
	5.02	Is there evidence that the balances are properly calibrated? (Verify the scale will indicate weights on 0.01 gram.)	**12**	2	24	24	Yes, Balances are certified yearly by Allometrics. Re-certification is due on 11/5/2010 on all 6 balances in lab.	
	5.03	Are chemicals and dry additives weighed properly with due care and attention? Are results recorded?	**12**	2	24	24	Yes	
	5.04	Are liquid volumes properly measured using gram weights and with due care and attention? Are results recorded?	**12**	2	24	24	Yes	
	5.05	Are calibration records available for all measuring equipment?	**12**	2	24	24	Yes	
		SECTION 5	**SUBTOTAL**		**120**	**120**	**100%**	
6.0 Lab Management Procedures								
	6.01	Are laboratory testing procedures in place at each work station or available?	**9**	3	27	36	All laboratory testing procedures are available both in hard copy and digital. There is no reference to testing procedures at any work station.	

Lab

	6.02	Is there a documented process in place for the Lab to request Bulk Plant cement/spacer/additives?	**9**	2	18	24	No documented process was observed or presented. Observation was made of email which requested restocking of cements, spacers, and additives.	
	6.03	Are current copies of API Spec 10A (ISO 10426-2), RP10B-2 (ISO 10426-2) and the Cementing Technology Manual available? Are API RP10B-3 through 10B-5 available if specialized testing is performed according to one of these? For international locations, ISO specifications?	**12**	3	36	36	Current copies of all documents were available, except for the Cementing Technology Manual, which was shown to be on line.	
	6.04	Is there an equipment preventative maintenance program in place? Is there clear accountability?	**12**	3	36	36	HTHP Consistometer are on a preventative maintenance program. Oil is changed monthly, filters are changed quarterly, each machine has its own maintenance book with a lab employee assigned to perform the maintenance. All other lab equipment is PM'd by outside third party vendors.	
	6.05	Are the preventative maintenance records available and up to date?	**12**	2	24	24	Yes, calibration records are kept and a dry erase board is utilized to visually track oil and filter routine maintenance changes.	
	6.06	Are laboratory pre-task safety meeting/safety checklist review conducted regularly?	**12**	3	36	36	Yes, daily pre-shift change and weekly crew change.	

	6.07	Are laboratory safety meetings/safety checklist reviews documented/logged with date, attendees, etc?	**9**	3	27	36	Yes, daily pre-shift change and weekly crew change. Inconsistent documentation of attendees and subject matter was observed.	
	6.08	Is lab test data retained for 3 years?	**12**	2	24	24	Yes, a comprehensive database is kept through Viking and Carr dating back to 2002.	
	6.09	Are thickening times, viscosity and temperature monitored and recorded?	**12**	2	24	24	Yes, Viking	
		SECTION 6	**SUBTOTAL**		**252**	**276**	**91%**	
7.0 Employee Competency								
	7.01	Have laboratory personnel received the appropriate, current safety training?	**9**	3	27	36	99.7% Compliant	
	7.02	Have laboratory personnel received fundamental training in equipment operation? (Check training logs, certificates, etc.)	**12**	3	36	36	Yes, 100% compliance.	
	7.03	Have laboratory personnel received fundamental training in chemical hygiene? (Check training logs, certificates, etc.)	**12**	3	36	36	Yes, 100% compliance.	

	7.04	Is adequate evidence of personnel training available in the form of records, certificates, etc.?	12	2	24	24	Yes, 100% compliance.	
		SECTION 7	**SUBTOTAL**		**123**	**132**	**93%**	
8.0 Slurry Preparation								
	8.01	Are slurry cups clean from obvious residual material and undamaged?	12	2	24	24	Yes	
	8.02	Is the cement mixing blender equipped with an automatic timer?	12	2	24	24	Yes, Fann Constant Speed Mixer (part # 101656308)	
	8.03	Is the cement mixing blender equipped with an operating tachometer to measure rpm?	12	2	24	24	Yes	
	8.04	Are blender blades within allowable 10% worn condition?	12	2	24	24	Yes, Blender is disassembled weekly and blade are changed out along with PM inspection. A local process was initiated where-by new blender blades are coated with a Tungsten Carbine Powder through high velocity spray injection. This process dramatically extends the useful life of the blender blades. **A BEST PRACTICE**	
	8.05	Is the blending container clean and free from obvious residual material?	12	2	24	24	Yes	

Lab

	8.06	Are all neat cements received for API specification testing sieved through a 20 mesh prior to conducting the tests?	**12**	2	24	24	Yes, every two years as required by API.	API requires manufacturer co-op testing every 2 years. API sends test kits to labs when this testing is needed.
	8.07	Is there a 3 inch diameter 20 mesh sieve available for sieving slurries with large particles when necessary (lost circulation, binding, etc. materials - not for every test)?	**12**	2	24	24	Yes	
	8.08	Are calibration records for the cement mixing blender available?	**12**	2	24	24	Yes	
	8.09	Was a satisfactory slurry preparation procedure demonstrated?	**12**	4	48	48	Lab technician satisfactorily prepared slurry following procedure without exception, taking extra time to make sure auditors witnessed each process step.	
		SECTION 8	**SUBTOTAL**		**240**	**240**	**100%**	
9.0 Fluid Loss and Free Fluid Testing								
	9.01	Are fluid loss filter screens clean with approximately 95% surface area unblocked and in overall good condition?	**12**	2	24	24	Yes	
	9.02	Are slurries for fluid loss testing properly preconditioned as per the current API RP10B-2, Section 10?	**12**	2	24	24	Yes <190° - Use Atmospheric Consistometer - certifying temperature of AC oil bath with certified thermometer - no documentation of this certification process. >190° to 450° - Use Chandler 7120 Stirring Fluid Loss Cell	May use HPHT Consistometer for >190° to 450° testing requirements. Condition on schedule +20min cool down.
	9.03	Are slurries for free fluid testing properly preconditioned as per the current API RP10B-2, Section 15?	**12**	2	24	24	Yes <190° - Use Atmospheric Consistometer - certifying temperature of AC oil bath with certified thermometer - no documentation of this certification process. >190° to 450° - Use Chandler 7120 Stirring Fluid Loss Cell	May use HPHT Consistometer for >190° to 450° testing requirements. Condition on schedule +20min cool down.

