

# HALLIBURTON

iCem<sup>®</sup> Service

## **PDC ENERGY - EBUS**

Ft. Lupton District, COLORADO

**For: CHRIS**

Date: Thursday, May 23, 2019

## **HARVEY**

WELD

PDC ENERGY HARVEY 13N 905698963

Job Date: Thursday, May 23, 2019

Sincerely,

**MITCHELL CAMPER/SAM CARPENTER**

## Legal Notice

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*The Road to Excellence Starts with Safety*

<b>Sold To #:</b> 304535		<b>Ship To #:</b> 3894726		<b>Quote #:</b>		<b>Sales Order #:</b> 0905698963	
<b>Customer:</b> PDC ENERGY-EBUS				<b>Customer Rep:</b> CHRIS			
<b>Well Name:</b> HARVEY			<b>Well #:</b> 13N		<b>API/UWI #:</b> 05-123-47431-00		
<b>Field:</b> WATTENBERG		<b>City (SAP):</b> LA SALLE		<b>County/Parish:</b> WELD		<b>State:</b> COLORADO	
<b>Legal Description:</b> SW SE-32-4N-65W-625FSL-2434FEL							
<b>Contractor:</b> ENSIGN DRLG				<b>Rig/Platform Name/Num:</b> ENSIGN 158			
<b>Job BOM:</b> 7523 7523							
<b>Well Type:</b> HORIZONTAL OIL							
<b>Sales Person:</b> HALAMERICA\HX38199				<b>Srv Supervisor:</b> Lance Carpenter			

**Job**

<b>Formation Name</b>			
<b>Formation Depth (MD)</b>		<b>Top</b>	<b>Bottom</b>
<b>Form Type</b>		BHST	
<b>Job depth MD</b>		17332ft	<b>Job Depth TVD</b> 7112
<b>Water Depth</b>			<b>Wk Ht Above Floor</b> 4
<b>Perforation Depth (MD)</b>		<b>From</b>	<b>To</b>

**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	1885	0	1885
Casing		5.5	4.778	20			0	17332		7112
Open Hole Section			8.5				1890	17338		7112

**Tools and Accessories**

Type	Size in	Qty	Make	Depth ft	Type	Size in	Qty	Make
Guide Shoe	5.5			17300	Top Plug	5.5	1	HES
Float Shoe	5.5				Bottom Plug	5.5	1	HES
Float Collar	5.5				SSR plug set	5.5		HES
Insert Float	5.5				Plug Container	5.5	1	HES
Stage Tool	5.5				Centralizers	5.5		HES

**Fluid Data**

<b>Stage/Plug #: 1</b>									
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
1	FDP-C1337-18	SBM FDP-C1337-18 CEMENT SPACER SYS	150	bbl	12.5	2.79	16.7		
1 lbm/bbl		<b>FE-2 (100001615)</b>							

201.23 lbm/bbl	<b>BARITE, BULK (100003681)</b>
6 lbm/bbl	<b>SEM-93P, 35 LB SACK - (1023977)</b>
6 lbm/bbl	<b>SEM-94P, 35 LB SACK - (1023987)</b>
0.10 gal/bbl	<b>MUSOL(R) A, 5 GAL PAIL (100064220)</b>
0.10 gal/bbl	<b>D-AIR 3000L, 5 GAL PAIL (101007444)</b>

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	Gasstop B1	GASSTOP (TM) SYSTEM	625	sack	13.2	1.55	7.73	6	7.73
5.13 Gal		<b>FRESH WATER</b>							
0.10 Gal		<b>D-AIR 3000L, 5 GAL PAIL (101007444)</b>							

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	ElastiCem	ELASTICEM (TM) SYSTEM	1432	sack	14.4	1.7	7.3	8	7.3
0.45 %		<b>HR-5, 50 LB SK (100005050)</b>							
7.30 Gal		<b>FRESH WATER</b>							

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	MMCR Displacement	MMCR Displacement	20	bbl	8.35				
0.50 gal/bbl		<b>MICRO MATRIX CEMENT RETARDER, 5 GAL PAIL (100003781)</b>							

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
5	Displacement fluid	WATER	362	bbl	8.34				

<b>Cement Left In Pipe</b>	<b>Amount</b>	33ft	<b>Reason</b>	<b>Shoe Joint</b>	
Mix Water:	pH 7	Mix Water Chloride:	200ppm	Mix Water Temperature:	65F °C
Cement Temperature:	## °F °C	Plug Displaced by:	8.34 lb/gal	Disp. Temperature:	## °F °C
Plug Bumped?	Yes	Bump Pressure:	2652psi	Floats Held?	Yes
Cement Returns:	## bbl m3	Returns Density:	## lb/gal kg/m3	Returns Temperature:	## °F °C

## Comment

JOB WENT WELL CEMENT WAS WEIGHED AND VERRIFIED ON SCALES, PUMPED 382 BBLS OF DISPLACEMENT AT 10BPM WITH MMCR IN THE FIRST 20BBLS AND BIOCIDE THROUGHTOUT. CAUGHT CEMENT AT 30BBLS AWAY, SLOWED RATE TO 4BPM AT 360BBLS AWAY FINAL CIRCULATING PRESSURE WAS 2652PSI BUMPED PLUG AND TOOK 500 PSI OVER HELD FOR A FEW MINS, OPENED UP WET SHOE SUB AT 3788PSI AND PUMPED 5 BBL WET SHOE. CHECKED FLOATS, FLOATS HELD AND GOT 3BBLS BACK.

