

HALLIBURTON

iCem[®] Service

EXTRACTION OIL & GAS

Date: Monday, October 23, 2017

Darlene East 29N-20-11C PRODUCTION

Job Date: Thursday, October 12, 2017

Sincerely,

Julia Nichols

Legal Notice

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1.0 Cementing Job Summary

1.1 Executive Summary

Halliburton appreciates the opportunity to perform the cementing services on the **Darlene East 29N-20-11C** 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 54 barrels of cement were 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 [Fort Lupton]

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Cementing Job Summary

The Road to Excellence Starts with Safety

Sold To #: 369404	Ship To #: 3825698	Quote #:	Sales Order #: 0904357322							
Customer: EXTRACTION OIL & GAS		Customer Rep: TODD STEPHENS								
Well Name: DARLENE EAST	Well #: 29N-20-11C	API/UWI #: 05-123-45416-00								
Field: GROVER	City (SAP): KEOTA	County/Parish: WELD	State: COLORADO							
Legal Description: SW SE-29-12N-61W-363FSL-1942FEL										
Contractor: PATTERSON-UTI ENERGY		Rig/Platform Name/Num: PATTERSON 346								
Job BOM: 7523 7523										
Well Type: HORIZONTAL OIL										
Sales Person: HALAMERICA\HX38199		Srvc Supervisor: Bryce Muir								
Job										
Formation Name										
Formation Depth (MD)	Top	Bottom								
Form Type	BHST									
Job depth MD	17377ft	Job Depth TVD	7149 FT							
Water Depth		Wk Ht Above Floor	3 FT							
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	3	9.625	8.921	36		J-55	0	1597	0	0
Casing	0	5.5	4.778	20		P-110	0	17377	0	0
Open Hole Section			8.5				1597	17387	0	7149
Tools and Accessories										
Type	Size in	Qty	Make	Depth ft		Type	Size in	Qty	Make	
Guide Shoe	5.5					Top Plug	5.5	1	KLX	
Float Shoe	5.5	1	KLX	17377		Bottom Plug	5.5			
Float Collar	5.5	1	KLX	17373		SSR plug set	5.5			
Insert Float	5.5					Plug Container	5.5	1	HES	
Stage Tool	5.5					Centralizers	5.5			
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	50	bbl	11.5	3.73		6		
149.34 lbm/bbl		BARITE, BULK (100003681)								
35 gal/bbl		FRESH WATER								
0.50 gal/bbl		MUSOL A, 330 GAL TOTE - (790828)								
0.50 gal/bbl		DUAL SPACER SURFACTANT B, 5 GAL PAIL (100003665)								

last updated on 10/23/2017 12:39:49 PM

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(v. 4.4.18)

Created: Monday, October 23, 2017

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Cementing Job Summary

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
2	ElastiCem Lead	ELASTICEM (TM) SYSTEM	2775	sack	13.2	1.57		5	7.54
	0.25 %	SCR-100 (100003749)							
	7.54 Gal	FRESH WATER							
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
3	Displacement	Displacement	384	bbl	8.34				
Cement Left In Pipe Amount NONE Reason Shoe Joint									
<p>Comment: WE ARRIVED ON LOCATION AT 1930 HOURS ON 10/12/2017. WE HELD A BRIEF SAFETY MEETING TO DISCUSS THE BEST WAY TO SPOT PUMPING EQUIPMENT. WE SPOTTED EQUIPMENT AND STARTED TO RIG UP OUR EQUIPMENT. THE RIG WAS ON BOTTOM WITH CASING AT 2105 HOURS. THE RIG WAS CIRCULATING THE WELL AT 12 BPM AT 1724 PSI. WE HELD OUR SAFETY MEETING WITH THE RIG CREW AND DISCUSSED SAFETY AND THE JOB ORDER OF OPERATION. RIGGED UP OR PLUG CONTAINER AND PUMPING LINES. WE PRESSURE TESTED OUR IRON TO 4500 PSI AFTER CONDUCTING A 500 PSI PRESSURE KICKOUT TEST. WE STARTED DOWNHOLE WITH TUNED SPACER. WE PUMPED 50 BBLS OF TUNED SPACER 5 BPM AT 330 PSI. WE ADDED THE TUNED SPACER ADDITIVES ON THE FLY. WE THEN STARTED DOWNHOLE WITH OUR 776 BBLS OF PRIMARY CEMENT. WE PUMPED CEMENT AT 8 BPM WITH A CIRCULATING PRESSURE OF 577 PSI. WE SHUTDOWN AFTER ALL CEMENT WAS PUMPED. WE CLEANED PUMPS AND LINES AND DROPPED A 5.5" TOP PLUG. WE PUMPED 384 BBLS OF FRESH WATER DISPLACEMENT. WE PUMPED DISPLACEMENT AT 8 BPM WITH A CIRCULATING PRESSURE OR 1000 PSI. THE MORE DISPLACEMENT WE PUMPED THE HIGHER OUR CIRCULATING PRESSURE GOT. WE GOT SPACER TO SURFACE AT 280 BBLS OF DISPLACEMENT PUMPED AND GOOD CEMENT TO SURFACE AT 330 BBLS PUMPED. WE LANDED THE PLUG AT 2772 PSI AND PRESSURED UP TO 3032 PSI. HELD FOR LESS THAN A MINUTE AND PUMPED A WET SHOE. WE STARTED AT 2 BPM TO RUPTURE THE DISK. THE DISK RUPTURED AT 3847 PSI. WE PUMPED A 5 BBL WET SHOE. CHECKED FLOATS AND THEY HELD. WE GOT 5 ½ BBLS BACK TO THE RCM. END OF JOB.</p>									

