

# HALLIBURTON

iCem<sup>®</sup> Service

**ANADARKO PETROLEUM CORP - EBUS**

**For:**

Date: Wednesday, July 16, 2014

**NRC 27N-5HZ**

Case 1

Sincerely,  
**Wesley Whipple**

Table of Contents

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

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Halliburton appreciates the opportunity to perform the cementing services on the **NRC 27N-5HZ** cement **Surface** 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**

	<b>Date</b>	<b>Time</b>	<b>Time Zone</b>
<b>Job Started</b>	5/1/2014	12:43:13	MT
<b>Job Completed</b>	5/1/2014	14:03:29	MT
<b>Departed Location</b>	5/1/2014	14:30:00	MT

## 1.2 Cementing Job Summary

<i>The Road to Excellence Starts with Safety</i>			
Sold To #: <b>300466</b>	Ship To #: <b>3367960</b>	Primary Sales Order #: <b>0901301338</b>	
Customer: <b>ANADARKO PETROLEUM CORP - EBUS</b>		Job Purpose: <b>7521 CMT SURFACE CASING BOM</b>	
Well Name: <b>NRC</b>		Well #: <b>27N-5 HZ</b>	API/UWI #: <b>05-123-39156-00</b>
Field: <b>WATTENBERG</b>	City: <b>ION</b>	Country/Parish: <b>WELD</b>	State/Prov: <b>COLORADO</b>
Legal Description:			
Rig Name & Number / Phone Number: <b>Majors 29 / 303-728-3910</b>			Location: <b>LAND</b>
myCem id# :	Job Criticality Status: <b>GREEN</b>	iFacts Request id #:	
<b>Contacts</b>			
Type	Name	Email	Phone
<b>Account Rep</b>	<b>Ryan Wyckoff</b>	<b>Ryan.Wyckoff@halliburton.com</b>	<b>+17205386044</b>
<b>Service Coordinator</b>	<b>Jonathan Snyder</b>	<b>Jonathan.Snyder@Halliburton.com</b>	<b>+13033040816</b>
<b>Company Man</b>			
<i>PPE, Safety Huddles, JSA's, HOC &amp; Near Miss Reporting, BBP Observations</i>			
Distance/Mileage(1 way)	<b>30 mile</b>	Distance/Mileage(1 way) Mtls:	<b>30 mile</b>
Srvcs:		Rqstd Job Start Date/Time:	<b>04/26/2014</b>
<b>HSE Information</b>			
H2S Present:	<b>Unknown</b>	CO2 Present:	<b>Unknown</b>
<b>Drive Safely. Lights On for Safety. Wear Seat Belts. Observe all HES / Customer Safety Policies.</b>			
Directions:			
WCR 12 & WCR 17,W 2/10,S 1/10 into			
<b>Instruction</b>			

<b>Job Info / Well Data</b>											
Job Depth (MD) <b>ft</b>	Job Depth (TVD) <b>ft</b>	Well Fluid Type		Well Fluid Weight <b>lbm/gal</b>		Displacement Fluid		Displ Fluid Weight <b>lbm/gal</b>			
<b>1338</b>						<b>Displacement</b>		<b>8.33</b>			
BHST <b>degF</b>	BHCT <b>degF</b>	Log Temp <b>degF</b>				Time Since Circ Stopped <b>HH:MM:SS</b>					
<b>Job Tubulars/Tools</b>											
Description	Size <b>in</b>	Weight <b>lbm/ft</b>	ID <b>in</b>	Thread	Grade	Top MD <b>ft</b>	Btm MD <b>ft</b>	Top TVD <b>ft</b>	Btm TVD <b>ft</b>	Shoe Jnt <b>ft</b>	% Excess
<b>13.5" Open Hole</b>			<b>13.5</b>			<b>0</b>	<b>1338</b>				<b>0</b>
<b>9.625" Surface Casing</b>	<b>9.625</b>	<b>36</b>	<b>8.921</b>		<b>J-55</b>	<b>0</b>	<b>1328</b>			<b>38</b>	
<b>Mud conditioning plan</b>											
The condition of the drilling fluid is one of the most important variables in achieving a cement barrier. Prior to cementing, circulate the mud at the planned highest displacement rate for the cement job for at least 2 bottoms-up until the well is clean, mud is free of gas and pump pressures have stabilized.											
<b>Materials</b>											
Stage/Plug #: 1											
Fluid #	Fluid Name	Package/SBM/Material	Rqstd	UOM	Density	Yield <b>ft<sup>3</sup>/</b>	Water Req	Rate	Total Mix	Surface Bat	

