

HALLIBURTON

iCem[®] Service

WHITING OIL & GAS CORP - EBUS

For: DAN MORRIS

Date: Monday, April 06, 2015

ALLEN #1

Case 1

Job Date: Monday, March 23, 2015

Sincerely,

Sheldon Cotts

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1.0 Cementing Job Summary

1.1 Executive Summary

Halliburton appreciates the opportunity to perform the cementing services on the **Allan #1** cement **Plug to Abandon** casing job. A pre-job safety meeting was held before the job where details of the job were discussed, potential safety hazards were reviewed, and environmental compliance procedures were outlined.

Halliburton maintains a continuous quality improvement process and appreciates any comments or suggestions that you may have. Halliburton again thanks you for the opportunity to perform service work on this well. We hope to be your solutions provider for future projects.

Respectfully,

Halliburton [Brighton]

Job Times

	Date	Time	Time Zone
Called Out Time:	3/23/15	0930	MST
Arrived On Location At:	3/23/15	1445	MST
Job Started At:	3/23/15	1524	MST
Job Completed At:	3/23/15	1635	MST
Departed Location At:	3/23/15	1730	MST

1.2 Planned Pumping Schedule

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Cementing Job Summary

The Road to Excellence Starts with Safety

Sold To #: 366960		Ship To #: 3653747		Quote #:		Sales Order #: 0902255056				
Customer: WHITING OIL & GAS CORP - EBUS				Customer Rep: DAN MORRIS						
Well Name: Alan			Well #: #1		API/UWI #:					
Field:		City (SAP): NEW RAYMER		County/Parish: WELD		State: COLORADO				
Legal Description:										
Contractor:				Rig/Platform Name/Num: Workover						
Job BOM: 7528										
Well Type: GAS										
Sales Person: HALAMERICA\HB60191				Srcv Supervisor: Aaron Smith						
Job										
Formation Name										
Formation Depth (MD)		Top			Bottom					
Form Type					BHST					
Job depth MD		150ft			Job Depth TVD					
Water Depth					Wk Ht Above Floor					
Perforation Depth (MD)		From			To					
Well Data										
Description	New / Used	Size in	ID in	Weight lbm/ft	Thread	Grade	Top MD ft	Bottom MD ft	Top TVD ft	Bottom TVD ft
Casing		8.625	8.097	24			0	70		
Tubing		2.875	2.441	8.5			0	150		0
Open Hole Section			7.875				70	5725		
Tools and Accessories										
Type	Size in	Qty	Make	Depth ft	Type	Size in	Qty	Make		
Guide Shoe	2.875			150	Top Plug	2.875		HES		
Float Shoe	2.875				Bottom Plug	2.875		HES		
Float Collar	2.875				SSR plug set	2.875		HES		
Insert Float	2.875				Plug Container	2.875		HES		
Stage Tool	2.875				Centralizers	2.875		HES		
Miscellaneous Materials										
Gelling Agt		Conc		Surfactant		Conc	Acid Type	Qty	Conc	
Treatment Fld		Conc		Inhibitor		Conc	Sand Type	Size	Qty	

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Cementing Job Summary

Cement Left In Pipe	Amount	ft	Reason		Shoe Joint				
Fluid Data									
Stage/Plug #: 4									
Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft ³ /sack	Mix Fluid Gal	Rate bbl/mi n	Total Mix Fluid Gal
1	Fresh Water	Fresh Water	4	bbbl	8.33				
Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft ³ /sack	Mix Fluid Gal	Rate bbl/mi n	Total Mix Fluid Gal
2	G Cement	Premium Cement	180	sack	15.8	1.15		5	5
5 Gal		FRESH WATER							
94 lbm		CMT - PREMIUM - CLASS G REG OR TYPE V, BULK (100003685)							
Cement Left In Pipe	Amount	ft	Reason		Shoe Joint				
Mix Water:	pH ##	Mix Water:	## ppm		Mix Water Temperature: ## °F °C				
		Chloride:							
Cement Temperature: ## °F °C	Plug Displaced by: ## lb/gal kg/m ³ XXXX	Disp. Temperature: ## °F °C							
Plug Bumped? Yes/No	Bump Pressure: #### psi MPa	Floats Held? Yes/No							
Cement Returns: ## bbl m ³	Returns Density: ## lb/gal kg/m ³	Returns Temperature: ## °F °C							
Comment									

1.3 Job Overview

		Units	Description
1	Surface temperature at time of job	°F	65
2	Mud type (OBM, WBM, SBM, Water, Brine)	-	WATER
3	Actual mud density	lb/gal	8.33
4	Time circulated before job	HH:MM	0:00
5	Mud volume circulated	bbls	0
6	Rate at which well was circulated	bpm	0
7	Pipe movement during circulation	Y/N	N/A
8	Rig pressure while circulating	psi	N/A
9	Time from end mud circulation to start of job	HH:MM	N/A
10	Pipe movement during cementing	Y/N	N
11	Calculated displacement	bbls	1
12	Job displaced by	Rig/HES	HES
13	Annular before Job	Y/N	N
14	Annular flow after job	Y/N	N
15	Length of rat hole	ft	N/A
16	Units of gas detected while circulating	Units	0
17	Was lost circulation experienced at any time?	Y/N	N

