

HALLIBURTON

iCem[®] Service

EXTRACTION OIL & GAS-EBUS

Date: Wednesday, January 08, 2020

Northwest A S20-25-12N Production

Job Date: Saturday, January 04, 2020

Sincerely,
Tyler Hill

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 **Northwest A S20-25-12N** 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.

Approximately 10bbbls of spacer was returned to surface.

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 #: 369404		Ship To #: 3901287		Quote #:		Sales Order #: 0906214901	
Customer: EXTRACTION OIL & GAS-EBUS				Customer Rep: Danny Herrera			
Well Name: NORTHWEST A			Well #: S20-25-12N			API/UWI #: 05-014-20786-00	
Field: WATTENBERG		City (SAP): BROOMFIELD		County/Parish: BROOMFIELD		State: COLORADO	
Legal Description: NW NW-9-1S-68W-1281FNL-849FWL							
Contractor: PATTERSON-UTI ENERGY				Rig/Platform Name/Num: PATTERSON 901			
Job BOM: 7523 7523							
Well Type: HORIZONTAL OIL							
Sales Person: HALAMERICA\H171328				Srv Supervisor: Kyle Bath			

Job

Formation Name			
Formation Depth (MD)	Top		Bottom
Form Type			BHST
Job depth MD	21602ft		Job Depth TVD
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	1593	0	1593
Casing		5.5	4.892	17			0	21602	0	7890
Open Hole Section			8.75				1593	12740	1593	7890
Open Hole Section			8.5				12740	21610	7890	7890

Tools and Accessories

Type	Size in	Qty	Make	Depth ft	Type	Size in	Qty	Make
Guide Shoe	5.5			21602	Top Plug	5.5		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	Tuned Prime Cement Spacer Base - RKS/SE	TUNED PRIME CEMENT SPACER SYS	100	bbl	11.5	3.6		5	
1 lbm/bbl	FE-2, 2000 LB BAG - (1005549)								
3 lbm/bbl	SEM-94P, 35 LB SACK - (1023987)								
35.60 gal/bbl	FRESH WATER								
155.96 lbm/bbl	BARITE, BULK (100003681)								
3 lbm/bbl	SEM-93P, 35 LB SACK - (1023977)								
0.20 gal/bbl	DUAL SPACER SURFACTANT B, 5 GAL PAIL (100003665)								
0.20 gal/bbl	MUSOL(R) A, 5 GAL PAIL (100064220)								

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	Cap	ELASTICEM (TM) SYSTEM	870	sack	12.5	1.76		8	8.98
8.98 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	GasStop B1	GASSTOP (TM) SYSTEM	615	sack	13.2	1.57		8	7.65
5.15 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	ELASTICEM (TM) SYSTEM	2033	sack	13.2	1.56		8	7.63
7.67 Gal	FRESH WATER								
0.65 %	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
5	MMCR Displacement	MMCR Displacement	20	bbl	8.33			8	
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	481	bbl	8.33			8	

Cement Left In Pipe	Amount	ft	Reason	Shoe Joint
Mix Water:	pH ##		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/No		Bump Pressure:#### psi MPa	Floats Held?Yes/No
Cement Returns:## bbl m3			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	Comb Pump Rate <i>(bbl/min)</i>	DS Pump Press <i>(psi)</i>	DH Density <i>(ppg)</i>	Pump Stg Tot <i>(bbl)</i>	Comments
Event	1	Call Out	Call Out	1/3/2020	19:00:00	USER					CREW CALLED OUT AT 19:00, REQUESTED ON LOCATION 04:00
Event	2	Depart Yard Safety Meeting	Depart Yard Safety Meeting	1/3/2020	21:45:00	USER					DISCUSS ROUTE AND HAZARDS
Event	3	Crew Leave Yard	Crew Leave Yard	1/3/2020	22:00:00	USER					CREW DEPART YARD
Event	4	Arrive at Location from Service Center	Arrive at Location from Service Center	1/4/2020	04:00:00	USER					ARRIVE ON LOCATION, RIG RUNNING CASING UPON HES ARRIVAL, RECIEVED NUMBERS FROM CO MAN. TD-21,610', TP- 21,598.4', WSS- 21,584.5', TVD- 7,910', CSG- 5.5" 17 #, OH- 8 3/4 " DOWN TO 12,740', THEN 8.5 " TO TD, PREVIOUS CSG- 9 5/8 36# SET AT 1,593', MUD WEIGHT- 9.8 #
Event	5	Assessment Of Location Safety Meeting	Assessment Of Location Safety Meeting	1/4/2020	04:15:00	USER					DISCUSS LOCATION HAZARDS AND HOW TO MITIGATE THEM. TESTED WATER FROM UPRIGHTS, PH-7, CHLORIDES 0, WITH A TEMP OF 70 DEGREES.
Event	6	Safety Meeting - Pre Rig-Up	Safety Meeting - Pre Rig-Up	1/4/2020	04:30:00	USER					DISCUSS HAZARDS AND WAYS TO MITIGATE THEM
Event	7	Safety Meeting - Pre Job	Safety Meeting - Pre Job	1/4/2020	08:20:00	USER	0.20	-24.00	8.41	116.40	PRE JOB SAFETY MEETING WITH RIG CREW AND CO REP

