

# HALLIBURTON

iCem<sup>®</sup> Service

**CONOCO/PHILLIPS COMPANY EBUSINESS**

**For:**

Date: Tuesday, November 25, 2014

**Property Reserve 4-65-3-4 1H**

Case 1

Sincerely,

Table of Contents

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1.1	Executive Summary	Error! Bookmark not defined.
1.2	Cementing Job Summary	Error! Bookmark not defined.
1.3	Planned Pumping Schedule	Error! Bookmark not defined.
1.4	Job Overview	Error! Bookmark not defined.
1.5	Water Field Test	Error! Bookmark not defined.
1.6	«BeginGroup:RealTimeJobSummary»Job Event Log	Error! Bookmark not defined.
2.0	«BeginGroup:Attachments»Attachments	Error! Bookmark not defined.
2.1	«Caption»	Error! Bookmark not defined.
3.0	«BeginGroup:HydraulicsAdHocGraph»Custom Graphs	Error! Bookmark not defined.
3.1	Custom Graph	Error! Bookmark not defined.

**1.1 Executive Summary**

Halliburton appreciates the opportunity to perform the cementing services on the **Well Name and Number** cement **Job Type** 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.

**This space is provided to enter in a brief summary of the job. Below are some important items to discuss"**

- 1. Quality of circulation before and during the job**
- 2. The final circulating pressure**
- 3. Whether or not any of the fluids that Halliburton pumped were returned to surface during the job**
- 4. Whether or not a flare was present at any point during the job**
- 5. A brief explanation any abnormalities on the job chart**
- 6. If we deviated from the original job plan, a brief explanation why we did so**

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			
On Location			
Job Started			
Job Completed			
Departed Location			

## 1.2 Cementing Job Summary

<b>Sold To #:</b> 352431		<b>Ship To #:</b> 3541346		<b>Quote #:</b> 0021949431		<b>Sales Order #:</b> 0901835420				
<b>Customer:</b> CONOCO/PHILLIPS COMPANY EBUSINESS				<b>Customer Rep:</b> Wesley Evans						
<b>Well Name:</b> PROPERTY RESERVE 4-65 3-4			<b>Well #:</b> 1 H		<b>API/UWI #:</b> 05-005-07226-00					
<b>Field:</b> WILDCAT		<b>City (SAP):</b> WATKINS		<b>County/Parish:</b> ARAPAHOE		<b>State:</b> COLORADO				
<b>Legal Description:</b> SE SE-3-4S-65W-425FSL-800FEL										
<b>Contractor:</b>				<b>Rig/Platform Name/Num:</b> H&P 280						
<b>Job BOM:</b> 7523										
<b>Well Type:</b> HORIZONTAL OIL										
<b>Sales Person:</b> HALAMERICA\HX38199				<b>Srvc Supervisor:</b> Devin Birchell						
<b>Job</b>										
<b>Formation Name</b>										
<b>Formation Depth (MD)</b>		<b>Top</b>		<b>Bottom</b>						
<b>Form Type</b>				<b>BHST</b>						
<b>Job depth MD</b>		16975ft		<b>Job Depth TVD</b>						
<b>Water Depth</b>				<b>Wk Ht Above Floor</b>						
<b>Perforation Depth (MD)</b>				<b>To</b>						
<b>Well Data</b>										
	<b>New / Used</b>	<b>Size in</b>	<b>ID in</b>	<b>Weight lbm/ft</b>	<b>Thread</b>	<b>Grade</b>	<b>Top MD ft</b>	<b>Bottom MD ft</b>	<b>Top TVD ft</b>	<b>Bottom TVD ft</b>
Casing		9.625	8.921	36		J-55	0	2229		2229
Casing		5.5	4.67	23	BTC	P-110	0	16975		8017
Open Hole Section			8.75				2229	16985	2212	8017
<b>Tools and Accessories</b>										
<b>Type</b>	<b>Size in</b>	<b>Qty</b>	<b>Make</b>	<b>Depth ft</b>		<b>Type</b>	<b>Size in</b>	<b>Qty</b>	<b>Make</b>	
Guide Shoe	5.5	1				Top Plug	5.5	1	HES	
Float Shoe	5.5	1		16975		Bottom Plug	5.5	1	HES	
Float Collar	5.5	1		16886		SSR plug set	5.5		HES	
Insert Float	5.5	1				Plug Container	5.5	1	HES	
	5.5	1				Centralizers	5.5	394	HES	
<b>Miscellaneous Materials</b>										
<b>Gelling Agt</b>		<b>Conc</b>		<b>Surfactant</b>		<b>Conc</b>		<b>Acid Type</b>		<b>Qty</b>
<b>Treatment Fld</b>		<b>Conc</b>				<b>Conc</b>		<b>Sand Type</b>		
<b>Fluid Data</b>										



