

HALLIBURTON

Cementing Job Summary*The Road to Excellence Starts with Safety*

Sold To #: 345242	Ship To #: 3745305	Quote #:	Sales Order #: 0903506384							
Customer: NOBLE ENERGY INC - EBUS		Customer Rep: Johnny Sanchez								
Well Name: HARPER	Well #: LD21-655	API/UWI #: 05-123-43293-00								
Field: WILDCAT	City (SAP): RAYMER	County/Parish: WELD	State: COLORADO							
Legal Description: SW NW-22-9N-58W-1821FNL-330FWL										
Contractor: H & P DRLG		Rig/Platform Name/Num: H & P 517								
Job BOM: 7523										
Well Type: HORIZONTAL OIL										
Sales Person: HALAMERICA/HB61755		Srv Supervisor: Brandon Parker								
Job										
Formation Name										
Formation Depth (MD)	Top	Bottom								
Form Type		BHST	230 degF							
Job depth MD	10813ft	Job Depth TVD								
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	1934	0	1934
Casing		5.5	4.778	20			0	10813	0	6521
Open Hole Section			8.5				1900	10828	1934	6521
Tools and Accessories										
Type	Size in	Qty	Make	Depth ft	Type	Size in	Qty	Make		
Guide Shoe	5.5		HES	10818	Top Plug	5.5	1	HES		
Float Shoe	5.5				Bottom Plug	5.5	1	HES		
Float Collar	5.5		HES	10768.6	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	11.5 lb/gal Tuned Spacer III	Tuned Spacer III	40	bbl	11.5	3.78		4		
0.40 gal/bbl		MUSOL(R) A, BULK (100003696)								
36.09 gal/bbl		FRESH WATER								
0.40 gal/bbl		DUAL SPACER SURFACTANT B, 5 GAL PAIL (100003665)								
147.42 lbm/bbl		BARITE, BULK (100003681)								

last updated on 9/3/2016 8:31:59 AM

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iCem® Service

(v. 4.2.393)

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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	11.5 lb/gal Tuned Spacer III	Tuned Spacer III	0	bbl	11.5	3.79		4.5	
36.09 gal/bbl		FRESH WATER							
147.42 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
3	Elasticem Lead w/o CBL	ELASTICEM (TM) SYSTEM	42	150sack	13.2	1.57		5	7.53
7.53 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	ElastiCem Lead W/ CBL	ELASTICEM (TM) SYSTEM	131	460sack	13.2	1.6		5	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
5	EconoCem Tail	ECONOCEM (TM) SYSTEM	206.5	690sack	13.5	1.68		5	7.98
7.98 Gal		FRESH WATER							
0.40 %		HR-5, 50 LB SK (100005050)							
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	FW Displacement	238	bbl	8.33			8	
Cement Left In Pipe		Amount	44.77 ft			Reason		Shoe Joint	
Mix Water: pH ## 6		Mix Water Chloride: ## ppm			Mix Water Temperature: ## °F °C				
Cement Temperature: ## °F °C		Plug Displaced by: ## lb/gal kg/m3 XXXX			Disp. Temperature: ## °F °C				
Plug Bumped? Yes		Bump Pressure: 1650 psi MPa			Floats Held? Yes				
Cement Returns: 0		Returns Density: ## lb/gal kg/m3			Returns Temperature: ## °F °C				
Comment									

2.0 Real-Time Job Summary

2.1 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	Driv-Side Pump Pressure (psi)	Downhole Density (ppg)	Combined Pump Rate (bbl/min)	Pump Stage Total (bbl)	Comments
Event	1	Call Out	Call Out	9/2/2016	03:00:00	USER					crew called out to 5.5 production, 1 elite pump trk, 1 660 and 2 field silios and 1 pickup trk. 5 Halliburton field hands
Event	2	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	9/2/2016	05:45:00	USER					safety meeting with all HES personnel to discuss safety issues associatd with travel
Event	3	Depart from Service Center or Other Site	Depart from Service Center or Other Site	9/2/2016	06:15:00	USER					
Event	4	Arrive at Location from Service Center	Arrive at Location from Service Center	9/2/2016	08:30:00	USER					met with Noble company rep and went over job numbers, water sources and iron placement.
Event	5	Assessment Of Location Safety Meeting	Assessment Of Location Safety Meeting	9/2/2016	08:32:00	USER					water temp 65, ph6, sul <200, chlo 0. td10828, sj 44.77, fc 10768.60, tp 10813.37,sp 1934, 5.5" casing 20Lb p110, wf 9.8
Event	6	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	9/2/2016	08:40:00	USER					meeting with all HES prsonnel to discuss safety/hazards associated with rigging up equipment
Event	7	Rig-Up Equipment	Rig-Up Equipment	9/2/2016	08:50:00	USER					
Event	8	Standby - Other - see comments	Standby - Other - see comments	9/2/2016	10:00:00	USER					wait for rig to land casing
Event	9	Casing on Bottom	Casing on Bottom	9/2/2016	12:30:00	USER					rid started circulating, circulated at 8BPM
Event	10	Pre-Job Safety Meeting	Pre-Job Safety Meeting	9/2/2016	13:30:00	USER					meeting with all personnel on location to discuss safety/hazards associated with the job and also covered job procedures. all personnel signed a jsa
Event	11	Start Job	Start Job	9/2/2016	14:06:51	COM6					