2.0 Real-Time Job Summary

2.1 Job Event Log

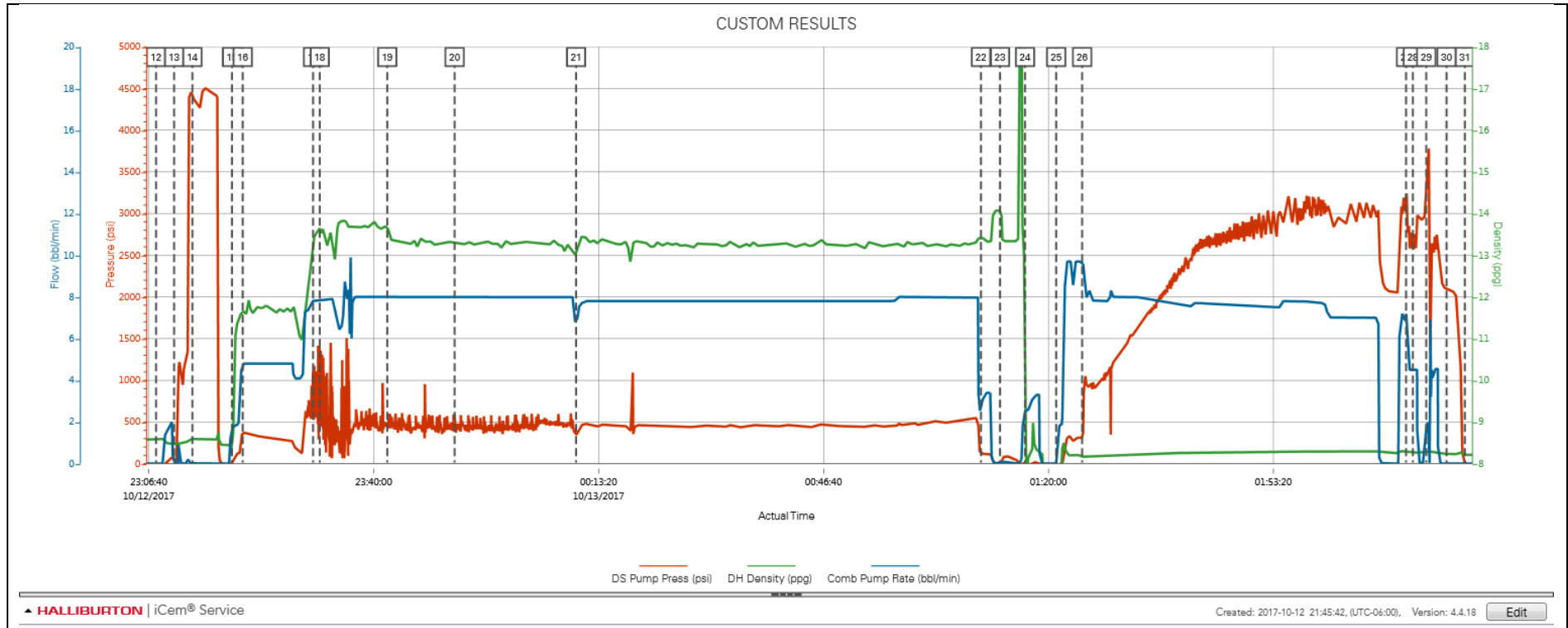
Type	Seq. No.	Activity	Graph Label	Date	Time	Source	DS Pump Press (psi)	DH Density (ppg)	Comb Pump Rate (bbl/min)	Comments
Event	1	Call Out	Call Out	10/12/2017	12:00:00	USER				CREW CALLED OUT TO PERFORM 5.5" PRODUCTION JOB FOR EXTRACTION OIL.
Event	2	Other	Other	10/12/2017	13:00:00	USER				LOAD UP ALL REQUIRED MATERIALS TO COMPLETE JOB. DOWNLOAD ALL PAPERWORK NEEDED FOR JOB.
Event	3	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	10/12/2017	17:15:00	USER				DISCUSS HAZARDS ASSOCIATED WITH DRIVING TRUCKS TO LOCATION. DISCUSS CONVOY ORDER, SAFEST ROUTE OF TRAVEL, AND ANY STOPS ALONG THE WAY.
Event	4	Depart from Service Center or Other Site	Depart from Service Center or Other Site	10/12/2017	17:30:00	USER				
Event	5	Arrive at Location from Service Center	Arrive at Location from Service Center	10/12/2017	19:30:00	USER				
Event	6	Assessment Of Location Safety Meeting	Assessment Of Location Safety Meeting	10/12/2017	19:40:00	USER				ASSESS LOCATION TO IDENTIFY POTENTIAL HAZARDS. DISCUSS BEST WAY TO SPOT PUMPING EQUIPMENT. SPOT EQUIPMENT.
Event	7	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	10/12/2017	20:15:00	USER				DISCUSS HAZARDS ASSOCIATED WITH RIGGING UP AND PACKING IRON ON LOCATION.
Event	8	Rig-Up Equipment	Rig-Up Equipment	10/12/2017	20:30:00	USER				
Event	9	Other	Other	10/12/2017	21:05:00	USER				RIG ON BOTTOM WITH CASING. RIG CIRCULATING AT 12 BPM WITH A CIRCULATION PRESSURE OF 1724 PSI.
Event	10	Pre-Job Safety Meeting	Pre-Job Safety Meeting	10/12/2017	22:45:00	USER	-15.70	8.43	0.00	DISCUSS HES SAFETY AND JOB PROCEDURES WITH COMPANY MAN AND RIG CREW. IDENTIFY MUSTER AREAS, CLOSEST HOSPITALS, AND FIRST AID LOCATIONS. DISCUSSED JOB ORDER OF OPERATION.
Event	11	Rig-Up Equipment	Rig-Up Equipment	10/12/2017	23:00:00	USER	-16.70	6.06	0.00	RIG UP PLUG CONTAINER AND IRON ON RIG FLOOR. GET READY TO FILL LINES.