		Name	Del Qty		lbm/gal	sack	Gal/sack	bbl/min	Fluid Gal/sack	Mixing Time
1		Mud Flush III (Powder)	12	bbl	8.4					
iFacts Test id #										
Fluid #	Fluid Name	Package/SBM/Material Name	Rqstd Del Qty	UOM	Density lbm/gal	Yield ft3/ sack	Water Req Gal/sack	Rate bbl/min	Total Mix Fluid Gal/sack	Surface Batch Mixing Time hr
	Lead Cement	SWIFTCM (TM) SYSTEM	478	sack	14.2	1.54	7.64	6	7.63	
iFacts Test id #		2128174								
Fluid #	Fluid Name	Package/SBM/Material Name	Rqstd Del Qty	UOM	Density lbm/gal	Yield ft3/ sack	Water Req Gal/sack	Rate bbl/min	Total Mix Fluid Gal/sack	Surface Batch Mixin Time
	Displacement		99.4	bbl	8.33					
iFacts Test id #										
Caution: Displacement quantities and densities are estimates ONLY! Do not use them for the actual job.										
Packaged Materials										
SAP #	Material		Qty	UOM		Comments				
	FRESH WATER		3647.3	Gal						
Casing Equipment										

**1.3 Planned Pumping Schedule**

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Stage / Plug #	Fluid #	Fluid Type	Fluid Name	Surface Density lbm/gal	Avg Rate bbl/min	Surface Volume	Downhole Volume
1	1	Spacer	Fresh Water Spacer	8.33	1.7	10.0 bbl	10.0 bbl
1	1	Spacer	Mud Flush	8.40	2.0	12.0 bbl	12.0 bbl
1	1	Spacer	Fresh Water Spacer	8.33	3.0	10.0 bbl	10.0 bbl
1	2	Cement Slurry	SwiftCem B2	14.2	5.5	478 sacks	478 sacks

**1.4 Job Overview**

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		Units	Description
1	Surface temperature at time of job	°F	
2	Mud type (OBM, WBM, SBM, Water, Brine)	-	WBM
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	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	N

11	Calculated displacement	Bbls	99.5
12	Job displaced by	Rig/HES	HES
13	Annular before job)?	Y/N	N
14	Annular flow after job	Y/N	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	N