Lab

	9.04	Is the ratio of the slurry-filled length to inside tube diameter of a 250 ml graduated cylinder used for operating free fluid testing greater than 6:1 and less than 8:1 (API RP 10B-2, Section 15/ISO 10426-2, in the section on "Well-simulation Slurry Stability Tests")	**12**	2	24	24	Yes	
	9.05	Is the free fluid test for Class G and H specification testing performed in a 500 ml conical flask as per API Spec 10A, Section 8? If specification testing is performed in the lab, it should also have the proper conical flask.	**12**	2	24	24	Yes	
	9.06	Is the fluid loss screen installed properly? The 325 mesh side should go to the inside of the cell toward the cement. If a perforated plate is used, the bottom cap must have flow grooves in it. Inspect the screen to verify it is the 325 mesh or the 600 mesh that is only used for MicroMatrix Cements. A person can see through the 325 mesh and the 600 mesh does not have visible openings.	**12**	2	24	24	Yes	
	9.07	Are stirring fluid loss cell thermocouples placed into the cell wall in accordance with API RP 10B-2.2? If the thermocouple is in the heating jacket, the cell should be modified by Fann to accept the thermocouple or a replacement ordered.	**12**	2	24	24	Yes	Some older Halliburton stirring fluid loss cells had the thermocouple in the heating jacket which does not give an accurate measure of temperature in the cell.
	9.08	Can free fluid tests be performed at an angle, in addition to vertically?	**12**	2	24	24	Yes	See revision :4.2.1 PDF / Free Fluid Testing for Actual Cementing Job / Procedure No.: WM-GL-HES-QM-420.080
	9.09	Does the lab multiply the actual filtrate value according to API procedures for the high pressure cell as described in API RP10B-2, Section 10 when calculating the API fluid loss value? i.e. If test goes 30 minutes multiply value X 2 if test runs shorter than 30 minutes the calculated value = (collected volume at dehydration) x (10.944/ SQRT of time at dehydration)	**12**	2	24	24	Yes	

Lab

	9.10	For slurries tested in a Stirring Fluid Loss Cell with required temperatures exceeding 190°, is a back pressure filtrate collection device used instead of a condenser system?	**12**	2	24	24	Yes	
		SECTION 9	**SUBTOTAL**		**240**	**240**	**100%**	
10.0 Crush Compressive Strengths								
	10.01	Is a functioning press available for determining crush strengths? Does the press have a swivel bearing plate attached to the top platen?	**12**	2	24	24	Yes	
	10.02	Is the press calibrated every 2 years as required by API?	**12**	2	24	24	Yes	
	10.03	Are cube molds and UCA strengths puddled to remove air entrainment as per API?	**12**	2	24	24	Yes	
	10.04	Is a 2 ramp temperature schedule used for curing the cube molds or UCA under pressure as required by API?	**12**	2	24	24	Yes 2 Ramp Temperature Schedule - API 4 hour 0 to CT (150) takes 37 mins CT to ST (200) takes 203 mins to total API 4 hr requirement standard	

Lab

	10.05	When crush strengths are determined on cylinders, is the ASTM L/D factor contained in Procedure 420.030 of GLBP Manual 4 used?	**12**	2	24	24	Yes	Better crush strengths are achieved on cube crush than on UCA due to larger surface area. UCA "sonic strength" is valid just not as precise. UCA provides time to 500 psi , 12/24 hour results and 50 psi (set time).
	10.07	Are there enough cube molds available?	**12**	2	24	24	Yes	
	10.08	Are the cube molds clean and undamaged?	**12**	2	24	24	Yes	
	10.09	Is the cube size measured and used to calculate crush strength?	**12**	2	24	24	Yes	
	10.10	Are cube molds and UCA chambers coated with light coats of release agents (grease)?	**12**	2	24	24	Yes	
	10.11	Is the load applied to crush specimen according to API RP 10B-2, Section 7.5.6 /ISO 10426-2 specifications?	**12**	2	24	24	Yes	
		SECTION 10	**SUBTOTAL**		**240**	**240**	**100%**	

Lab

11. Thickening Time Testing								
	11.01	Is the slurry cup used for HPHT thickening time tests filled with the slurry cup inverted as per API RP 10B-2, Section 9.4.2?	**12**	2	24	24	Yes	
	11.02	Are covers over the electrical contact pins that go through the side of the pressure chamber?	**12**	2	24	24	Yes	
	11.03	Is the slurry cup (or can) kept upright when removed from the high pressure Stirring Fluid Loss Cell or HPHT Consistometer and opened after being conditioned for pouring into another test apparatus?	**12**	2	24	24	Yes	This relates to slurry cups when preconditioning slurries for use in other test devices. If the cup, or can, as it is often called, is inverted a normal for disassembly, any mineral oil on top of the can will percolate through the slurry, contaminating it.
	11.04	Is the thickening time test started within 5 minutes (± 15 sec) after cessation of mixing the slurry according to API/ISO?	**9**	2	18	24	Lab technician satisfactorily prepared slurry following procedure without exception, taking extra time to make sure auditors witnessed each process step. Technician, did not however, complete the entire slurry preparation within API requirements of 5 minutes (± 15 sec) from start of slurry preparation to start of actual Thickening Time test on HPHT Consistometer. (5:45)	
	11.05	Are new style potentiometers for the UNIPRO II and iPRO Consistometer kept with a specific Consistometer?	**12**	2	24	24	Yes	All "new style" potentiometers are calibrated to a specific HPHT Consistometer. Potentiometers for old style manual Consistometer could be calibrated away from the machine using a specially built device.
		SECTION 11	**SUBTOTAL**		**114**	**120**	**95%**	

