

## HALLIBURTON

## Cementing Job Summary

*The Road to Excellence Starts with Safety*

Sold To #: 345242		Ship To #: 3730158		Quote #:		Sales Order #: 0904130524				
Customer: NOBLE ENERGY INC - EBUS						Customer Rep: Jim Turner				
Well Name: RATTLESNAKE FEDERAL				Well #: LC10-785		API/UWI #: 05-123-42972-00				
Field: WILDCAT		City (SAP): RAYMER		County/Parish: WELD		State: COLORADO				
Legal Description: NW NW-22-9N-59W-400FNL-1236FWL										
Contractor: Noble				Rig/Platform Name/Num: H&P 524						
Job BOM: 7523 7523										
Well Type: HORIZONTAL OIL										
Sales Person: HALAMERICA\HB70026				Srv Supervisor: Aaron Smith						
Job										
Formation Name										
Formation Depth (MD)		Top		Bottom						
Form Type				BHST		215 degF				
Job depth MD		17299ft		Job Depth TVD		6103				
Water Depth				Wk Ht Above Floor		4				
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	1933	0	1933
Casing	0	5.5	4.778	20		P-110	0	17288	0	6103
Open Hole Section			8.5				5881	17299	0	6103
Fluid Data										
Stage/Plug #: 1										
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	11.5 lb/gal Tuned Spacer III	Tuned Spacer III		80	bbl	11.5	3.84		5	
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	ElastiCem	ELASTICEM (TM) SYSTEM		150	sack	13.2	1.57		6	7.54
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 w/ SCBL	ELASTICEM (TM) SYSTEM		476	sack	13.2	1.6		6	7.69

iCem® Service

(v. 4.4.18)

Created: Thursday, July 06, 2017

## HALLIBURTON

## Cementing Job Summary

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	NeoCem NT1	NeoCem TM	1284	sack	13.2	2.04		5	9.75
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	MMCR Displacement	MMCR Displacement	20	bbl	8.33				
0.50 gal/bbl		MICRO MATRIX CEMENT RETARDER, 5 GAL PAIL (100003781)							
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
6	Displacement	Displacement	363	bbl	8.33				
Cement Left In Pipe		Amount					Reason		Shoe Joint
Comment Estimated TOLC 1671'. TOTC 5976'									

## 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)	DS Pump Press (psi)	Comments
Event	1	Call Out	Call Out	7/2/2017	16:30:00	USER				Crew of Aaron Smith, Vitali Neverdasov, Ryan Stephens, and Darius Cadena called out by Brandon Fantaisa for on location @ 2230.
Event	2	Depart Yard Safety Meeting	Depart Yard Safety Meeting	7/2/2017	19:30:00	USER				Journey management meeting held prior to departure, to discuss route, hazards of route and potential stops.
Event	3	Depart from Service Center or Other Site	Depart from Service Center or Other Site	7/2/2017	19:45:00	USER				Journey called into dispatch, crew departs yard with all equipment and materials.
Event	4	Arrive at Location from Service Center	Arrive at Location from Service Center	7/2/2017	22:00:00	USER				Arrived on location with all equipment and materials, met with customer rep to discuss numbers and job procedure, performed hazard hunt, and water test. Water tested good to mix cement, Temp 67, Cl 0 ppm high scale, Ph 7.
Event	5	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	7/2/2017	22:20:00	USER				JSA to discuss the hazards of rig-up
Event	6	Rig-Up Equipment	Rig-Up Equipment	7/2/2017	22:45:00	USER				Rig-up all surface lines and equipment up to the red zone
Event	7	Rig-Up Completed	Rig-Up Completed	7/2/2017	23:30:00	USER				After all casing had been ran
Event	8	Casing on Bottom	Casing on Bottom	7/3/2017	00:10:00	USER				landing joint brought to floor and landed
Event	9	Circulate Well	Circulate Well	7/3/2017	00:12:00	USER				MW 9.2 ppg, 12 BPM, 1065 psi, 460 units, 1440 bbls
Event	10	Pre-Job Safety Meeting	Pre-Job Safety Meeting	7/3/2017	01:00:00	USER				With all essential personnel to discuss job procedure and hazards of job.
Event	11	Start Job	Start Job	7/3/2017	01:57:28	COM5				Start recording real-time data.
Event	12	Test Lines	Test Lines	7/3/2017	02:05:04	USER		8.58	4670.00	@4500 psi
Event	13	Drop Bottom Plug	Drop Bottom Plug	7/3/2017	02:11:34	USER				Hand-dropped HWE bottom plug in casing, verified with customer rep
Event	14	Pump Spacer 1	Pump Spacer 1	7/3/2017	02:12:52	USER	2.50	11.52	188.00	80 bbls tuned spacer @11.5 ppg, 3.84ft3/sk 23.8 gal/sk. Verified with pressurized scales. 48 gallons Musol A, 48 Gallons Dual Spacer B, 20 Gallons D-Air, 4 bpm 150 psi.

