

HALLIBURTON

iCem[®] Service

GREAT WESTERN OIL & GAS LLC - EBUS

For: Great Western

Date: Thursday, February 21, 2019

Ottesen LE 06-351HNX Recement #1

Sincerely,
Ryan Keeran

Legal Notice

Disclaimer:

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1.0 Cementing Job Summary

1.1 Executive Summary

Halliburton appreciates the opportunity to perform the cementing services on the **Ottesen LE 06-351HNX** cement **re-cement** 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.

Circulation was never obtained before or during the job

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 Fort Lupton

The Road to Excellence Starts with Safety

Sold To #: 346459	Ship To #: 3913336	Quote #: 0022549624	Sales Order #: 0905505433
Customer: GREAT WESTERN OPERATING CO LLC-EBUS		Customer Rep: MARK TIBBS	
Well Name: OTTESEN LE	Well #: 6-351HNX	API/UWI #: 05-123-48287-00	
Field: WATTENBERG	City (SAP): IONE	County/Parish: WELD	State: COLORADO
Legal Description: NW SE-33-1N-66W-1410FSL-1668FEL			
Contractor:		Rig/Platform Name/Num:	
Job BOM: 14099 14099			
Well Type: HORIZONTAL OIL			
Sales Person: HALAMERICA\H139013		Srvc Supervisor: Lance Carpenter	

Job

Formation Name			
Formation Depth (MD)	Top		Bottom
Form Type	BHST		
Job depth MD	11120t	Job Depth TVD	7321
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		9.625	8.921	36			0	1862		
Casing		5.5	4.892	17			0	11120		
Open Hole Section			8.5				1862	11120		

Tools and Accessories

Type	Size in	Qty	Make	Depth ft	Type	Size in	Qty	Make
Guide Shoe	5.5				Top Plug	5.5	1	HES
Float Shoe	5.5				Bottom Plug	5.5		HES
Float Collar	5.5				SSR plug set	5.5		HES
Insert Float	5.5				Plug Container	5.5		HES
Stage Tool	5.5				Centralizers	5.5		HES

Fluid Data

Stage/Plug #: 1										
Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft ³ /sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal	
1	FDP Spacer	FDP Spacer	100	bbl	12.5	2.74				
5 lbm/bbl		SEM-94P, 35 LB SACK - (1023987)								
26 lbm/bbl		FDP-C1337-18, 40 LB SACK - (1092927)								

5 lbm/bbl		SEM-93P, 35 LB SACK - (1023977)							
205.1530 lbm/bbl		BARITE, BULK (100003681)							
Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft3/sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal
2	14.4 ppg ElastiCem	ELASTICEM (TM) SYSTEM	685	sack	14.4	1.69		4	7.69
7.69 Gal		FRESH WATER							
Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft3/sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal
3	16.5 ppg GasStop	GASSTOP (TM) SYSTEM	406	sack	16.5	1.38		4	5.1
3.33 Gal		FRESH WATER							
Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft3/sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal
4	Water		252	bbl	8.3				
Cement Left In Pipe	Amount	ft	Reason			Shoe Joint			
Mix Water:	pH 7		Mix Water Chloride:	100 ppm		Mix Water Temperature:	60 °F		
Cement Temperature:	## °F °C		Plug Displaced by:	## lb/gal kg/m3 XXXX		Disp. Temperature:	## °F °C		
Plug Bumped?	No		Bump Pressure:	#### psi MPa		Floats Held?	Yes/No		
Cement Returns:	## bbl m3		Returns Density:	## lb/gal kg/m3		Returns Temperature:	## °F °C		
Comment JOB WENT WELL. NO CIRCULATION DURING ANY OF THE JOB. VOLUMES WERE GOOD. CUT SPACER TO 100 BBL AT REQUEST AND DUE TO MIXABILITY. GOOD LIFT PRESSURE AFTER PLUG DROP. FINAL CIRCULATING PRESSURE AT 4 BPM 3350 PSI. SHUT IN WITH 3000 PSI.									