Lab

12. Rheology								
	12.01	Is there a heated cup to determine the rheological properties at temperatures up to 194°F? If so, is cup temperature set at conditioning temperature?	**12**	2	24	24	Yes	
	12.02	For Rheological testing, is the preferred API/ISO method of: Precondition slurry by ramping up to BHCT according to a schedule as opposed to placing the slurry in a preheated cup and stirring for 20-30 minutes being utilized?	**12**	2	24	24	Yes, the preferred method of preconditioning slurry and ramping to BHCT according to schedule is being used.	Some additives (especially polymers) may experience 'thermal shock' and not perform the same as they would when the temperature is ramped up. This is discussed in API/ISO.
	12.03	Is a working Viscometer available for fluid Rheology (PV/YP & Gel strength)? Does the viscometer meet minimum requirement of 6 separate speeds (3-600 RPM)?	**12**	2	24	24	Yes	
		SECTION 12	**SUBTOTAL**		**72**	**72**	**100%**	

TOTAL AUDIT SCORE	**2589**	**2808**	**92%**

2010 Cementing Reliability Audit

United States	Country
Lafayette, La	Primary Audit Location
Broussard, La	Actual Audit Location

Laboratory Broussard, La	Score (%)
1.0 Appearance	100%
2.0 General / HSE	83%
3.0 Chemical Samples and Handling	83%
4.0 Calibration Instruments	94%
5.0 Weights and Measurements	100%
6.0 Lab Management Procedures	91%

Laboratory Broussard, La	Score (%)
7.0 Employee Competency	93%
8.0 Slurry Preparation	100%
9.0 Fluid Loss and Free Fluid Testing	100%
10. Crush Compressive Strengths	100%
11. Thickening Time Testing	95%
12. Rheology	100%

Overall Total Score 92%

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2010 Cementing Reliability Audit

20-Jan-10	**Audit Start Date**
5-Feb-10	**Audit Closeout Date**
United States	**Country**
Lafayette, La	**Primary Audit Location**
Broussard, La	**Actual Audit Location**

Lab

Topic	Question Number	Question	Score	Evidence - Source - Comment	Global Cementing Service Standard	Corrective Action Plan To Close Gap	Corrective Action Plan To Close Gap	Responsible Person(s)	Audit Close Out Date	Due Date	Date Comp	Status	Notes
1.0 Appearance	1.01	Is the laboratory orderly and uncluttered?	**12**	Laboratory was found to be in exceptional state of order and uncluttered.			N/A		5-Feb-10	06-May-10	5-Feb-10	Closed	
1.0 Appearance	1.02	Based on appearance, would you trust test results from this lab?	**12**	Without question.			N/A		5-Feb-10	06-May-10	5-Feb-10	Closed	
1.0 Appearance	1.03	Would you feel comfortable bringing a customer here?	**12**	Without question - world class facility.			N/A		5-Feb-10	06-May-10	5-Feb-10	Closed	
2.0 General / HSE	2.01	Does the Lab have old or obsolete equipment still in operation. (HPHT Consistometer older than 25 years, Atm Consistometer older than 25 years, UCA's older than 15 years.)	**12**	No HPHT Consistometer older than 25 years, Atm Consistometer older than 25 years, or UCA's older than 15 years.			N/A		5-Feb-10	06-May-10	5-Feb-10	Closed	
2.0 General / HSE	2.02	Is laboratory HSE information available and clearly displayed in prominent locations?	**12**	HSE information clearly displayed throughout interior of lab work area. Sign on outside of lab entrance stating " Safety Glasses Required Before Entering"			N/A		5-Feb-10	06-May-10	5-Feb-10	Closed	
2.0 General / HSE	2.03	Are Global Lab Best Practices manuals available either in hard copy or via computer?	**3**	Global Lab Best Practices manuals were available, but not current versions.		Update GLBP Manual to current version.	Update GLBP to current version	Completed	5-Feb-10	06-May-10	14-Apr-10	Closed	
2.0 General / HSE	2.04	Does all laboratory equipment appear functional? If not operable, has LOTO been applied?	**9**	All lab equipment appeared to be functional, except for 1 Autoclave which had a LOTO on the control valve, but the unit had the power cord attached and was functioned on and off. Power cord should be LOTO as well to prevent any use of equipment.		Disconnect electrical cord and stow or unplug and cap off with a LOTO over plug.	Disconnect electricial cord and stow or unplug and cap off with LOTO over plug.	Completed	5-Feb-10	06-May-10	14-Apr-10	Closed	
2.0 General / HSE	2.05	Is a chemical hygiene plan available? Do employees understand the plan?	**12**	A very complete Chemical Hygiene Plan is present, understood, and practiced by all employees.					5-Feb-10	06-May-10	5-Feb-10	Closed	
2.0 General / HSE	2.06	Is PPE. available and being used? Goggles, glasses, rubber aprons, gloves, etc.?	**12**	All required PPE is available and in use.					5-Feb-10	06-May-10	5-Feb-10	Closed	