Stage/Plug #: 1									
Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft <sup>3</sup> /sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal
1	Clean Spacer III	CLEANSPECER III	85	bbl	10.5	3.86		5	
30.80 gal/bbl									
0.50 gal/bbl		(003696)							
0.50 gal/bbl		(0001626)							
Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft <sup>3</sup> /sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal
2	ExtendaCem	EXTENDACEM (TM) SYSTEM	665	sack	12	1.94		5	10.29
0.20 %		(100003668)							
10.29 Gal									
Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft <sup>3</sup> /sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal
3	ExpandaCem B2	EXPANDACEM (TM) SYSTEM	1745	sack	13.8	1.67		5	7.7
7.70 Gal									
0.30 %		(027729)							
Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft <sup>3</sup> /sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal
4	MMCR Displacement	MMCR Displacement	20	bbl	8.34				
0.10 gal/bbl		RETARDER, 5 GAL PAIL (100003781)							

Fluid #	Stage Type	Fluid Name		Qty	Qty UoM	Mixing Density lbm/gal	Yield ft <sup>3</sup> /sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal
5	Displacement	Displacement		336	bbl	8.34				
		Amount	85 ft							
Comment										

## 1.4 Planned Pumping Schedule

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### 1. Fill Lines with Water

- a. Density = X
- b. Volume = X

### 2. Pressure Test Lines to Xpsi

### 3. Pump X Spacer

- a. Density = X lb/gal
- b. Volume = X bbl
- c. Rate = X bpm

### 4. Pump X Spacer

- a. Density = X lb/gal
- b. Volume = X bbl
- c. Rate = X bpm

### 5. Pump X Spacer

- a. Density = X lb/gal
- b. Volume = X bbl
- c. Rate = X bpm

### 6. Drop Bottom Plug

### 7. Pump X (Lead)

- a. Density = X
- b. Yield = X
- c. Water Requirement = X
- d. Volume = X sks (X bbls)
- e. Rate = X bpm

### 8. Pump X (Tail)

- a. Density = X
- b. Yield = X
- c. Water Requirement = X
- d. Volume = X sks (X bbls)
- e. Rate = X bpm

### 9. Drop Top Plug

### 10. Start Displacement

### 11. Pump Displacement Water

- a. Density = X lb/gal
- b. Volume = X bbls
- c. Rate = X bpm

### 12. Land Plug – Anticipated Final Circulation Pressure X psi

**Calculated Total Displacement = X bbls**

**1.5 Job Overview**

		Units	Description
1	Surface temperature at time of job	°F	46
2	Mud type (OBM, WBM, SBM, Water, Brine)	-	OBM
3	Actual mud density	lb/gal	9.8
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	N
8	Rig pressure while circulating	Psi	
9	Time from end mud circulation to start of job	HH:MM	:15
10	Pipe movement during cementing	Y/N	N
11	Calculated displacement	Bbls	356
12	Job displaced by	Rig/HES	HES
13	Annular before job)?	Y/N	0
14	Annular flow after job	Y/N	0
15	Length of rat hole	Ft	10
16	Units of gas detected while circulating	Units	0
17	Was lost circulation experienced at any time ?	Y/N	N

**Lost Circulation Details**



**Squeeze Job Information**

		Units	Description
1	Was the well full prior to cementing?	Y/N	
2	Injection Rate #1 & Pressure	psi/bpm	
3	Injection Rate #2 & Pressure	psi/bpm	
4	Injection Rate #2 & Pressure	psi/bpm	
5	Initial ISIP	psi	
6	Final ISIP	psi	

**Plug Job Information**

		Units	Description
1	Density of well fluid exiting well prior to job	lb/gal	
2	Density of well fluid entering well prior to job	lb/gal	
3	Was the well full prior to cementing?	Y/N	
4	How many joints of workstring pulled wet?	# Joints	
5	Depth of workstring for circulation after the plug?	ft	
6	Calculated Plug Height	ft	

## 1.6 Water Field Test

Item	Recorded Test Value	Units	Max. Acceptable Limit	Potential Problems in Exceeding Limit
pH	7	----	6.0 - 8.0	Chemicals in the water can cause severe retardation
Chlorides	0	ppm	3000 ppm	Can shorten thickening time of cement
Sulfates	0	ppm	1500 ppm	Will greatly decrease the strength of cement
Total Hardness	0	ppm	500 mg/L	High concentrations will accelerate the set of the cement
Calcium	0	ppm	500 ppm	High concentrations will accelerate the set of the cement
Total Alkalinity	0	ppm	1000 ppm	Cement is greatly retarded to the point where it may not set up at all (typically occurs @ pH ≥ 8.3).
Bicarbonates	0	ppm	1000 ppm	Cement is greatly retarded to the point where it may not set up at all
Potassium	0	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	0	ppm	300 ppm	High concentrations will accelerate the set of the cement
Temperature	58	°F	50-80 °F	High temps will accelerate; Low temps may risk freezing in cold weather