Event	12	Start Job	Start Job	10/12/2017	23:07:45	COM6	-17.70	8.60	0.00	
Event	13	Test Lines	Test Lines	10/12/2017	23:10:25	COM6	39.30	8.47	0.00	CONDUCT A LOW PRESSURE TEST TO 500 PSI TO TEST RCM PRESSURE KICKOUTS. KICKOUTS FUNCTIONING PROPERLY. CONDUCT A HIGH PRESSURE TEST TO 4500 PSI TO TEST PUMPS AND LINES. HELD FOR A FEW MINUTES MONITORING PRESSURE LOSS.
Event	14	Other	Other	10/12/2017	23:13:07	USER	4426.30	8.59	0.10	PUMP 3 BBLS FRESH WATER AHEAD TO FILL PUMPS AND LINES.
Event	15	Check Weight	Check Weight	10/12/2017	23:19:00	USER	10.30	8.47	1.80	TUNED SPACER VERIFIED BY PRESSURIZED MUD BALANCE.
Event	16	Pump Spacer 1	Pump Spacer 1	10/12/2017	23:20:35	COM6	388.30	11.66	4.80	PUMP 50 BBLS OF TUNED SPACER. TUNED SPACER PUMPED AT 5 BPM WITH A CIRCULATING PRESSURE OF 330 PSI. WE HAD GOOD CIRCULATION.
Event	17	Pump Cement	Pump Cement	10/12/2017	23:31:01	COM6	1098.30	13.31	7.80	PUMPED 776 BBLS OF PRIMARY CEMENT. 2775 SACKS @ 13.2#/GAL 1.57 CUFT/SK 7.54 GAL/SK. WE PUMPED CEMENT AT 8 BPM WITH A CIRCULATING PRESSURE OF 577 PSI. WE HAD GOOD CIRCULATION.
Event	18	Check Weight	Check Weight	10/12/2017	23:32:00	USER	1126.30	13.64	7.90	CEMENT VERIFIED BY PRESSURIZED MUD BALANCE.
Event	19	Check Weight	Check Weight	10/12/2017	23:42:00	USER	394.30	13.64	8.00	CEMENT VERIFIED BY PRESSURIZED MUD BALANCE.
Event	20	Check Weight	Check Weight	10/12/2017	23:52:00	USER	487.30	13.30	8.00	CEMENT VERIFIED BY PRESSURIZED MUD BALANCE.
Event	21	Check Weight	Check Weight	10/13/2017	00:10:00	USER	315.30	12.99	6.80	CEMENT VERIFIED BY PRESSURIZED MUD BALANCE.
Event	22	Shutdown	Shutdown	10/13/2017	01:10:00	USER	101.30	13.42	2.50	
Event	23	Clean Lines	Clean Lines	10/13/2017	01:12:49	COM6	-7.70	14.08	0.00	
Event	24	Drop Top Plug	Drop Top Plug	10/13/2017	01:16:32	COM6	13.30	8.67	2.50	5.5" TOP PLUG DROPPED BY KLX REP. PLUG WITNESSED BY BRYCE MUIR AND COMPANY MAN.
Event	25	Pump Displacement	Pump Displacement	10/13/2017	01:21:09	COM6	-16.70	-0.28	0.00	PUMPED 384 BBLS OF FRESH WATER DISPLACEMENT. WE

