

# HALLIBURTON

iCem<sup>®</sup> Service

**ANADARKO PETROLEUM CORP - EBUS**

**For:**

Date: Saturday, June 28, 2014

**Johnson 2N-24HZ**

Surface

Sincerely,

**Devin Birchell**

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## 1.1 Executive Summary

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Halliburton appreciates the opportunity to perform the cementing services on the **Johnson 2N-24HZ** 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]**

## 1.2 Cementing Job Summary

<b>Sold To #:</b> 300466		<b>Ship To #:</b> 3530798		<b>Quote #:</b>		<b>Sales Order #:</b> 0901468139	
<b>Customer:</b> ANADARKO PETROLEUM CORP - EBUS				<b>Customer Rep:</b> Toby			
<b>Well Name:</b> JOHNSON			<b>Well #:</b> 2N-24HZ		<b>API/UWI #:</b> 05-123-39460-00		
<b>Field:</b> WATTENBERG		<b>City (SAP):</b> PLATTEVILLE		<b>County/Parish:</b> WELD		<b>State:</b> COLORADO	
<b>Legal Description:</b> SW SE-24-3N-66W-653FSL-2069FEL							
<b>Contractor:</b>				<b>Rig/Platform Name/Num:</b> Majors 29			
<b>Job BOM:</b> 7521							
<b>Well Type:</b> HORIZONTAL GAS							
<b>Sales Person:</b> HALAMERICA\HX46524				<b>Srv 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>		979ft			<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	979		
Open Hole Section			13.5				0	979		
<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	9.625					Top Plug	9.625	1	HES	
Float Shoe	9.625	1		972		Bottom Plug	9.625		HES	
Float Collar	9.625	1		930		SSR plug set	9.625		HES	
Insert Float	9.625					Plug Container	9.625	1	HES	
	9.625					Centralizers	9.625	7	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>										
<b>Stage/Plug #: 1</b>										

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	Mud Flush III (Powder)	Mud Flush III	12	bbl	8.4				
42 gal/bbl									
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	Lead Cement	SWIFTCEM (TM) SYSTEM	383	sack	14.2	1.54		6	7.64
0.20 %		(1376573)							
0.1250 lbm		(40)							
2 lbm		(01894003)							
1.60 %									
2 %		(101217146)							
7.64 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	Displacement	Displacement	72	bbl	8.33				
		Amount	42 ft						

**Comment**

## 1.4 Planned Pumping Schedule

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1. **Fill Lines with Water**
  - a. Density = 8.3
  - b. Volume = 2
2. **Pressure Test Lines to 3000psi**
3. **Pump X Spacer**
  - a. Density = 8.3 lb/gal
  - b. Volume = 10 bbl
  - c. Rate = 2 bpm
4. **Pump X Spacer**
  - a. Density = 8.4 lb/gal
  - b. Volume = 12 bbl
  - c. Rate = 2 bpm
5. **Pump X Spacer**
  - a. Density = 8.3 lb/gal
  - b. Volume = 10 bbl
  - c. Rate = 4 bpm
6. **Pump X (Lead)**
  - a. Density = 14.2
  - b. Yield = 1.54
  - c. Water Requirement = 7.64
  - d. Volume = 383 sks (105 bbls)
  - e. Rate = 4 bpm
7. **Drop Top Plug**
8. **Start Displacement**
9. **Pump Displacement Water**
  - a. Density = 8.3 lb/gal
  - b. Volume = 72 bbls
  - c. Rate = 5 bpm

