HALLIBURTON

iCem® Service

EXTRACTION OIL & GAS

For:
Date: Monday, October 13, 2014

Extraction Diamond Valley East #8
Intermediate

Sincerely,
Sebastian Estenssoro

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1.1 Executive Summary

Halliburton appreciates the opportunity to perform the cementing services on the **Diamond Valley East #8** cement **Intermediate** 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 Brighton

Job Times

	Date	Time	Time Zone
Called Out	8/22/14	1100	MST
On Location		1400	MST
Job Started		1907	MST
Job Completed		2125	MST
Departed Location		2230	MST

1.2 Cementing Job Summary

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Cementing Job Summary

The Road to Excellence Starts with Safety

Sold To #: 369404	**Ship To #:** 3356465	**Quote #:**	**Sales Order #:** 0901602301
Customer: EXTRACTION OIL & GAS		**Customer Rep:**	
Well Name: DIAMOND VALLEY EAST	**Well #:** 8		**API/UWI #:** 05-123-38564-00
Field: WATTENBERG	**City (SAP):** WINDSOR	**County/Parish:** WELD	**State:** COLORADO
Legal Description: SW SW-23-6N-67W-912FSL-155FWL			
Contractor:		**Rig/Platform Name/Num:** FRONTIER 10	
Job BOM: 7522			
Well Type: HORIZONTAL OIL			
Sales Person: HALAMERICA\H117930		**Srvc Supervisor:** Dennis A. Sims	

Job

Formation Name					
Formation Depth (MD)	**Top**		**Bottom**		
Form Type			**BHST**	225 degF	
Job depth MD	7442ft		**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	0	9.625	8.921	36	BTC	J-55	0	850	0	
Casing	0	7	6.276	26	BTC	P-110	0	7442		
Open Hole Section			8.75				850	7442		

Tools and Accessories

Type	Size in	Qty	Make	Depth ft		Type	Size in	Qty	Make
Guide Shoe	7	1		7442		Top Plug	7	1	HES
Float Shoe	7	1				Bottom Plug	7	1	HES
Float Collar	7	1				SSR plug set	7	1	HES
Insert Float	7	1				Plug Container	7	1	HES
Stage Tool	7	1				Centralizers	7	1	HES

Miscellaneous Materials

Gelling Agt		Conc		Surfactant		Conc		Acid Type		Qty	Conc
Treatment Fld		Conc		Inhibitor		Conc		Sand Type		Size	Qty

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	Mud Flush III (Powder)	Mud Flush III	10	bbl	8.4	0		6	
42 gal/bbl		FRESH WATER							

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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
2	Fresh Water	Fresh Water	10	bbl	8.33	0		6	
42 gal/bbl		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	11.5 lb/gal Tuned Spacer III	Tuned Spacer III	20	bbl	11.5	3.75		6	
148.73 lbm/bbl		BARITE, BULK (100003681)							
24.20 gal/bbl		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	Lead Cement	ECONOCEM (TM) SYSTEM	472	sack	12.7	1.89		6	9.97
9.97 Gal		FRESH WATER							
61.10 lbm		TYPE I / II CEMENT, BULK (101439798)							

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	Tail Cement	EXPANDACEM (TM) SYSTEM	258	sack	13.8	1.67		6	7.71
0.10 %		HR-5, 50 LB SK (100005050)							
7.71 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
6	Displacement	Displacement	281	bbl	10.5				

Cement Left In Pipe	Amount	42 ft	Reason	Shoe Joint
Comment				

1.3 Planned Pumping Schedule

1. **Fill Lines with Water**
    a. Density = 8.33ppg
    b. Volume = 2bbl
2. **Pressure Test Lines to 3500psi**
3. **Pump Tuned Spacer**
    a. Density = 11.5 lb/gal
    b. Volume = 20 bbl
    c. Rate = 4 bpm
4. **Drop Bottom Plug**
5. **Pump EconoCem (Lead)**
    a. Density = 12.7
    b. Yield = 1.89
    c. Water Requirement = 9.97
    d. Volume = 472 sks (159 bbls)
    e. Rate = 5 bpm
6. **Pump ExpandaCem (Tail)**
    a. Density = 13.8
    b. Yield = 1.67
    c. Water Requirement = 7.71
    d. Volume = 258 sks (77 bbls)
    e. Rate = 4 bpm
7. **Drop Top Plug**
8. **Start Displacement**
9. **Pump Displacement Mud**
    a. Density = 10.5 lb/gal
    b. Volume = 281 bbls
    c. Rate = 8 bpm
10. Land Plug – Anticipated Final Circulation Pressure 1300 psi