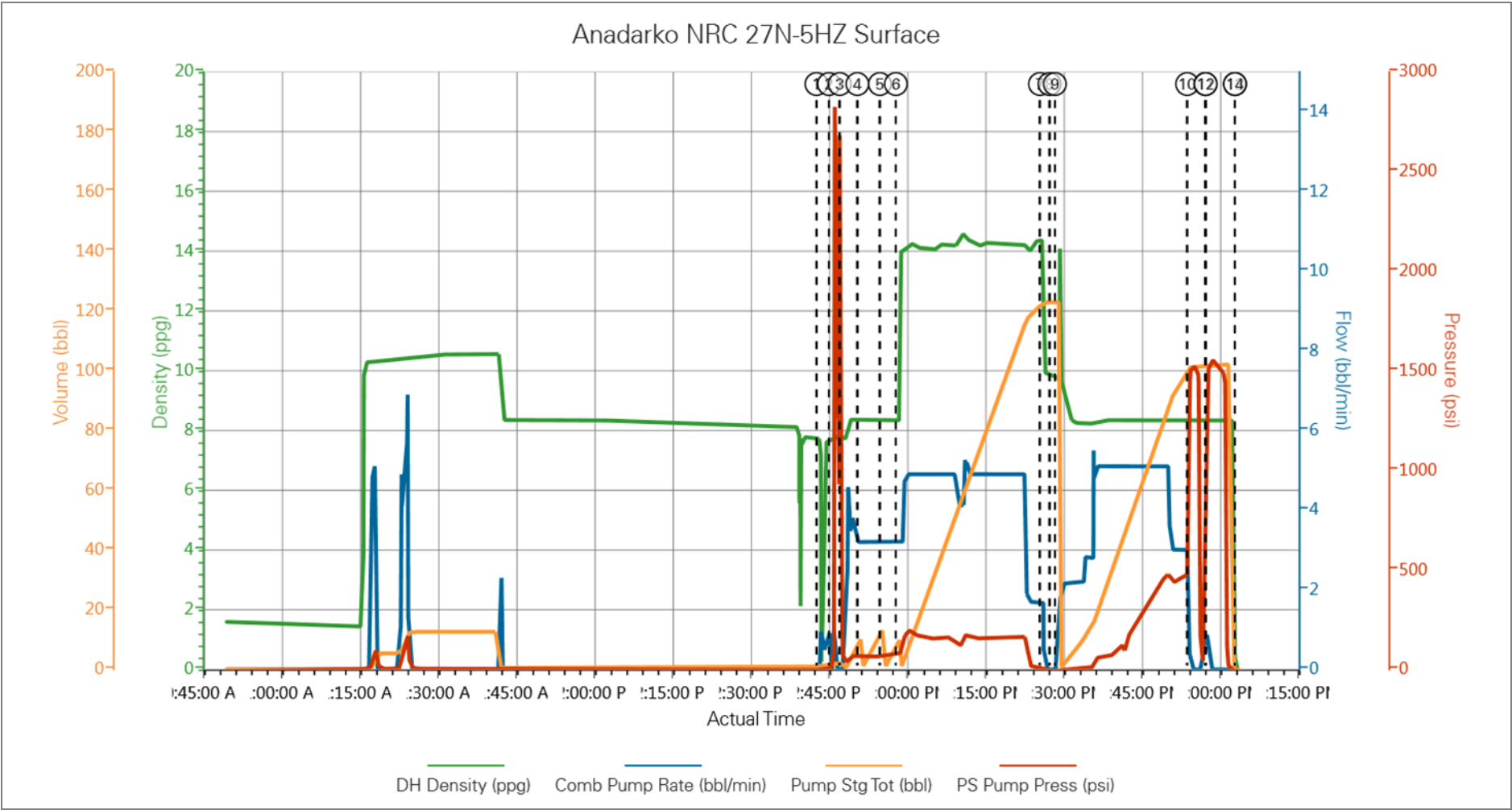
## 1.5 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	DH Density (ppg)	Comb Pump Rate (bbl/min)	Pump Stg Tot (bbl)	PS Pump Press (psi)	Comment
Event	1	Start Job	Start Job			COM5	7.69	0.00	1.0	-3.00	
Event	2	Test Lines	Test Lines	5/1/2014	12:45:37	COM5	7.73	0.00	2.0	4.00	Pressure Test pumps and lines to 2500 psi. found no leaks in line and pressure held
Event	3	Pump Spacer 1	Pump Spacer 1	5/1/2014	12:47:41	COM5	7.72	0.00	0.0	27.00	Pump 10bbls of fresh water spacer
Event	4	Pump Spacer 2	Pump Spacer 2	5/1/2014	12:51:04	COM5	8.31	3.20	10.5	61.00	Mix and Pump 12bbls of Mud Flush Spacer
Event	5	Pump Spacer 1	Pump Spacer 1	5/1/2014	12:55:23	COM5	8.33	3.20	0.0	68.00	Pump 10bbls of Fresh water spacer
Event	6	Pump Cement	Pump Cement	5/1/2014	12:58:28	COM5	8.33	3.20	0.0	74.00	Mix and Pump 478 sks/ 131 bbls of SwiftCem @ 14.2 ppg. Density verified by pressureized mud scales.
Event	7	Shutdown	Shutdown	5/1/2014	13:26:06	COM5	10.87	0.00	122.9	8.00	Shutdown to wash Cement Mixing System
Event	8	Drop Top Plug	Drop Top Plug	5/1/2014	13:27:56	COM5	9.87	0.00	122.9	-7.00	Drop top plug from HES plug container. Witnessed by Anadarko company rep
Event	9	Pump Displacement	Pump Displacement	5/1/2014	13:28:58	COM5	9.69	0.00	0.0	-8.00	Pump Fresh water

											displacement
Event	10	Bump Plug	Bump Plug	5/1/2014	13:54:20	COM5	8.33	0.00	101.4	1518.00	Bump plug 500psi over final pumping pressure
Event	11	Bump Plug	Bump Plug	5/1/2014	13:57:50	COM5	8.35	0.00	102.1	1555.00	
Event	12	Other	Other	5/1/2014	13:57:54	COM5	8.35	0.00	102.1	1563.00	release pressure back to pump truck , recieved 1bbl back. pressured back up on casing to 1500psi. pressure held. checked floats again and recieved 1bbl back.
Event	13	End Job	End Job	5/1/2014	14:03:29	COM5	0.06	0.00	0.0	-6.00	end Job
Event	14	Rig-Down Equipment	Rig-Down Equipment	5/1/2014	14:03:30	USER	0.06	0.00	0.0	-6.00	Commenced rig down of all equipment.
Event	15	Depart Location	Depart Location	5/1/2014	14:30:00	USER					Crew held pre journey safety meeting to discuss road conditions, route being traveled and potential driving hazards. all drivers fit for duty

2.0 Custom Graphs

2.1 Custom Graph



## 3.0 Appendix

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