Submitted Respectfully by: \_\_\_\_\_

**1.7 Job Event Log**

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	Truck 1 Pr (psi)	Truck 1 Dens (ppg)	Truck 1 Slry Rt (bbl/min)	Comment
Event	1	Call Out	Call Out	11/24/2014	20:00:12	USER				called cement crew out for conoco/phillips production
Event	2	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	11/25/2014	01:20:21	USER				discussed route weather following distance other traffic
Event	3	Depart from Service Center or Other Site	Depart from Service Center or Other Site	11/25/2014	01:30:21	USER				called journey and departed for location
Event	4	Arrive At Loc	Arrive At Loc	11/25/2014	02:30:12	USER				pump and bulk trucks made it to location the batchmixer was waiting for a replacement tractor ( batchmixer arrived at 0400)
Event	5	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	11/25/2014	02:40:12	USER				discuss spotting equipment wswing path and hand placement
Event	6	Rig-Up Equipment	Rig-Up Equipment	11/25/2014	02:45:14	USER				spot pump and bulk truck and rigged iron to red zone
Event	7	Pre-Job Safety Meeting	Pre-Job Safety Meeting	11/25/2014	10:40:15	USER	-22.00	2.08	0.00	discussed job procedures with rig and cement crews
Event	8	Rig-Up Completed	Rig-Up Completed	11/25/2014	12:15:45	USER	-6.00	7.66	0.00	loaded and rigged up cement head to casing and tied in stand pipe
Event	9	Start Job	Start Job	11/25/2014	12:17:47	COM1	-6.00	8.16	0.00	
Event	10	Prime Pumps	Prime Pumps	11/25/2014	12:18:04	USER	5.00	8.18	1.10	filled pump and lines ready for pressure test
Event	11	Test Lines	Test Lines	11/25/2014	12:20:23	COM1	4678.00	8.42	0.00	test pump and lines to 4691 psi
Event	12	Pump Spacer 1	Pump Spacer 1	11/25/2014	12:24:47	COM1	4.00	8.20	0.00	pump 85 bbls cleaned spacer III @ 10.5 ppg
Event	13	Drop Bottom Plug	Drop Bottom Plug	11/25/2014	13:09:02	COM1	92.00	8.37	2.60	dropped bottom plug with driller witnessing
Event	14	Pump Lead Cement	Pump Lead Cement	11/25/2014	13:09:09	COM1	101.00	9.82	2.60	pump 229 bbls (665 sks) 12 ppg lead, y: 1.94 ft3/sk w:



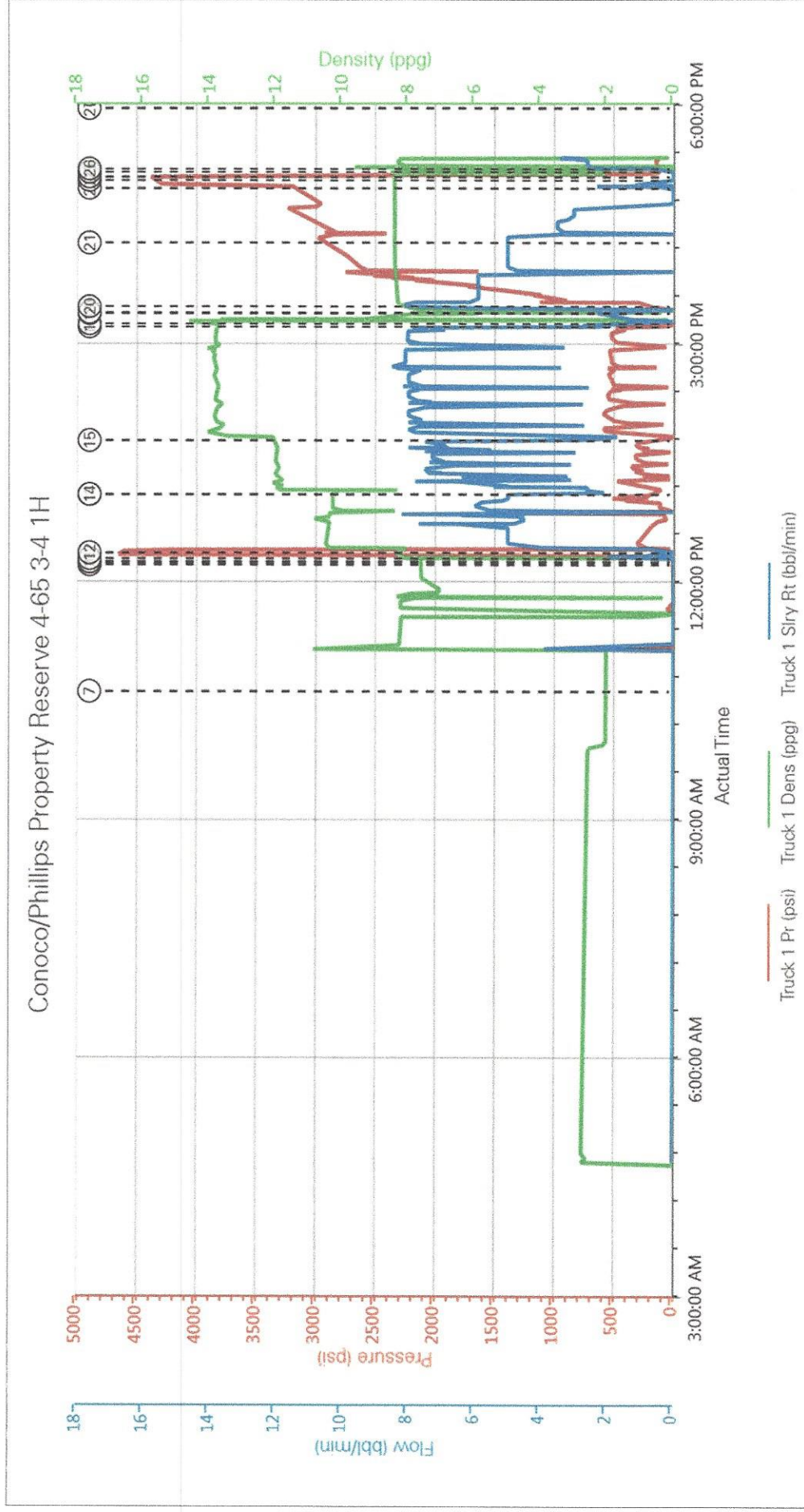
										10.29 gal/sk
Event	15	Pump Tail Cement	Pump Tail Cement	11/25/2014	13:50:04	COM1	-46.00	12.77	1.70	pump 519 bbls (1745 sks) 13.8 ppg lead, y: 1.67 ft3/sk w: 7.7 gal/sk
Event	16	Shutdown	Shutdown	11/25/2014	15:15:38	COM1	-85.00	13.93	0.00	shutdown to drop plug and to clean pump and lines
Event	17	Clean Lines	Clean Lines	11/25/2014	15:17:56	COM1	-159.00	0.16	1.50	clean pump and lines to haul off pit
Event	18	Drop Top Plug	Drop Top Plug	11/25/2014	15:25:44	COM1	-137.00	7.82	0.00	drop top plug with company rep witnessing
Event	19	Pump Displacement	Pump Displacement	11/25/2014	15:26:33	COM1	61.00	7.81	1.80	pump 10 bbls mmcr water and 346 bbls fresh water
Event	20	Displ Reached Cmnt	Displ Reached Cmnt	11/25/2014	15:31:01	USER	383.00	8.34	8.10	with 36 bbls away displacement reached cement
Event	21	Spacer Returns to Surface	Spacer Returns to Surface	11/25/2014	16:19:01	USER	2978.00	8.42	5.00	with 294 bbls displacement away spacer returns to surface
Event	22	Bump Plug	Bump Plug	11/25/2014	17:00:29	COM1	4308.00	8.44	0.00	bump plug with 3164 psi and too pressure to 4358 psi
Event	23	Check Floats	Check Floats	11/25/2014	17:06:27	USER	4395.00	8.42	0.00	held pressure for 5 minutes and checked floats, floats held with 5 bbls back to truck
Event	24	End Job	End Job	11/25/2014	17:09:01	COM1	114.00	8.54	0.00	job completed
Event	25	Pre-Rig Down Safety Meeting	Pre-Rig Down Safety Meeting	11/25/2014	17:12:36	USER	136.00	8.77	2.70	discussed swing path hand placement team lifting
Event	26	Rig-Down Equipment	Rig-Down Equipment	11/25/2014	17:15:01	USER	150.00	8.33	2.60	rig down all iron and hoses
Event	27	Rig-Down Completed	Rig-Down Completed	11/25/2014	18:00:15	USER				walk around to ensure everything is properly put away
Event	28	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	11/25/2014	18:10:24	USER				discussed route weather following distance other traffic
Event	29	Depart Location for Service Center or Other Site	Depart Location for Service Center or Other Site	11/25/2014	18:20:14	USER				thank you for using halliburton energy services





2.0 Custom Graphs

2.1 Custom Graph



Insert Planned Pump Schedule from Proposal or actual Job Procedure built for job