Calculated Total Displacement = 281 bbls

1.4 Job Overview

		Units	Description
1	Surface temperature at time of job	^{o}F	
2	Mud type (OBM, WBM, SBM, Water, Brine)	-	
3	Actual mud density	lb/gal	
4	Time circulated before job	HH:MM	
5	Mud volume circulated	Bbls	
6	Rate at which well was circulated	Bpm	
7	Pipe movement during hole circulation	Y/N	
8	Rig pressure while circulating	Psi	
9	Time from end mud circulation to start of job	HH:MM	
10	Pipe movement during cementing	Y/N	
11	Calculated displacement	Bbls	
12	Job displaced by	Rig/HES	
13	Annular before job)?	Y/N	
14	Annular flow after job	Y/N	
15	Length of rat hole	Ft	
16	Units of gas detected while circulating	Units	
17	Was lost circulation experienced at any time ?	Y/N	

1.5 Water Field Test

Item	Recorded Test Value	Units	Max. Acceptable Limit	Potential Problems in Exceeding Limit
pH		----	6.0 - 8.0	Chemicals in the water can cause severe retardation
Chlorides		ppm	3000 ppm	Can shorten thickening time of cement
Sulfates		ppm	1500 ppm	Will greatly decrease the strength of cement
Total Hardness		ppm	500 mg/L	High concentrations will accelerate the set of the cement
Calcium		ppm	500 ppm	High concentrations will accelerate the set of the cement
Total Alkalinity		ppm	1000 ppm	Cement is greatly retarded to the point where it may not set up at all (typically occurs @ pH ≥ 8.3).
Bicarbonates		ppm	1000 ppm	Cement is greatly retarded to the point where it may not set up at all
Potassium		ppm	5000 ppm	High concentrations will shorten the pump time of cement (indicates the presence of chlorides, therefore if Potassium levels are measured as high, so should the chlorides)
Iron		ppm	300 ppm	High concentrations will accelerate the set of the cement
Temperature		^{o}F	50-80 ^{o}F	High temps will accelerate; Low temps may risk freezing in cold weather