2.0 Real-Time Job Summary

2.1 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	PS Pump Press <i>(psi)</i>	DH Density <i>(ppg)</i>	Comb Pump Rate <i>(bbl/min)</i>	Comments
Event	1	Call Out	Call Out	2/21/2019	03:00:00	USER				CREW CALLED OUT. ON LOCATION 0900
Event	2	Depart Shop for Location	Depart Shop for Location	2/21/2019	08:30:00	USER				CREW HAS VERIFIED EQUIPMENT AND MATERIALS. CREW HAS JOURNEY MANAGEMENT SAFETY MEETING DISCUSSING ROUTE, CONVOY ORDER, FOLLOWING DISTANCE, HAZARDS AND DEPARTS FOR LOCATION
Event	3	Arrive At Loc	Arrive At Loc	2/21/2019	09:00:00	USER				CREW ARRIVES AT LOCATION. ASSESSES LOCATION FOR HAZARDS AND EQUIPMENT LAYOUT AND DISCUSS HAZARDS, ROLES, RED ZONES AND SIM OPS. THEN CREW BEGINS SPOTTING EQUIPMENT AND RIGGING UP
Event	4	Other	Other	2/21/2019	11:00:00	USER				CREW DISCUSSES JOB WITH CUSTOMER REPRESENTATIVES ESTABLISHING JOB PROCEDURES, CONTINGENCIES AND THEN HAVE PRE JOB MEETING WITH CREW DISCUSSING ROLES, HAZARDS, RED ZONES AND JOB PROCEDURE

Event	5	Test Lines	Test Lines	2/21/2019	11:57:48	COM6	511.00	7.63	0.00	CREW FILLS LINES AND PRESSURE TESTS HES LINES TO 7000 PSI. HELD FOR A FEW MINUTES TO ENSURE A GOOD TEST. THEN ATTEMPT TO GET CIRCULATION AND INJECTION RATE BUT NEVER DO GET CIRCULATION. INJECTED AT 6 BPM AT 2550 PSI
Event	6	Pump Spacer 1	Pump Spacer 1	2/21/2019	13:04:20	COM6	1809.00	8.45	0.00	PUMP 100 BBL FDP SPACER 12.5# 2.74 YIELD 16.6 GAL. CUT SHORT 100 BBL DUE TO CUSTOMER AND MIXABILITY
Event	7	Pump Lead Cement	Pump Lead Cement	2/21/2019	14:07:06	COM6	733.00	12.61	7.00	PUMP 206 BBL ELASTICEM 14.4# 1.69 YIELD 7.69 GAL 685 SACKS
Event	8	Pump Tail Cement	Pump Tail Cement	2/21/2019	14:43:35	COM6	1731.00	15.27	5.50	PUMP 100 BBL GASSTOP 16.5# 1.38 YIELD 5.1 GAL 406 SACKS
Event	9	Drop Top Plug	Drop Top Plug	2/21/2019	15:00:28	COM6	382.00	16.44	0.00	SHUTDOWN. DROP TOP PLUG AND LINE UP TO TOP OF WELLHEAD
Event	10	Pump Displacement	Pump Displacement	2/21/2019	15:01:20	COM6	365.00	16.42	0.00	PUMP 252 BBL DISPLACEMENT WATER 8.4# 4 BPM FINAL CIRCULATING PRESSURE 3350 PSI
Event	11	Shutdown	Shutdown	2/21/2019	16:03:52	USER	3340.00	8.62	4.10	SHUTDOWN
Event	12	Other	Other	2/21/2019	16:07:07	USER	101.00	8.78	0.00	SHUT IN WELL. ABOUT 3000 PSI ON THE CASING WHEN SHUT IN
Event	13	Other	Other	2/21/2019	16:15:00	USER				CREW HAS PRE RIG DOWN SAFETY MEETING DISCUSSING ROLES, HAZARDS, RESPONSIBILITIES, RED

ZONES AND BEGIN RIGGING
DOWN

Event	14	Depart Location	Depart Location	2/21/2019	17:00:00	USER
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CREW IS DONE RIGGING
DOWN AND READY TO
DEPART. CREW HAS
JOURNEY MANAGEMENT
SAFETY MEETING
DISCUSSING ROUTE,
CONVOY ORDER,
FOLLOWING DISTANCE,
HAZARDS AND DEPARTS
FROM LOCATION

3.0 Job Chart

3.1 Job Chart