Lab

Topic	Question Number	Question	Score	Evidence - Source - Comment	Global Cementing Service Standard	Corrective Action Plan To Close Gap	Corrective Action Plan To Close Gap	Responsible Person(s)	Audit Close Out Date	Due Date	Date Comp	Status	Notes
2.0 General / HSE	2.07	Are the ventilation hoods in place and operational? (vent velocity at the calibration point should be 80 ft/min to 120 ft/min or 24.38 M/min to 36.57 M/min as per ANSI/AIHA Z9.5-2003, Laboratory Ventilation)	**3**	Three blending stations are in use. One has required ventilation in place and meets ANSI/AIHA Z9.5-2003, Laboratory Ventilation code.		Install appropriate ventilation at all blending stations.	Install appropriate ventilation at all blending stations.	Tim Quirk	5-Feb-10	06-May-10		Open	
2.0 General / HSE	2.08	Are fire extinguishers readily available and readily located?	**12**	Yes, By exits to Warehouse and Conference Room. Also, by HPHT Consistometer room.					5-Feb-10	06-May-10	5-Feb-10	Closed	
2.0 General / HSE	2.09	Are all exits clearly marked?	**12**	Yes, illuminated signs above exit doors.					5-Feb-10	06-May-10	5-Feb-10	Closed	
2.0 General / HSE	2.10	Are emergency evacuation routes clearly posted?	**12**	Yes					5-Feb-10	06-May-10	5-Feb-10	Closed	
2.0 General / HSE	2.11	Is an emergency eyewash station available, accessible and operational? If rinse bottles are in use, are they within their expiration date?	**12**	A centrally located emergency eyewash station is available, accessible and operational.					5-Feb-10	06-May-10	5-Feb-10	Closed	
2.0 General / HSE	2.12	Is an emergency drench shower available, accessible and operational?	**12**	A centrally located emergency drench shower is available, accessible and operational.					5-Feb-10	06-May-10	5-Feb-10	Closed	
2.0 General / HSE	2.13	Are showers, eyewash, and fire extinguishers clearly labeled with signs and routinely inspected?	**12**	Emergency drench shower - eyewash station and fire extinguishers are all clearly labeled with signs. Fire extinguishers are within expiration dates. All are routinely inspected with documentation provided.					5-Feb-10	06-May-10	5-Feb-10	Closed	
2.0 General / HSE	2.14	Are refrigerators marked either "food only" or "chemical storage only"?	**12**	No refrigerator in main lab work area. Refrigerator in kitchen is labeled "food only". No chemicals were found in kitchen refrigerator.					5-Feb-10	06-May-10	5-Feb-10	Closed	
2.0 General / HSE	2.15	Is all glassware free of chips or breakage?	**9**	2 Free water cylinders were found to have glass chips at base of unit.		Replace all glassware with chips or cracks.	Replace all glassware with chips or cracks	Completed	5-Feb-10	06-May-10	14-Apr-10	Closed	
2.0 General / HSE	2.16	Do all liquid containers in excess of 5 gallons have satisfactory secondary containment?	**3**	Two 55 gallon drums are in use and placed in side a somewhat larger metal drum container. One drum captures waste mineral oil and the other captures waste mud. A third rectangular metal tank stores seawater for the testing of SW slurries. The two 55 gall drums do not have adequate secondary containment to prevent a spill, while the salt water tank does not have any secondary containment in place.		Install expanded secondary containment around all containers larger than 5 gallons.	Install expanded secondary containment around all containers larger than 5 gallons.	Richard Dubois	5-Feb-10	06-May-10		Open	

Lab

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2.0 General / HSE	2.17	Are compressed gas cylinders secured, properly labeled and properly located?	**12**	Yes, an excellent compressed gas cylinder cage and rack in in use. All cylinders are well isolated away from employees and primary work area. A BEST PRACTICE					5-Feb-10	06-May-10	5-Feb-10	Closed	
2.0 General / HSE	2.18	Are Health, Safety and Environmental inspections performed regularly and a record maintained?	**9**	Yes, a weekly lab inspection is performed by assigned lab personnel. Quarterly lab inspections are also performed, but conflicting observations exist between the weekly and quarterly reports. Also, follow-up details with sign off (as "addressed" or "current status") on items which required attention was not found.		Review prior inspections for items which were observed and in need of correction. Add additional space on form to sign off action taken to remendy any concern or need. Sign and date as complete or ongoing status. Review with team.	Review prior inspections for items which were observed and in need of correction. Add additional space on form to sign off action taken to remendy any concern or need. Sign and date as complete or ongoing status. Review with team.	Completed	5-Feb-10	06-May-10	14-Apr-10	Closed	
3.0 Chemical Samples and Handling	3.01	Are chemicals stored in proper containers and properly sealed?	**12**	Yes, All chemicals are stored in proper containers and properly sealed.					5-Feb-10	06-May-10	5-Feb-10	Closed	
3.0 Chemical Samples and Handling	3.02	Are there identification labels on all storage containers?	**12**	Yes, Viking prints identification labels that are on all storage containers.					5-Feb-10	06-May-10	5-Feb-10	Closed	
3.0 Chemical Samples and Handling	3.03	Do cements and additives have specific information on labels (contents, date, batch no., lot no., etc.)? Are labels legible?	**12**	Do cements and additives have specific information on labels (contents, date, batch no., lot no., etc.)? Are labels legible?					5-Feb-10	06-May-10	5-Feb-10	Closed	
3.0 Chemical Samples and Handling	3.04	Are customer cement blends isolated, properly labeled, logged and stored appropriately in proper containers?	**12**	Yes, customer cement blends are isolated, properly labeled, logged and stored appropriately in proper containers. They are placed on a tiered rack alphabetically.					5-Feb-10	06-May-10	5-Feb-10	Closed	
3.0 Chemical Samples and Handling	3.05	Is there a documented procedure in place to ensure cement and additive samples are reflective of current Bulk Plant inventory and regularly replenished?	**3**	Retarders are tracked - No procedure is in place to ensure that all lab cement and additive samples are reflective of current bulk plant or remote field storage location inventories. The Lab does maintain a cement and additive list for all items in their position, but can not be sure if they are reflective of current items inventoried in the GoM. The lab has no way to validate whether chemical additive samples should be held in their inventory or disposed of.		Design comprehensive process to ensure that all lab cement and additive samples are reflective of current GoM materials utilized in lab.	Design comprehensive process to ensure that all lab cement and additive samples are reflective of current GoM materials utilized in lab.	Tim Quirk, Richard Dubois, Mike Serio and Tech Team	5-Feb-10	06-May-10		Open	
3.0 Chemical Samples and Handling	3.06	Is a Customer blend/water/cement additive sample log available and up to date?	**12**	Yes, Viking logs all Customer blend/water/cement additive samples.					5-Feb-10	06-May-10	5-Feb-10	Closed	
3.0 Chemical Samples and Handling	3.07	Are MSDS sheets available and readily accessible for all chemicals in lab? (Select a random list of 10 chemicals in the Lab and request MSDS.)	**12**	Yes, both electronic and hard copy MSDS sheets were available and readily accessible for all chemicals in the lab. This was determined by randomly selecting 10 chemicals and viewing the associated MSDS sheet.					5-Feb-10	06-May-10	5-Feb-10	Closed	
3.0 Chemical Samples and Handling	3.08	Are fit-for-purpose fire proof cabinets available and labeled for storage of flammable materials / chemicals?	**0**	No, there is no fit-for-purpose fire proof cabinet available and labeled for storage of flammable materials / chemicals. Fiberglass trays are being used as per previous Sr. HSE Technical Professional and not current Region HSE/OE Manager-GoM.		Order, install, and use appropriate fire proof cabinet.	Order, install, and use appropriate fire proof cabinet.	Richard Dubois	5-Feb-10	06-May-10		Open	