Submitted Respectfully by: _____

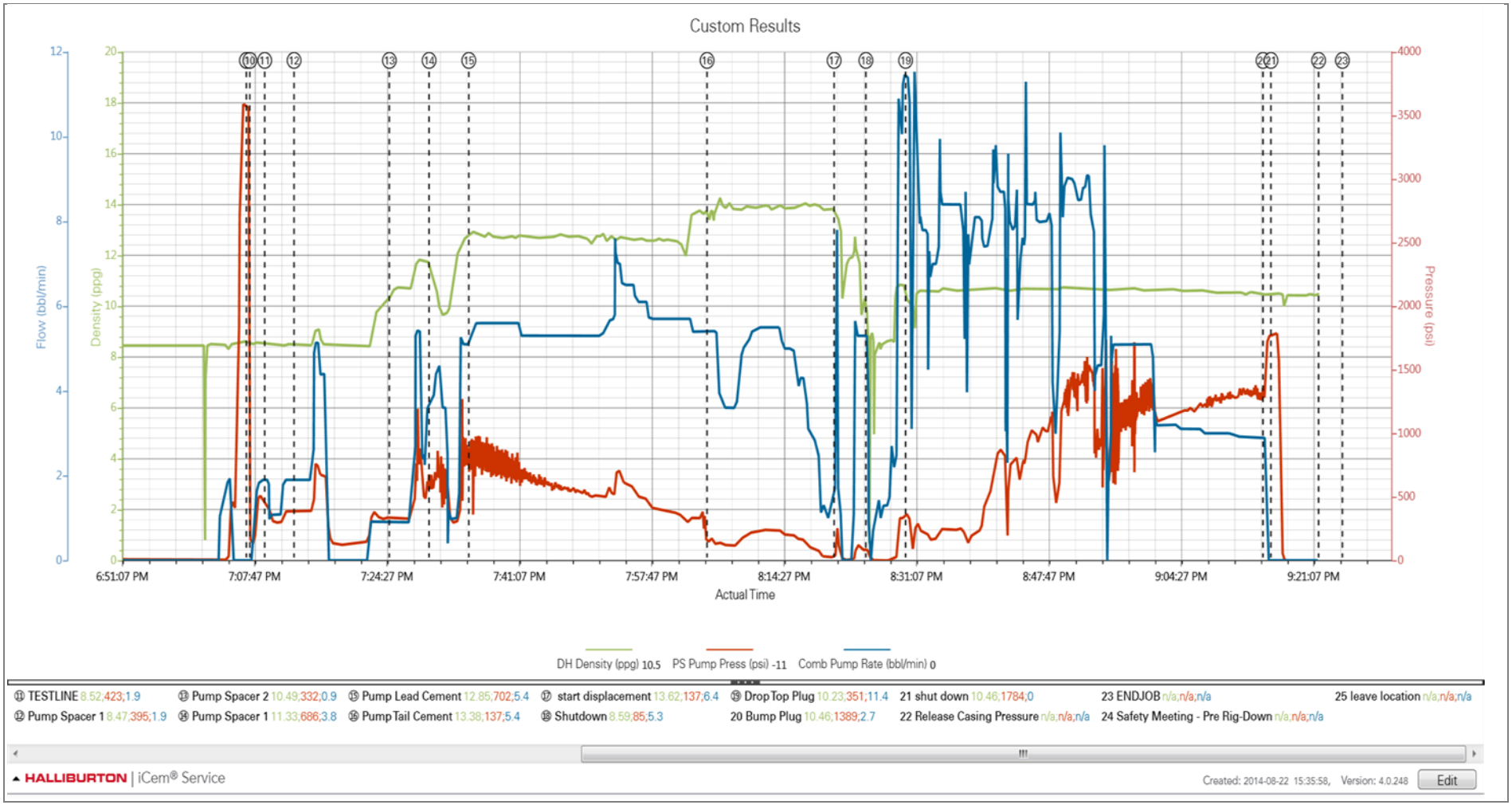
1.6 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	Downhole Density *(ppg)*	Pass-Side Pump Pressure *(psi)*	Combined Pump Rate *(bbl/min)*	Comment
Event	1	Call Out	Call Out	8/22/2014	11:00:00	USER				
Event	2	Safety Meeting - Service Center or other Site	Safety Meeting	8/22/2014	12:00:00	USER				before leaving yard
Event	3	Depart Shop for Location	Depart Shop for Location	8/22/2014	13:00:00	USER				
Event	4	Arrive At Loc	Arrive At Loc	8/22/2014	14:00:00	USER				trucks on location
Event	5	Pre-Rig Up Safety Meeting	Pre-Rig Down Safety Meeting	8/22/2014	14:10:00	USER				
Event	6	Rig-up Lines	Rig-up Lines	8/22/2014	14:30:00	USER				start rig up
Event	7	Rig-Up Completed	Rig-Up Completed	8/22/2014	15:30:00	USER				
Event	8	Safety Meeting - Pre Job	Safety Meeting - Pre Job	8/22/2014	18:00:00	USER	8.44	5.00	0.00	safety meeting pre-job wiith rig crew
Event	9	Pump Spacer 1	Pump Spacer 1	8/22/2014	19:07:00	USER	8.65	3559.00	0.00	fill lines to test
Event	10	STRTJOB	STRTJOB	8/22/2014	19:07:25	COM1	8.49	126.00	0.00	start job
Event	11	TESTLINE	TESTLINE	8/22/2014	19:09:18	COM1	8.52	423.00	1.90	test lines 3500 psi
Event	12	Pump Spacer 1	Pump Spacer 1	8/22/2014	19:13:00	USER	8.47	395.00	1.90	pump mud flush 10 bbls 4 bbls mon 600 psi
Event	13	Pump Spacer 2	Pump Spacer 2	8/22/2014	19:25:00	USER	10.49	332.00	0.90	pump 10 bbls water 4 min 600 psi
Event	14	Pump Spacer 1	Pump Spacer 1	8/22/2014	19:30:00	USER	11.33	686.00	3.80	pump 20 bbls tuned spacer 11.5 # 4 min 600 psi
Event	15	Pump Lead Cement	Pump Lead Cement	8/22/2014	19:35:00	USER	12.85	702.00	5.40	pump 159 bbls lead cement @ 12.7 bbg, 5.5bbls min 750 psi
Event	16	Pump Tail Cement	Pump Tail Cement	8/22/2014	20:05:00	USER	13.38	137.00	5.40	pump 77 bbls tail cement @ 13.8 ppg 5.5 bbls min 300 psi
Event	17	Pump Displacement - Start	start displacement	8/22/2014	20:21:00	USER	13.62	137.00	6.40	start mud displacement 7 bbls min 281 bbls
Event	18	Shutdown	Shutdown	8/22/2014	20:25:00	USER	8.59	85.00	5.30	shut down finished mixing cement
Event	19	Drop Top Plug	Drop Top Plug	8/22/2014	20:30:00	USER	10.23	351.00	11.40	drop top plug
Event	20	Bump Plug	Bump Plug	8/22/2014	21:15:00	USER	10.46	1389.00	2.70	land plug 1300 psi pressure to 1800

