

HALLIBURTON

iCem[®] Service

NOBLE ENERGY INC - EBUS

Date: Monday, September 10, 2018

Emmy State H25-764 Production

Job Date: Wednesday, August 15, 2018

Sincerely,
Adam McKay

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 **Emmy State H25-764** cement **Production** 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 [Ft. Lupton]

The Road to Excellence Starts with Safety

Sold To #: 345242		Ship To #: 3883737		Quote #:		Sales Order #: 0905061836					
Customer: NOBLE ENERGY INC-EBUS						Customer Rep: John Drahota/Chris Ewing					
Well Name: EMMY STATE				Well #: H25-764		API/UWI #: 05-123-46973-00					
Field: WATTENBERG		City (SAP): KEENESBURG		County/Parish: WELD		State: COLORADO					
Legal Description: SE SW-25-3N-65W-285FSL-1230FWL											
Contractor: H & P DRLG					Rig/Platform Name/Num: H & P 517						
Job BOM: 7523 7523											
Well Type: HORIZONTAL OIL											
Sales Person: HALAMERICA\HB70026					Srvc Supervisor: Nick Cummins/Kamereon White						
Job											
Formation Name											
Formation Depth (MD)		Top		Bottom							
Form Type				BHST		230 degF					
Job depth MD		17479ft		Job Depth TVD		7017ft					
Water Depth				Wk Ht Above Floor		5ft					
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	1936	0	1936	
Casing		5.5	4.778	20			0	17479	0	7017	
Open Hole Section			8.5				2485	6680	1361	6680	
Open Hole Section			8.5				6680	17494	6680	7018	
Tools and Accessories											
Type	Size in	Qty	Make	Depth ft		Type	Size in	Qty	Make		
Guide Shoe	5.5	1	HES	17479		Top Plug	5.5	1	HES		
						Bottom Plug	5.5	2	HES		
Float Collar	5.5	1	HES	17433							
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			120	bbl	11.5	3.78		5	23.5

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	140	sack	13.2	1.68		5	8.04
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	430	sack	13.2	1.68		8	8.06
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	1217	sack	13.2	2.04		8	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	Displacement	Displacement	387	bbl	8.33			10	
Cement Left In Pipe	Amount	45 ft			Reason			Shoe Joint	
Mix Water:	pH 7	Mix Water Chloride:	<400 ppm			Mix Water Temperature:	74°F		
		Plug Displaced by:	8.33 lb/gal			Disp. Temperature:			
Plug Bumped?	Yes	Bump Pressure:	1900 psi			Floats Held?	Yes		
Cement Returns:	0	Returns Density:	11.5 lb/gal						
Comment									

2.0 Real-Time Job Summary

2.1 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	DS Pump Press (psi)	DH Density (ppg)	Comb Pump Rate (bbl/min)	Comments
Event	1	Call Out	Call Out	8/15/2018	06:30:00	USER				The crew was called out for an on location time of 1200.
Event	2	Depart from Service Center or Other Site	Depart from Service Center or Other Site	8/15/2018	10:50:00	USER				The crew held a pre journey safety meeting. The supervisor called in a journey. The crew departed from the service center.
Event	3	Arrive at Location from Service Center	Arrive at Location from Service Center	8/15/2018	11:30:00	USER				The crew arrived on location safely. The rig was still running casing. The supervisor went and got numbers from the company man. TD 17,494' TP 17,479' 5 1/2" 20# P-110 FC 17,433' PC 1,936' 9 5/8" 36# J-55 TVD 7,017' OH 8 1/2" Mud 9.6 ppg
Event	4	Assessment Of Location Safety Meeting	Assessment Of Location Safety Meeting	8/15/2018	11:40:00	USER				Crew discussed all hazards and procedures for spotting trucks in.
Event	5	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	8/15/2018	11:45:00	USER				Crew discussed rig up hazards and rig up procedure.
Event	6	Other	Rig Up Equipment	8/15/2018	11:50:00	USER				Rigged up all HES equipment and lines.
Event	7	Prime Pumps	Prime Pumps	8/15/2018	13:51:46	COM4				
Event	8	Other	Rig Up Completed	8/15/2018	14:00:00	USER				Rig up completed no one got hurt.
Event	9	Casing on Bottom	Casing on Bottom	8/15/2018	14:35:00	USER				Casing on bottom
Event	10	Safety Meeting - Pre Job	Safety Meeting - Pre Job	8/15/2018	16:30:00	USER				Crew discussed all hazards and the procedure for cement job, with all parties involved.
Event	11	Check Weight	Check Weight	8/15/2018	16:35:42	COM4				
Event	12	Other	Fill Lines	8/15/2018	16:39:15	COM4				We filled lines with 3 bbls of water. At 3 bpm with 250 psi.
Event	13	Test Lines	Test Lines	8/15/2018	16:42:05	COM4	2940.00	8.40		We pressure tested the rigs IBOP to 3,000 psi. The pressure test passed.
Event	14	Test Lines	Test Lines	8/15/2018	16:47:34	COM4	4761.00	8.48		We tested all HES lines to 4500 psi. The pressure test passed.
Event	15	Drop Bottom Plug	Drop Bottom Plug	8/15/2018	16:51:00	COM4				The company man witnessed the first bottom plug drop.