Lab

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3.0 Chemical Samples and Handling	3.09	Is a chemical inventory list available, up to date and utilized to manage inventory?	**9**	Yes, but list only shows container size and not volume on hand.		Add volume readings as part of assigned daily volume check of all chemical in lab. Track and measure…document process.	Add volume readings as part of assigned daily volume check of all chemical in lab. Track and measure…document process.	Kenny Miller	5-Feb-10	06-May-10		Open	
3.0 Chemical Samples and Handling	3.10	Are Lab tests and results archived for historical review? Is the archive readily searchable?	**12**	Yes, all lab test results are archived with Viking or CARR and is readily searchable. Hard copy test results are also available.					5-Feb-10	06-May-10	5-Feb-10	Closed	
3.0 Chemical Samples and Handling	3.11	Is a waste disposal plan documented and in place?	**12**	Yes, a comprehensive waste disposal plan is in place and being used.					5-Feb-10	06-May-10	5-Feb-10	Closed	
3.0 Chemical Samples and Handling	3.12	Is there a storage area available for corrosive materials?	**9**	Yes, but items are not segregated.		Segregate corrosive materials.	Segregate corrosive materials.	Richard Dubois	5-Feb-10	06-May-10		Open	
4.0 Calibration Instruments	4.01	Is a functioning certified dry block temperature calibration instrument available? Do lab personnel know how to use it? Is there a regularly scheduled calibration plan?	**12**	Yes, Lab has a Techne Ucal 400+ Dri-Block Calibrator Unit that was certified on 4/7/2009. The unit was demonstrated and found to be within the ± 2 degree variation allowance. Regularly skedaddled calibration plan is in place and being used.					5-Feb-10	06-May-10	5-Feb-10	Closed	
4.0 Calibration Instruments	4.02	Is a HPHT potentiometer calibrator available, functioning and certified? Do lab personnel know how to use it? Is there a regularly scheduled calibration plan?	**9**	Yes, a HPHT potentiometer calibrator is available and was demonstrated. A weekly calibration schedule is being used instead of the required monthly standard requirement. The weights being used to calibrate the potentiometer are not certified independently, but are being validated by weighting on a certified balance scale. Documentation of this process is not being done at this time.		Document process to verify that the balance scale has been certified and is used to certify all other weights used to calibrate additional lab equipment.	Document process to verify that the balance scale has been certified and is used to certify all other weights used to calibrate additional lab equipment.	Tim Quirk	5-Feb-10	06-May-10		Open	
4.0 Calibration Instruments	4.03	Is there a high pressure calibrator being used to test HTHP Consistometer Vessels, Fluid Loss Cells, UCA's Compressive Strength Autoclaves, etc, or is pressure calibrated by an outside source? Check for current calibration certificates.	**12**	Chandler performs all pressure testing and calibrations on a yearly basis (5/19/2009).					5-Feb-10	06-May-10	5-Feb-10	Closed	
4.0 Calibration Instruments	4.04	Are visual inspection and pressure tests documented and current for all individual pressure vessels according to Global Lab Best Practices procedure # WM-GL-HES-QM 570.030? (Check tags on Consistometer, fluid loss cells, UCA, compressive strength autoclaves, etc.)	**12**	Yes, Chandler performs all pressure testing and calibrations on a yearly basis (5/19/2009) according to GLBP..					5-Feb-10	06-May-10	5-Feb-10	Closed	
4.0 Calibration Instruments	4.05	Is a rotational viscometer calibrator available (weights), functioning and certified? Do lab personnel know how to use it? Is there a regularly scheduled calibration plan?	**9**	Yes, a rotational viscometer calibrator is available and was demonstrated. The weights being used to calibrate the rotational viscometer are not certified independently, but are being validated by weighting on a certified balance scale. Documentation of this process is not being done at this time.		Document process to verify that the balance scale has been certified and is used to certify all other weights used to calibrate additional lab equipment.	Document process to verify that the balance scale has been certified and is used to certify all other weights used to calibrate additional lab equipment.	Tim Quirk	5-Feb-10	06-May-10		Open	
4.0 Calibration Instruments	4.06	Is a Tachometer available, functioning and certified for calibrating rpm? Do lab personnel know how to use it? Is there a regularly scheduled calibration plan?	**12**	A Tachometer is available, functioning, and certified (9/14/2010 next due date) for calibrating rpm. The Tachometer was demonstrated and regularly scheduled calibrations were reviewed.					5-Feb-10	06-May-10	5-Feb-10	Closed	