TOP OF TAIL CEMENT 6745'

TOP OF LEAD CEMENT 2529'

44 BBLS OF SPACER BACK TO SURFACE.

## 1.0 Real-Time Job Summary

### 1.1 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	DS Pump Press <i>(psi)</i>	DH Density <i>(ppg)</i>	Comb Pump Rate <i>(bbl/min)</i>	Pump Stg Tot <i>(bbl)</i>	Comments
Event	1	Other	Call Out	5/22/2019	12:00:00	USER					CREW CALLED OUT
Event	2	Depart Yard Safety Meeting	Depart Yard Safety Meeting	5/22/2019	15:00:00	USER					AFTER CHECKING CORRECT VOLUMES WERE LOADED AND EQUIPMENT WAS RUNNING, HAD PRE CONVOY SAFETY MEETING WITH CREW AND DISCUSSED SAFE FOLLOWING DISTANCE, WILD LIFE, AND ROUTE TO LOCATION.
Event	3	Arrive at Rig	Arrive at Rig	5/22/2019	15:30:00	USER					CREW ARRIVED ON LOCATION. RIG WAS STILL RUNNING CASING WITH ABOUT 4000' TO BOTTOM
Event	4	Safety Meeting - Pre Rig-Up	Safety Meeting - Pre Rig-Up	5/22/2019	17:30:00	USER					HAD PRE RIG UP SAFETY MEETING WITH CREW AND DISCUSSED SLIP,TRIPS AND FALLS, TEAM CARRY, PINCH POINTS AND 40'BUFFER ZONE.
Event	5	Other	Other	5/22/2019	21:00:00	USER					CREW STARTED TO CIRCULATE LATEX
Event	6	Safety Meeting	Safety Meeting	5/22/2019	22:15:00	USER	3.00	8.32	0.00	13.70	HAD SAFETY MEETING WITH HES AND RIG CREW, DISCUSSED MUSTER AREA, NEAREST HOSPITAL, STOP WORK AUTHORITY, SLIP,TRIPS AND FALLS, PRESSURE TESTING

											PROCEDURE AND GOOD COMMUNICATION THROUGHOUT JOB.
Event	7	Start Job	Start Job	5/22/2019	22:41:37	COM6	1.00	9.05	0.00	13.70	START JOB
Event	8	Test Lines	Test Lines	5/22/2019	22:48:02	COM6	176.00	8.29	0.00	16.40	FILLED LINES WITH 3BBLs OF FRESH WATER AND PRESSURE TESTED LINES TO 6500PSI
Event	9	Pump Spacer 1	Pump Spacer 1	5/22/2019	22:54:02	COM6	14.00	8.04	0.00	0.00	PUMPED 150 BBLs OF (FDP) SPACER 12.5PPG 2.79 YIELD 16.7GAL
Event	10	Drop Bottom Plug	Drop Bottom Plug	5/22/2019	23:26:05	COM6	243.00	12.42	5.60	163.70	DROPPED BOTTOM PLUG WITH KLX HAND ON RIG FLOOR.
Event	11	Pump Lead Cement	Pump Lead Cement	5/22/2019	23:26:07	COM6	237.00	12.45	5.60	0.00	PUMPED 172 BBLs OF LEAD CEMENT (GASSTOP) 13.2PPG 1.55 YIELD 7.73 GAL 625 SKS
Event	12	Pump Tail Cement	Pump Tail Cement	5/22/2019	23:52:47	COM6	716.00	13.01	8.00	0.10	PUMPED 433BBLs OF TAIL CEMENT (ELASTICEM) 14.4PPG 1.7 YIELD 7.3 GAL 1432 SKS
Event	13	Clean Lines	Clean Lines	5/23/2019	01:05:14	COM6	26.00	3.37	0.00	514.20	RIG BLEW DOWN LINES BACK TO WASH UP TANK AND HES WASHED PUMPS AND LINES.
Event	14	Drop Top Plug	Drop Top Plug	5/23/2019	01:05:22	COM6	22.00	0.91	0.00	514.20	DROPPED TOP PLUG WITH KLX HAND ON RIG FLOOR.
Event	15	Pump Displacement	Pump Displacement	5/23/2019	01:13:21	COM6	4.00	7.84	0.00	533.10	PUMPED 382 BBLs OF DISPLACEMENT WATER WITH MMCR IN THE FIRST 20 BBLs AND BIOCIDES THROUGHOUT. CAUGHT CEMENT AT 30 BBLs AWAY.

Event	16	Bump Plug	Bump Plug	5/23/2019	02:02:03	COM6	3089.00	8.50	0.00	394.30	SLOWED RATE TO 4 BPM AT 360BBLS AWAY, FINAL CIRCULATING PRESSURE WAS 2652PSI BUMPED PLUG AND TOOK 500PSI OVER.
Event	17	Other	Other	5/23/2019	02:03:46	USER	3788.00	8.56	2.00	395.20	OPENED UP WET SHOE SUB AND PUMPED 5 BBLS FRESH WATER
Event	18	Check Floats	Check Floats	5/23/2019	02:06:48	USER	1970.00	8.45	0.00	400.70	CHECKED FLOATS AND GOT 3BBLS BACK
Event	19	End Job	End Job	5/23/2019	02:08:08	COM6	0.00	8.45	0.00	400.70	END JOB
Event	20	Pre-Rig Down Safety Meeting	Pre-Rig Down Safety Meeting	5/23/2019	02:20:00	USER					HAD PRE RIG DOWN SAFETY MEETING WITH CREW AND DISCUSSED, PINCH POINTS, TEAM CARRY, BUFFER ZONE. SLIP, TRIPS AND FALLS.
Event	21	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	5/23/2019	04:00:00	USER					HAD PRE CONVOY SAFETY MEETING WITH CREW AND DISCUSSED, SAFE FOLLOWING DISTANCE, WILD LIFE AND ROUTE BACK TO YARD.