				7						STARTED PUMPING DISPLACEMENT AT 10 BPM WITH A CIRCULATING PRESSURE OF 280 PSI.
Event	26	Displ Reached Cement	Displ Reached Cmmt	10/13/2017	01:25:00	USER	307.30	8.14	9.70	DISPLACEMENT REACHED CEMENT AFTER PUMPING 28 BBLS. WE SLOWED RATE TO 8 BPM WITH A CIRCULATING PRESSURE OF 1000 PSI. THE MORE DISPLACEMENT WE PUMPED AT 8 BPM THE HIGHER CIRCULATING PRESSURE GOT. WE GOT TUNED SPACER TO SURFACE AT 280 BBLS DISPLACEMENT PUMPED. WE WERE PUMPING 8 BPM @ 3240 PSI WENT WE GOT SPACER TO SURFACE. WE GOT GOOD CEMENT TO SURFACE AT 330 BBLS DISPLACEMENT PUMPED. WE WERE PUMPING 7 BPM @ 3024 PSI. WE GOT 54 BBLS OF GOOD CEMENT TO SURFACE.
Event	27	Bump Plug	Bump Plug	10/13/2017	02:13:00	USER	3213.30	8.27	7.20	WE LANDED THE PLUG ON CALCULATED DISPLACEMENT. WE LANDED PLUG AT 2772 PSI AT 4.5 BPM. WE PRESSURED UP TO 3032 PSI AND HELD FOR LESS THAN A MINUTE.
Event	28	Other	Other	10/13/2017	02:14:00	USER	2770.30	8.27	4.50	KICKED IN PUMPS TO RUPTURE DISK AND PUMP A 5 BBL WET SHOE. DISK RUPTURED AT 3847 PSI @ 2 BPM. WE INCREASED OUR RATE TO 4.5 BPM AND PUMPED 5 BBLS.
Event	29	Shutdown	Shutdown	10/13/2017	02:16:00	USER	3176.30	8.28	1.60	CALCULATED TOP OF CEMENT IS RIGHT AT SURFACE.
Event	30	Check Floats	Check Floats	10/13/2017	02:19:00	USER	2085.30	8.23	0.00	FLOATS HELD. WE GOT 5 1/2 BBLS BACK TO THE RCM.
Event	31	End Job	End Job	10/13/2017	02:21:43	COM6	-3.70	8.21	0.00	
Event	32	Pre-Rig Down Safety Meeting	Pre-Rig Down Safety Meeting	10/13/2017	02:45:55	USER				DISCUSS HAZARDS ASSOCIATED WITH RIGGING DOWN AND PACKING IRON ON LOCATION.
Event	33	Rig-Down Equipment	Rig-Down Equipment	10/13/2017	03:00:00	USER				
Event	34	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	10/13/2017	04:15:00	USER				DISCUSSED HAZARDS ASSOCIATED WITH DRIVING TRUCK BACK TO THE SERVICE CENTER. DISCUSSED DRIVER FATIGUE AND WHAT TO DO IF TOO TIRED TO DRIVE.
Event	35	Depart Location for Service Center or Other Site	Depart Location for Service Center or Other Site	10/13/2017	04:30:00	USER				JOB WAS SAFELY COMPLETED BY BRYCE MUIR AND CREW. THANK YOU FOR USING HALLIBURTON ENERGY SERVICES. STAY SAFE OUT HERE.

3.0 Attachments

3.1 CUSTOM RESULTS – JOB CHART WITH EVENTS



3.2 CUSTOM RESULTS – JOB CHART WITHOUT EVENTS