Lab

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4.0 Calibration Instruments	4.07	Are there certified weights available for checking balance(s)? Do lab personnel know how to use them? Are all weights certified as required?	**12**	No, Balances are certified quarterly by Allometrics. Last certified on 11/5/2009.					5-Feb-10	06-May-10	5-Feb-10	Closed	
4.0 Calibration Instruments	4.08	Is an accurate, certified timer available to check equipment timers/clocks?	**12**	Yes, an accurate, certified timer was demonstrated.					5-Feb-10	06-May-10	5-Feb-10	Closed	
5.0 Weights and Measurements	5.01	Are the laboratory balances clean from obvious residual material?	**12**	Yes					5-Feb-10	06-May-10	5-Feb-10	Closed	
5.0 Weights and Measurements	5.02	Is there evidence that the balances are properly calibrated? (Verify the scale will indicate weights on 0.01 gram.)	**12**	Yes, Balances are certified yearly by Allometrics. Re-certification is due on 11/5/2010 on all 6 balances in lab.					5-Feb-10	06-May-10	5-Feb-10	Closed	
5.0 Weights and Measurements	5.03	Are chemicals and dry additives weighed properly with due care and attention? Are results recorded?	**12**	Yes					5-Feb-10	06-May-10	5-Feb-10	Closed	
5.0 Weights and Measurements	5.04	Are liquid volumes properly measured using gram weights and with due care and attention? Are results recorded?	**12**	Yes					5-Feb-10	06-May-10	5-Feb-10	Closed	
5.0 Weights and Measurements	5.05	Are calibration records available for all measuring equipment?	**12**	Yes					5-Feb-10	06-May-10	5-Feb-10	Closed	
6.0 Lab Management Procedures	6.01	Are laboratory testing procedures in place at each work station or available?	**9**	All laboratory testing procedures are available both in hard copy and digital. There is no reference to testing procedures at any work station.		Create and stage relitive information at work stations to help employee refocus (pre-task) in order to ready themselves for executing work process methods.	Create and stage relitive information at work stations to help employee refocus (pre-task) in order to ready themselves for executing work process methods.	Tim Quirk	5-Feb-10	06-May-10		Open	
6.0 Lab Management Procedures	6.02	Is there a documented process in place for the Lab to request Bulk Plant cement/spacer/additives?	**9**	No documented process was observed or presented. Observation was made of email which requested restocking of cements, spacers, and additives.		Document and formalize a process to request bulk plant items.	Document and formalize a process to request bulk plant items.	Kenny Miller	5-Feb-10	06-May-10		Open	
6.0 Lab Management Procedures	6.03	Are current copies of API Spec 10A (ISO 10426-2), RP10B-2 (ISO 10426-2) and the Cementing Technology Manual available? Are API RP10B-3 through 10B-5 available if specialized testing is performed according to one of these? For international locations, ISO specifications?	**12**	Current copies of all documents were available, except for the Cementing Technology Manual, which was shown to be on line.		Update documents to current versions	Update documents to current versions	Audit correction. Manuals were available at time of audit.	5-Feb-10	06-May-10	5-Feb-10	Closed	

Lab

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6.0 Lab Management Procedures	6.04	Is there an equipment preventative maintenance program in place? Is there clear accountability?	**12**	HTHP Consistometer are on a preventative maintenance program. Oil is changed monthly, filters are changed quarterly, each machine has its own maintenance book with a lab employee assigned to perform the maintenance. All other lab equipment is PM'd by outside third party vendors.		Create an individual preventative maintence task list for all appropriate lab equipment. Reference equipment user guide as a source for guidance.	Create an individual preventative maintence task list for all appropriate lab equipment. Reference equipment user guide as a source for guidance.		5-Feb-10	06-May-10	5-Feb-10	Closed	
6.0 Lab Management Procedures	6.05	Are the preventative maintenance records available and up to date?	**12**	Yes, calibration records are kept and a dry erase board is utilized to visually track oil and filter routine maintenance changes.					5-Feb-10	06-May-10	5-Feb-10	Closed	
6.0 Lab Management Procedures	6.06	Are laboratory pre-task safety meeting/safety checklist review conducted regularly?	**12**	Yes, daily pre-shift change and weekly crew change.					5-Feb-10	06-May-10	5-Feb-10	Closed	
6.0 Lab Management Procedures	6.07	Are laboratory safety meetings/safety checklist reviews documented/logged with date, attendees, etc?	**9**	Yes, daily pre-shift change and weekly crew change. Inconsistent documentation of attendees and subject matter was observed.		Document all attendees and subject matter.	Document all attendees and subject matter.	Completed	5-Feb-10	06-May-10	14-Apr-10	Closed	
6.0 Lab Management Procedures	6.08	Is lab test data retained for 3 years?	**12**	Yes, a comprehensive database is kept through Viking and Carr dating back to 2002.					5-Feb-10	06-May-10	5-Feb-10	Closed	
6.0 Lab Management Procedures	6.09	Are thickening times, viscosity and temperature monitored and recorded?	**12**	Yes, Viking					5-Feb-10	06-May-10	5-Feb-10	Closed	
7.0 Employee Competency	7.01	Have laboratory personnel received the appropriate, current safety training?	**9**	99.7% Compliant		Review employee training compliance weekly. Support and encourge employees to remain current with all required training.	Review employee training compliance weekly. Support and encourge employees to remain current with all required training.	Completed	5-Feb-10	06-May-10	14-Apr-10	Closed	
7.0 Employee Competency	7.02	Have laboratory personnel received fundamental training in equipment operation? (Check training logs, certificates, etc.)	**12**	Yes, 100% compliance.					5-Feb-10	06-May-10	5-Feb-10	Closed	
7.0 Employee Competency	7.03	Have laboratory personnel received fundamental training in chemical hygiene? (Check training logs, certificates, etc.)	**12**	Yes, 100% compliance.					5-Feb-10	06-May-10	5-Feb-10	Closed	
7.0 Employee Competency	7.04	Is adequate evidence of personnel training available in the form of records, certificates, etc.?	**12**	Yes, 100% compliance.					5-Feb-10	06-May-10	5-Feb-10	Closed	