1.4 Plug Job Information

		Units	Description
1	Density of well fluid exiting well prior to job	lb/gal	8.33
2	Density of well fluid entering well prior to job	lb/gal	8.33
3	Was the well full prior to cementing?	Y/N	N
4	How many joints of workstring pulled wet?	# Joints	0
5	Depth of workstring for circulation after the plug?	ft	N/A
6	Calculated Plug Height (workstring out)	ft	To Surface

1.5 Water Field Test

Item	Recorded Value	Units	Max Acceptable Limit	Potential Problems in Exceeding Limit
pH	5	-	6.0-8.0	Chemicals in the water can cause severe retardation
Chlorides	90	ppm	3000 ppm	Can shorten thickening time of cement
Sulfates	<200	ppm	1500 ppm	Will greatly decrease the strength of cement
Total Hardness	>215	ppm	500 mg/L	High concentrations will accelerate the set of the cement
Calcium	0	ppm	500 ppm	High concentrations will accelerate the set of the cement
Total Alkalinity	0	ppm	1000 ppm	Cement is greatly retarded to the point where it may not set up at all (typically occurs @ pH ≥ 8.3).
Bicarbonates	0	ppm	1000 ppm	Cement is greatly retarded to the point where it may not set up at all
Potassium	0	ppm	5000 ppm	High concentrations will shorten the pump time of cement (indicates the presence of chlorides, therefore if Potassium levels are measured as high, so should the chlorides)
Iron	0	ppm	300 ppm	High concentrations will accelerate the set of the cement
Temperature	53	°F	50-80 °F	High temps will accelerate; Low temps may risk freezing in cold weather

Submitted Respectfully by:

Aaron Smith

2.0 Real-Time Job Summary

2.1 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	Comb Pump Rate (bbl/min)	DH Density (ppg)	PS Pump Press (psi)	Comments
Event	1	Call Out	Call Out	3/23/2015	09:30:00	USER				FOR ON LOCATION ASAP
Event	2	Depart Yard Safety Meeting	Depart Yard Safety Meeting	3/23/2015	12:00:00	USER				JOURNEY MANAGMENT MEETING PRIOR TO DEPARTURE
Event	3	Depart from Service Center or Other Site	Depart from Service Center or Other Site	3/23/2015	12:30:00	USER				
Event	4	Arrive at Location from Service Center	Arrive at Location from Service Center	3/23/2015	14:45:00	USER				WITH ALL EQUIPMENT AND MATERIALS
Event	5	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	3/23/2015	14:50:00	USER				RIG-UP JSA WITH HES CREW
Event	6	Rig-Up Equipment	Rig-Up Equipment	3/23/2015	14:55:00	USER				
Event	7	Rig-Up Completed	Rig-Up Completed	3/23/2015	15:05:00	USER				
Event	8	Pre-Job Safety Meeting	Pre-Job Safety Meeting	3/23/2015	15:15:00	USER				WITH CUSTOMER REP AND RIG CREW
Event	9	Start Job	Start Job	3/23/2015	15:24:49	USER				
Event	10	Pump Spacer 1	Pump Spacer 1	3/23/2015	15:27:26	COM4	0.00	7.49	0.00	4 BBLs FRESH WATER
Event	11	Pump Cement	Pump Cement	3/23/2015	15:40:17	COM4	0.00	16.35	-4.00	30.73 BBLs/150 SKS @ 15.8 PPG, 1.15 YIELD, 5.00 GAL/SK VERIFIED WITH PRESSURIZED SCALES
Event	12	Pump Displacement	Pump Displacement	3/23/2015	16:02:08	COM4	1.00	17.29	-8.00	1 BBL FRESH WATER
Event	13	Pump Cement	Pump Cement	3/23/2015	16:22:35	USER	0.00	20.25	-19.00	6 BBLs/ 29.3 SKS @ 15.8 PPG, 1.15 YIELD, 5.00 GAL/SK VERIFIED WITH PRESSURIZED SCALES FOR

										TOP OUT
Event	14	End Job	End Job	3/23/2015	16:35:02	USER	0.00	7.71	-23.00	CALLED ARS TO VERIFY TICKET
Event	15	Pre-Rig Down Safety Meeting	Pre-Rig Down Safety Meeting	3/23/2015	16:57:16	USER				RIG-DOWN JSA WITH HES CREW
Event	16	Rig-Down Equipment	Rig-Down Equipment	3/23/2015	17:10:00	USER				
Event	17	Rig-Down Completed	Rig-Down Completed	3/23/2015	17:20:00	USER				
Event	18	Depart Location Safety Meeting	Depart Location Safety Meeting	3/23/2015	17:25:00	USER				JOURNEY MANAGMENT MEETING PRIOR TO DEPARTURE
Event	19	Depart Location for Service Center or Other Site	Depart Location for Service Center or Other Site	3/23/2015	17:30:00	USER				THANKS AARON SMITH AND CREW

2.2 Custom Graph