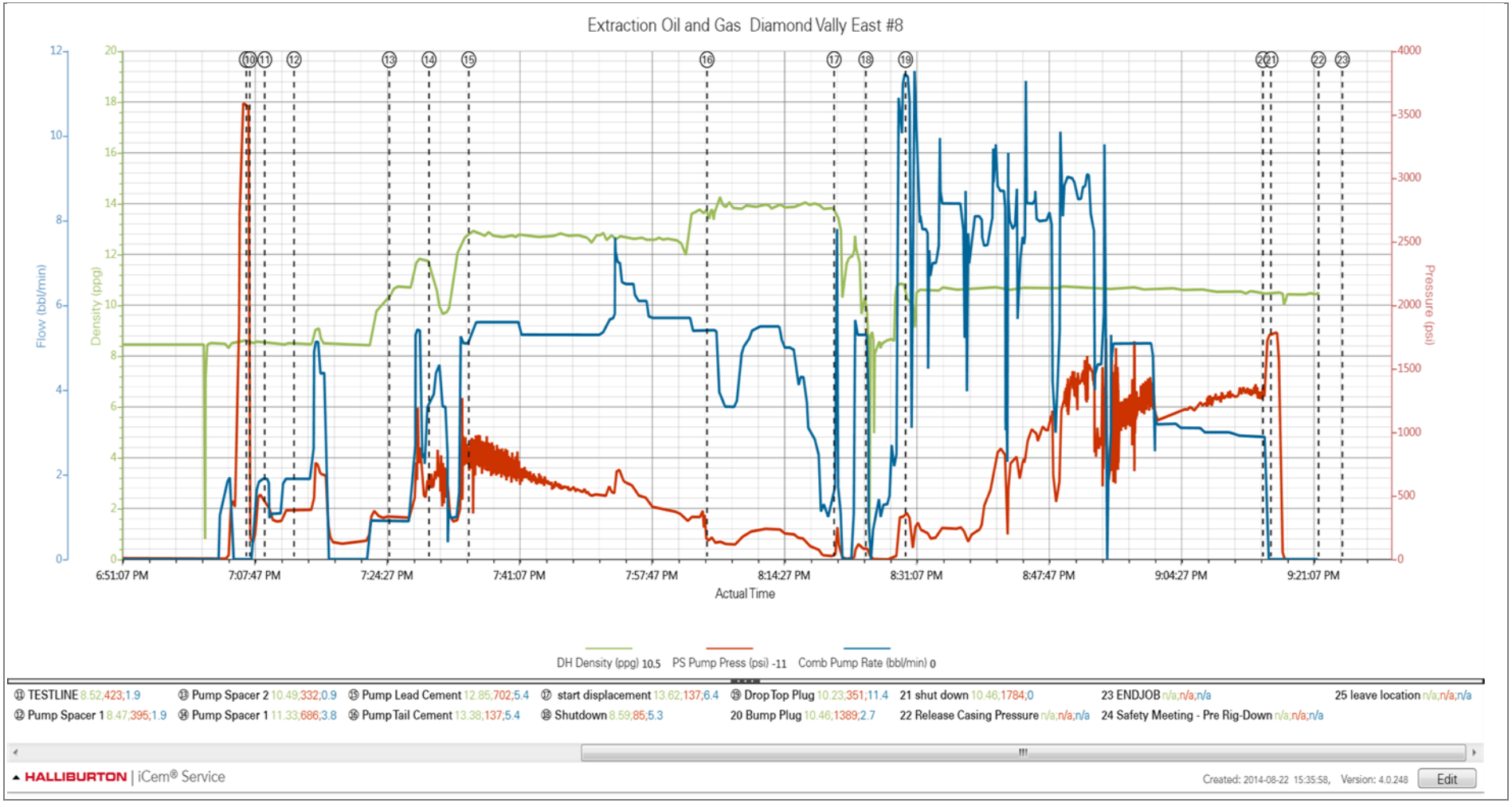
Event	21	Shutdown	shut down	8/22/2014	21:16:00	USER	10.46	1784.00	0.00	shut down and hold pressure 3 min
Event	22	Release Casing Pressure	Release Casing Pressure	8/22/2014	21:22:00	USER				1.5 bbls return floats holding 5 bbls over on displacement 12 bbls cement returned to slop tank
Event	23	ENDJOB	ENDJOB	8/22/2014	21:25:00	COM1				
Event	24	Safety Meeting - Pre Rig-Down	Safety Meeting - Pre Rig-Down	8/22/2014	22:00:00	USER				start rig down
Event	25	Depart Location	leave location	8/22/2014	22:30:00	USER				

2.0 Attachments

2.1 Extraction Oil and Gsa.png



2.2 extraction O&G.png



3.0 Appendix