Lab

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8.0 Slurry Preparation	8.01	Are slurry cups clean from obvious residual material and undamaged?	**12**	Yes					5-Feb-10	06-May-10	5-Feb-10	Closed	
8.0 Slurry Preparation	8.02	Is the cement mixing blender equipped with an automatic timer?	**12**	Yes, Fann Constant Speed Mixer (part # 101656308)					5-Feb-10	06-May-10	5-Feb-10	Closed	
8.0 Slurry Preparation	8.03	Is the cement mixing blender equipped with an operating tachometer to measure rpm?	**12**	Yes					5-Feb-10	06-May-10	5-Feb-10	Closed	
8.0 Slurry Preparation	8.04	Are blender blades within allowable 10% worn condition?	**12**	Yes, Blender is disassembled weekly and blade are changed out along with PM inspection. A local process was initiated where-by new blender blades are coated with a Tungsten Carbine Powder through high velocity spray injection. This process dramatically extends the useful life of the blender blades. A BEST PRACTICE					5-Feb-10	06-May-10	5-Feb-10	Closed	
8.0 Slurry Preparation	8.05	Is the blending container clean and free from obvious residual material?	**12**	Yes					5-Feb-10	06-May-10	5-Feb-10	Closed	
8.0 Slurry Preparation	8.06	Are all neat cements received for API specification testing sieved through a 20 mesh prior to conducting the tests?	**12**	Yes, every two years as required by API.					5-Feb-10	06-May-10	5-Feb-10	Closed	
8.0 Slurry Preparation	8.07	Is there a 3 inch diameter 20 mesh sieve available for sieving slurries with large particles when necessary (lost circulation, binding, etc. materials - not for every test)?	**12**	Yes					5-Feb-10	06-May-10	5-Feb-10	Closed	
8.0 Slurry Preparation	8.08	Are calibration records for the cement mixing blender available?	**12**	Yes					5-Feb-10	06-May-10	5-Feb-10	Closed	
8.0 Slurry Preparation	8.09	Was a satisfactory slurry preparation procedure demonstrated?	**12**	Lab technician satisfactorily prepared slurry following procedure without exception, taking extra time to make sure auditors witnessed each process step.					5-Feb-10	06-May-10	5-Feb-10	Closed	
9.0 Fluid Loss and Free Fluid Testing	9.01	Are fluid loss filter screens clean with approximately 95% surface area unblocked and in overall good condition?	**12**	Yes					5-Feb-10	06-May-10	5-Feb-10	Closed	

Lab

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9.0 Fluid Loss and Free Fluid Testing	9.02	Are slurries for fluid loss testing properly preconditioned as per the current API RP10B-2, Section 10?	**12**	Yes <190° - Use Atmospheric Consistometer - certifying temperature of AC oil bath with certified thermometer - no documentation of this certification process. >190° to 450° - Use Chandler 7120 Stirring Fluid Loss Cell					5-Feb-10	06-May-10	5-Feb-10	Closed	
9.0 Fluid Loss and Free Fluid Testing	9.03	Are slurries for free fluid testing properly preconditioned as per the current API RP10B-2, Section 15?	**12**	Yes <190° - Use Atmospheric Consistometer - certifying temperature of AC oil bath with certified thermometer - no documentation of this certification process. >190° to 450° - Use Chandler 7120 Stirring Fluid Loss Cell					5-Feb-10	06-May-10	5-Feb-10	Closed	
9.0 Fluid Loss and Free Fluid Testing	9.04	Is the ratio of the slurry-filled length to inside tube diameter of a 250 ml graduated cylinder used for operating free fluid testing greater than 6:1 and less than 8:1 (API RP 10B-2, Section 15/ISO 10426-2, in the section on "Well-simulation Slurry Stability Tests")	**12**	Yes					5-Feb-10	06-May-10	5-Feb-10	Closed	
9.0 Fluid Loss and Free Fluid Testing	9.05	Is the free fluid test for Class G and H specification testing performed in a 500 ml conical flask as per API Spec 10A, Section 8? If specification testing is performed in the lab, it should also have the proper conical flask.	**12**	Yes					5-Feb-10	06-May-10	5-Feb-10	Closed	
9.0 Fluid Loss and Free Fluid Testing	9.06	Is the fluid loss screen installed properly? The 325 mesh side should go to the inside of the cell toward the cement. If a perforated plate is used, the bottom cap must have flow grooves in it. Inspect the screen to verify it is the 325 mesh or the 600 mesh that is only used for MicroMatrix Cements. A person can see through the 325 mesh and the 600 mesh does not have visible openings.	**12**	Yes					5-Feb-10	06-May-10	5-Feb-10	Closed	
9.0 Fluid Loss and Free Fluid Testing	9.07	Are stirring fluid loss cell thermocouples placed into the cell wall in accordance with API RP 10B-2.2? If the thermocouple is in the heating jacket, the cell should be modified by Fann to accept the thermocouple or a replacement ordered.	**12**	Yes					5-Feb-10	06-May-10	5-Feb-10	Closed	
9.0 Fluid Loss and Free Fluid Testing	9.08	Can free fluid tests be performed at an angle, in addition to vertically?	**12**	Yes					5-Feb-10	06-May-10	5-Feb-10	Closed	
9.0 Fluid Loss and Free Fluid Testing	9.09	Does the lab multiply the actual filtrate value according to API procedures for the high pressure cell as described in API RP10B-2, Section 10 when calculating the API fluid loss value? i.e. If test goes 30 minutes multiply value X 2 if test runs shorter than 30 minutes the calculated value = (collected volume at dehydration) x (10.944/ SQRT of time at dehydration)	**12**	Yes					5-Feb-10	06-May-10	5-Feb-10	Closed	
9.0 Fluid Loss and Free Fluid Testing	9.10	For slurries tested in a Stirring Fluid Loss Cell with required temperatures exceeding 190°, is a back pressure filtrate collection device used instead of a condenser system?	**12**	Yes					5-Feb-10	06-May-10	5-Feb-10	Closed	
10.0 Crush Compressive Strengths	10.01	Is a functioning press available for determining crush strengths? Does the press have a swivel bearing plate attached to the top platen?	**12**	Yes					5-Feb-10	06-May-10	5-Feb-10	Closed	