Event	15	Drop Bottom Plug	Drop Bottom Plug	7/3/2017	02:40:08	USER				Hand-dropped second bottom plug in casing verified with customer rep
Event	16	Pump Lead Cement	Pump Lead Cement	7/3/2017	02:44:28	USER	2.20	13.24	67.00	150 sks(41.94 bbls) Elasticem @ 13.2 ppg, 1.57 ft3/sk, 7.54 gal/sk. verified with pressurized scales. 6 Bpm, 425 psi
Event	17	Pump Lead Cement	Pump Lead Cement	7/3/2017	02:55:17	USER	4.80	13.02	246.00	476 sks(135.64 bbls) Elasticem @ 13.2 ppg, 1.6 ft3/sk, 7.69 gal/sk verified with pressurized scales. 8 Bpm, 590 psi.
Event	18	Comment	Comment	7/3/2017	03:02:05	USER	8.00	13.20	474.00	Downhole had issues reading at first, it lined out after picking up rate.
Event	19	Pump Tail Cement	Pump Tail Cement	7/3/2017	03:17:31	USER	6.28	13.20	387.38	1284sks(466.51 bbls) NeoCem @ 13.2 ppg, 2.04 ft3/sk, 9.75 gal/sk verified with pressurized scales. 7bpm 560 psi.
Event	20	Shutdown	Shutdown	7/3/2017	04:35:11	USER				to blow top drive and lines down
Event	21	Clean Lines	Clean Lines	7/3/2017	04:45:13	USER				Wash pumps and lines to the pit.
Event	22	Drop Top Plug	Drop Top Plug	7/3/2017	04:47:44	USER				Hand-Dropped HWE top plug in casing verified by customer rep
Event	23	Pump Displacement	Pump Displacement	7/3/2017	04:51:43	USER	10.00	8.06	386.00	382.68 bbls fresh water with 15 gallons aldicide.
Event	24	Bump Plug	Bump Plug	7/3/2017	05:37:58	USER	2.10	8.14	1535.00	@500 psi over final circulating pressure of 1421 psi
Event	25	Check Floats	Check Floats	7/3/2017	05:41:52	USER				floats good 3.5 bbls back
Event	26	End Job	End Job	7/3/2017	05:42:58	COM5				End reading real time data.
Event	27	Pre-Rig Down Safety Meeting	Pre-Rig Down Safety Meeting	7/3/2017	05:44:27	USER				JSA to discuss the hazards of rig-down
Event	28	Rig-Down Completed	Rig-Down Completed	7/3/2017	06:30:00	USER				With no incidents or injuries to people and equipment.
Event	29	Depart Location Safety Meeting	Depart Location Safety Meeting	7/3/2017	06:35:00	USER				Journey managment meeting held prior to depature, to discuss the route and hazards of route.
Event	30	Depart Location for Service Center or Other Site	Depart Location for Service Center or Other Site	7/3/2017	06:45:00	USER				Journey called into dispatch. Thank you for choosing Halliburton Cementing, Aaron Smith and Crew.