Event	12	Pump Water	Fill Lines FW	9/2/2016	14:08:19	USER	0.00	6.14	0.80	0.1	fill lines with 2BBL's of fw at 2BPM top psi was 50psi
Event	13	Test Lines	Test Lines	9/2/2016	14:10:59	USER	40.00	8.33	0.00	2.2	test kickputs, test 5th gear stall and test high pressure to 3987, pressure held great
Event	14	Test Lines	Test Lines	9/2/2016	14:17:19	USER	41.00	8.37	0.80	2.3	tesp ibop to 4500psi
Event	15	Pump Spacer	Pump Tuned Spacer with Liquid Additives	9/2/2016	14:26:00	USER	26.00	8.36	0.90	0.1	pumped 40BBL's of tuned spacer at 11.5ppg, 3.78 yield, 23.8 gal/sk, wet chems added 16 gallons musol, 16 gallons dual spacer, 5 gallons of d-air. pumped at 4.5BPM and average pressure was 170ps. weighed using high pressure mud scales
Event	16	Pump Spacer 2	Pump Tuned Spacer	9/2/2016	14:35:38	USER	182.00	11.47	4.40	33.9	pumped 40BBL's of spacer at 11.5ppg, 3.79 yield, 24.4 gal/sk, pumped at 4.5BPM and average pressure was 170psi. weight was confirmed by using high pressure mud scales.
Event	17	Shutdown	Shutdown	9/2/2016	14:45:19	USER	49.00	11.65	0.00	74.6	to drop bottom plug
Event	18	Drop Bottom Plug	Drop Bottom Plug	9/2/2016	14:48:19	USER	42.00	11.53	0.00	0.0	confirmed by Noble company rep and HES supervisor
Event	19	Pump Lead Cement	Pump Lead Cement	9/2/2016	14:50:29	USER	56.00	11.56	1.40	0.4	pumped 41.94bbls' of elasticem lead cmt with out cbl, 150sk, 13.2ppg, 1.57 yield, 7.53 gal/sk, pumped at 6bpm pressure 380psi. checked weight using high pressure mud scales. wet sample left on location
Event	20	Pump Lead Cement	Pump Lead Cement	9/2/2016	14:58:00	USER	402.00	13.20	6.00	41.9	pumped 131bbl's of elasticem lead cmt, 460sk, with cbl, 13.2ppg, 1.60 yield, 7.69 gal/sk, pumped at 5BPM to keep up with cmt silo, average pressure was 310psi. checked weight using high pressure mud scales. wet samples left on location
Event	21	Pump Tail Cement	Pump Tail Cement	9/2/2016	15:23:59	USER	314.00	13.09	4.90	1.9	pumped 206.5bbl's of econocem tail cmt, 13.5ppg, 1.68yield, 7.98 gal/sk, 690 sks, pumped at 5BPM an average pressure was 400psi. confirmed weight using high

pressure mud scales. wet sample left on location										
Event	22	Shutdown	Shutdown	9/2/2016	16:07:00	USER	69.00	13.53	0.00	206.9 to drop top plug
Event	23	Other	Wash Pump	9/2/2016	16:12:10	USER	17.00	13.65	0.00	0.0 clean pump to cuttings tank
Event	24	Drop Top Plug	Drop Top Plug	9/2/2016	16:20:39	USER	-2.00	8.19	0.00	0.0 confirmed by Noble company rep and HES supervisor
Event	25	Pump Displacement	Pump FW Displacement	9/2/2016	16:22:39	USER	55.00	8.18	3.40	0.6 pumped calculated 238BBL's of FW displacement with MMCR
Event	26	Slow Rate	Slow Rate	9/2/2016	16:52:49	USER	1587.00	8.33	3.00	223.7 slow rate to 3BPM to land plug at 220 away
Event	27	Bump Plug	Bump Plug	9/2/2016	16:58:29	USER	1946.00	8.37	2.10	240.7 plug bumped at calculated 238, pressure 1650psi kicked out pumps at 2150psi and pressure climbed to 2250 and held like a rock
Event	28	Check Floats	Check Floats	9/2/2016	17:02:29	USER	3.00	8.31	0.00	240.7 HES floats held 3BBL's back to the trk
Event	29	End Job	End Job	9/2/2016	17:03:55	COM6				
Event	30	Pre-Rig Down Safety Meeting	Pre-Rig Down Safety Meeting	9/2/2016	17:05:00	USER	-9.00	8.33	0.00	0.0 meeting with all HES personnel to discuss safety/hazards associated with rigging down
Event	31	Rig-Down Equipment	Rig-Down Equipment	9/2/2016	17:15:00	USER	0.00	0.02	0.00	0.0
Event	32	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	9/2/2016	18:16:00	USER				meeting with all HES peronnel to discuss safety/hazards associated with driving
Event	33	Depart Location for Service Center or Other Site	Depart Location for Service Center or Other Site	9/2/2016	18:20:00	USER				
Event	34	Returns To Surface	Returns To Surface	9/2/2016	18:23:00	USER				true hole calucated 3.5BBL's of tuned spacer, did not get spacer to surface
Event	35	Other	Other	9/2/2016	18:25:00	USER				Thank You for Choosing Halliburton Cement. Parker and Crew(713)703-3283