Lab

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10.0 Crush Compressive Strengths	10.02	Is the press calibrated every 2 years as required by API?	**12**	Yes					5-Feb-10	06-May-10	5-Feb-10	Closed	
10.0 Crush Compressive Strengths	10.03	Are cube molds and UCA strengths puddled to remove air entrainment as per API?	**12**	Yes					5-Feb-10	06-May-10	5-Feb-10	Closed	
10.0 Crush Compressive Strengths	10.04	Is a 2 ramp temperature schedule used for curing the cube molds or UCA under pressure as required by API?	**12**	Yes 2 Ramp Temperature Schedule - API 4 hour 0 to CT (150) takes 37 mins CT to ST (200) takes 203 mins to total API 4 hr requirement standard					5-Feb-10	06-May-10	5-Feb-10	Closed	
10.0 Crush Compressive Strengths	10.05	When crush strengths are determined on cylinders, is the ASTM L/D factor contained in Procedure 420.030 of GLBP Manual 4 used?	**12**	Yes					5-Feb-10	06-May-10	5-Feb-10	Closed	
10.0 Crush Compressive Strengths	10.07	Are there enough cube molds available?	**12**	Yes					5-Feb-10	06-May-10	5-Feb-10	Closed	
10.0 Crush Compressive Strengths	10.08	Are the cube molds clean and undamaged?	**12**	Yes					5-Feb-10	06-May-10	5-Feb-10	Closed	
10.0 Crush Compressive Strengths	10.09	Is the cube size measured and used to calculate crush strength?	**12**	Yes					5-Feb-10	06-May-10	5-Feb-10	Closed	
10.0 Crush Compressive Strengths	10.10	Are cube molds and UCA chambers coated with light coats of release agents (grease)?	**12**	Yes					5-Feb-10	06-May-10	5-Feb-10	Closed	
10.0 Crush Compressive Strengths	10.11	Is the load applied to crush specimen according to API RP 10B-2, Section 7.5.6 /ISO 10426-2 specifications?	**12**	Yes					5-Feb-10	06-May-10	5-Feb-10	Closed	
11. Thickening Time Testing	11.01	Is the slurry cup used for HPHT thickening time tests filled with the slurry cup inverted as per API RP 10B-2, Section 9.4.2?	**12**	Yes					5-Feb-10	06-May-10	5-Feb-10	Closed	

Lab

Topic	Question Number	Question	Score	Evidence - Source - Comment	Global Cementing Service Standard	Corrective Action Plan To Close Gap	Corrective Action Plan To Close Gap	Responsible Person(s)	Audit Close Out Date	Due Date	Date Comp	Status	Notes
11. Thickening Time Testing	11.02	Are covers over the electrical contact pins that go through the side of the pressure chamber?	**12**	Yes					5-Feb-10	06-May-10	5-Feb-10	Closed	
11. Thickening Time Testing	11.03	Is the slurry cup (or can) kept upright when removed from the high pressure Stirring Fluid Loss Cell or HPHT Consistometer and opened after being conditioned for pouring into another test apparatus?	**12**	Yes					5-Feb-10	06-May-10	5-Feb-10	Closed	
11. Thickening Time Testing	11.04	Is the thickening time test started within 5 minutes (± 15 sec) after cessation of mixing the slurry according to API/ISO?	**9**	Lab technician satisfactorily prepared slurry following procedure without exception, taking extra time to make sure auditors witnessed each process step. Technician, did not however, complete the entire slurry preparation within API requirements of 5 minutes (± 15 sec) from start of slurry preparation to start of actual Thickening Time test on HPHT Consistometer. (5:45)		Focus on API requirement of preparing and starting TT test within ± 15 sec of 5 minutes.	Focus on API requirement of preparing and starting TT test within ± 15 sec of 5 minutes.	Completed	5-Feb-10	06-May-10	14-Apr-10	Closed	
11. Thickening Time Testing	11.05	Are new style potentiometers for the UNIPRO II and iPRO Consistometer kept with a specific Consistometer?	**12**	Yes					5-Feb-10	06-May-10	5-Feb-10	Closed	
12. Rheology	12.01	Is there a heated cup to determine the rheological properties at temperatures up to 194°F? If so, is cup temperature set at conditioning temperature?	**12**	Yes					5-Feb-10	06-May-10	5-Feb-10	Closed	
12. Rheology	12.02	For Rheological testing, is the preferred API/ISO method of: Precondition slurry by ramping up to BHCT according to a schedule as opposed to placing the slurry in a preheated cup and stirring for 20-30 minutes being utilized?	**12**	Yes, the preferred method of preconditioning slurry and ramping to BHCT according to schedule is being used.					5-Feb-10	06-May-10	5-Feb-10	Closed	
12. Rheology	12.03	Is a working Viscometer available for fluid Rheology (PV/YP & Gel strength)? Does the viscometer meet minimum requirement of 6 separate speeds (3-600 RPM)?	**12**	Yes					5-Feb-10	06-May-10	5-Feb-10	Closed	