Event	16	Pump Spacer 1	Pump Spacer 1	8/15/2018	16:51:13	COM4	431.00	11.76	4.00	We pumped 120 bbls of spacer at 5 bpm. At 11.5 ppg 3.78 yield 23.5 gals/sk. We verified weight using pressurized mud scales. 5 bpm with 490 psi. Top of spacer is 0'.
Event	17	Shutdown	Shutdown	8/15/2018	17:15:30	COM4				Shutdown to drop second bottom plug.
Event	18	Drop Bottom Plug	Drop Bottom Plug	8/15/2018	17:18:46	COM4				Company man witnessed the second bottom plug drop.
Event	19	Pump Cap Cement	Pump Cap Cement	8/15/2018	17:18:56	COM4	227.00	13.10	4.00	We pumped 42 bbls (140 sks) of cap cement. At 13.2 ppg 1.68 yield 8.04 gals/sk. We verified weight using pressurized scales. Estimated top of cap cement is 2,504'.
Event	20	Check Weight	Check Weight	8/15/2018	17:21:39	COM4	190.00	13.12	4.10	We checked the weight of the cap cement using pressurized scales it weighed up at 13.2 ppg.
Event	21	Pump Lead Cement	Pump Lead Cement	8/15/2018	17:28:10	COM4	559.00	13.22	8.00	We pumped 128 bbls (430 sks) of lead cement. At 13.2 ppg 1.68 yield 8.06 gals/sk. We verified weight using pressurized scales. Estimated top of lead cement is 3,531'.
Event	22	Check Weight	Check Weight	8/15/2018	17:32:01	COM4	593.00	13.44	8.00	We checked the weight of the lead cement using pressurized scales it weighed up at 13.2 ppg.
Event	23	Pump Tail Cement	Pump Tail Cement	8/15/2018	17:50:27	COM4	283.00	13.13	5.00	We pumped 442 bbls (1217 sks) of tail cement. At 13.2 ppg 2.04 yield 9.75 gals/sk. We verified weight using pressurized scales. Estimated top of tail cement is 6,666.5'.
Event	24	Check Weight	Check Weight	8/15/2018	17:51:23	COM4	457.00	13.17	6.00	We checked the weight of the tail cement using pressurized scales it weighed up at 13.2 ppg.
Event	25	Check Weight	Check Weight	8/15/2018	18:00:39	COM4	820.00	13.09	8.00	We checked the weight of the tail cement using pressurized scales it weighed up at 13.2 ppg.
Event	26	Check Weight	Check Weight	8/15/2018	18:26:35	COM4	821.00	13.21	8.00	We checked the weight of the tail cement using pressurized scales it weighed up at 13.2 ppg.
Event	27	Pump Shoe Cement	Pump Shoe Cement	8/15/2018	18:49:51	COM4	314.00	13.35	4.00	We pumped a 13.4 ppg shoe.
Event	28	Shutdown	Shutdown	8/15/2018	18:50:13	COM4				Shutdown to wash pumps and lines.
Event	29	Drop Top Plug	Drop Top Plug	8/15/2018	19:05:26	COM4				Company man witnessed top plug drop.
Event	30	Pump Displacement	Pump Displacement	8/15/2018	19:05:30	COM4	626.00	8.33	10.00	We pumped 387 bbls of water. The first 20 bbls with MMCR. We put biocide throughout till the last 30 bbls to make sure the lines had fresh water in them for rig down. We got 0 bbls of spacer to surface

Event	31	Displ Reached Cement	Displ Reached Cement	8/15/2018	19:08:30	COM4	626.00	8.06	10.00	Displacement reached cement at 30 bbls away.
Event	32	Bump Plug	Bump Plug	8/15/2018	19:48:54	COM4	1904.00	8.13	2.90	we bumped the plug the final circulating pressure was 1,900 psi. We brought it 500 psi over to 2,600 psi.
Event	33	Other	Check Floats	8/15/2018	19:55:13	COM4				We checked floats the floats held. We got 5 bbls back to the truck
Event	34	End Job	End Job	8/15/2018	19:58:20	COM4				Cement job complete.
Event	35	Post-Job Safety Meeting (Pre Rig-Down)	Post-Job Safety Meeting (Pre Rig-Down)	8/15/2018	20:00:00	USER				Crew discussed rig down hazards and rig down procedure.
Event	36	Rig Down Lines	Rig Down Lines	8/15/2018	20:05:00	USER				Rigged down all HES equipment and lines.
Event	37	Rig-Down Completed	Rig-Down Completed	8/15/2018	20:45:00	USER				Rig down completed no one got hurt.
Event	38	Depart Location for Service Center or Other Site	Depart Location for Service Center or Other Site	8/15/2018	21:30:00	USER				The crew held a pre journey safety meeting. The supervisor called in a journey. The crew departed from location.

3.0 Attachments

3.1 Cement Job With Events.png