Event	8	Start Job	Start Job	1/4/2020	08:48:16	COM4	0.20	-23.00	2.34	0.20	START RECORDING DATA
Event	9	Drop Bottom Plug	Drop Bottom Plug	1/4/2020	08:54:44	COM4	3.10	32.00	8.40	2.00	BOTTOM PLUG DROPPED , VRIFIED BY CO MAN.
Event	10	Test Lines	Test Lines	1/4/2020	08:55:49	COM4	0.20	-2.00	8.25	4.10	TEST LINES TO 6500, K/O 6800.
Event	11	Pump Spacer 1	Pump Spacer 1	1/4/2020	09:03:05	COM4	0.30	-16.00	8.23	5.90	PUMPED 155 SACKS/ 100 BBLs OF TUNED PRIME SPACER, AT 11.5 PPG, 3.6 YIELD, 22.8 GAL/SK. PUMPED AT A RATE OF 6 BPM WITH A PSI OF 158.
Event	12	Check Weight	Check Weight	1/4/2020	09:08:20	COM4	3.30	75.00	11.16	16.40	CHECKED WEIGHT WITH PRESSURIZED SCALES.
Event	13	Pump Cap Cement	Pump Cap Cement	1/4/2020	09:21:57	COM4	6.10	191.00	11.98	93.70	PUMPED 870 SACKS/ 272.71 BBLs OF ELASTICEM CAP CEMENT. AT 12.5 PPG, 1.76 YIELD, 8.98 GAL/SK. PUMPED AT A RATE OF 8 BPM WITH A PSI OF 508 .
Event	14	Check Weight	Check Weight	1/4/2020	09:23:49	COM4	6.10	288.00	12.17	11.40	CHECKED WEIGHT WITH PRESSURIZED SCALES.
Event	15	Pump Lead Cement	Pump Lead Cement	1/4/2020	09:56:53	COM4	8.30	410.00	12.43	0.10	PUMPED 615 SACKS/ 171.96 BBLs OF GASSTOP LEAD CEMENT 13.2 PPG, 1.57 FT3/SK, 7.65 GAL/SK 8 BPM 720 PSI, CALCULATED TOLC 4400
Event	16	Check Weight	Check Weight	1/4/2020	10:01:52	COM4	5.90	448.00	13.14	23.20	
Event	17	Pump Tail Cement	Pump Tail Cement	1/4/2020	10:22:34	COM4	8.30	620.00	13.21	0.10	MIX AND PUMP 2033 SKS 565 BBLs TAIL CEMENT 13.2 PPG, 1.56 FT3/SK, 7.63 GAL/SK 8 BPM 540 PSI, CALCULATED TOTC 8220
Event	18	Check Weight	Check Weight	1/4/2020	11:01:28	COM4	8.30	579.00	13.20	323.80	

Event	19	Shutdown	Shutdown	1/4/2020	11:36:52	COM4	0.00	94.00	13.16	605.70	
Event	20	Clean Lines	Clean Lines	1/4/2020	11:42:25	USER	4.80	33.00	13.78	606.10	WASH PUMPS AND LINES
Event	21	Drop Top Plug	Drop Top Plug	1/4/2020	11:46:17	COM4	0.00	-16.00	9.25	618.10	
Event	22	Pump Displacement	Pump Displacement	1/4/2020	11:46:19	COM4	0.00	-16.00	9.25	618.10	PUMP 501 BBLS FRESH WATER DISPLACEMENT FIRST 20 W/MMCR, 8 BPM 2400 PSI, LOST RETURNS AT 290 BBLS AWAY GAINED AT 306 BBLS, RECIEVED 10 BBLS TUNED SPACER
Event	23	Bump Plug	Bump Plug	1/4/2020	13:17:04	COM4	0.00	2376.00	8.34	515.10	BUMPED PLUG AT 1850 PSI TOOK TO 2500 PSI
Event	24	Pressure Up Well	Pressure Up Well	1/4/2020	13:18:34	COM4	0.00	2424.00	8.34	515.10	BURST AT 2730 PSI PUMPED 5 BBL WET SHOE
Event	25	Other	Other	1/4/2020	13:20:49	COM4	0.00	1561.00	8.33	522.90	CHECK FLOATS, TOOK 3 BBLS BACK
Event	26	End Job	End Job	1/4/2020	13:22:28	COM4	0.00	-15.00	8.32	0.00	
Event	27	Safety Meeting - Pre Rig-Down	Safety Meeting - Pre Rig-Down	1/4/2020	13:28:00	USER					DISCUSS HAZARDS AND WAYS TO MITIGATE THEM
Event	28	Depart Location Safety Meeting	Depart Location Safety Meeting	1/4/2020	14:30:00	USER					DISCUSS HAZARDS AND ROUTE
Event	29	Crew Leave Location	Crew Leave Location	1/4/2020	15:00:00	USER					THANK YOU FOR USING HALLIBURTON, KYLE BATH AND CREW

3.0 Attachments

3.1 Northwest A S20-25-12N Production.png