10. Land Plug – Anticipated Final Circulation Pressure 350 psi

**Calculated Total Displacement = 72 bbls**

## 1.5 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	6/28/2014	13:00:21	USER				called cement crew for anadarko johnson 2n-24hz surface
Event	2	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	6/28/2014	17:00:12	USER				discussed route weather other traffic following distance
Event	3	Depart from Service Center or Other Site	Depart from Service Center or Other Site	6/28/2014	17:10:25	USER				called journey gate checked and departed for location
Event	4	Arrive At Loc	Arrive At Loc	6/28/2014	18:00:21	USER				ended journey talked with company rep on volumes rates depths and pressures
Event	5	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	6/28/2014	18:05:24	USER				discussed spotting equipment hand placement swing path pinch points
Event	6	Rig-Up Equipment	Rig-Up Equipment	6/28/2014	18:10:45	USER				spotted pump rigged up water, bulk hoses and ground iron
Event	7	Pre-Job Safety Meeting	Pre-Job Safety Meeting	6/28/2014	18:50:14	USER	44.00	11.10	2.20	discussed job procedures with rig and cement crews
Event	8	Rig-Up Completed	Rig-Up Completed	6/28/2014	19:11:01	USER	30.00	11.16	0.00	loaded plug and rigged cement head to casing and rigged up main line
Event	9	Prime Pumps	Prime Pumps	6/28/2014	19:12:45	USER	29.00	11.12	0.00	primed pump and lines for pressure test
Event	10	Test Lines	Test Lines	6/28/2014	19:13:49	COM1	33.00	8.25	0.00	test pump and lines t 3000 psi
Event	11	Pump Spacer 1	Pump Spacer 1	6/28/2014	19:15:48	COM1	34.00	8.33	0.00	pump 10 bbls fresh water spacer
Event	12	Pump Spacer 2	Pump Spacer 2	6/28/2014	19:21:10	COM1	60.00	8.33	2.60	pump 12 bbls mud flush III spacer
Event	13	Pump Spacer 1	Pump Spacer 1	6/28/2014	19:25:10	COM1	86.00	8.31	4.10	pump 10 bbls fresh water spacer

Event	14	Pump Lead Cement	Pump Lead Cement	6/28/2014	19:27:47	COM1	94.00	8.35	4.10	pump 105 bbls ( 383 sks) 14.2ppg slurry, y:1.54 ft3/sk w: 7.64 gal/sk
Event	15	Shutdown	Shutdown	6/28/2014	19:53:46	COM1	51.00	3.16	0.00	shutdown to drop plug and to wash pump and lines
Event	16	Clean Lines	Clean Lines	6/28/2014	19:53:50	COM1	46.00	2.02	0.00	cleaned pump and lines on top of plug
Event	17	Drop Top Plug	Drop Top Plug	6/28/2014	19:56:10	COM1	37.00	1.74	0.00	dropped top plug
Event	18	Pump Displacement	Pump Displacement	6/28/2014	19:56:13	COM1	37.00	1.74	0.00	pump 72 bbls fresh water displacement
Event	19	Spacer Returns to Surface	Spacer Returns to Surface	6/28/2014	19:59:45	USER	55.00	8.02	4.90	spacer returns to surface with 13 bbls displacement away
Event	20	Cement Returns to Surface	Cement Returns to Surface	6/28/2014	20:07:45	USER	329.00	8.30	4.90	cement returns to surface with 45 bbls displacement away (27bbls back)
Event	21	Bump Plug	Bump Plug	6/28/2014	20:13:43	COM1	1180.00	8.27	0.00	bumped plug with 402 psi took pressure to 1273 psi
Event	22	Check Floats	Check Floats	6/28/2014	20:15:23	USER	136.00	8.41	0.00	checked floats, floats held with .5 bbls back
Event	23	Pressure Up Well	Pressure Up Well	6/28/2014	20:16:50	USER	1044.00	8.27	0.80	pressure up well to 1300 psi and hold for 5 minutes
Event	24	Release Casing Pressure	Release Casing Pressure	6/28/2014	20:21:32	USER	1313.00	8.34	0.00	released all pressure ready for rig down
Event	25	End Job	End Job	6/28/2014	20:22:18	COM1	59.00	8.35	0.00	job completed
Event	26	Pre-Rig Down Safety Meeting	Pre-Rig Down Safety Meeting	6/28/2014	20:24:05	USER	-1.00	0.16	0.00	discussed hand placement pinch points
Event	27	Rig-Down Equipment	Rig-Down Equipment	6/28/2014	20:30:12	USER	0.00	8.32	1.30	rig down all bulk and water hoses rig float and main line
Event	28	Rig-Down Completed	Rig-Down Completed	6/28/2014	21:00:25	USER				walk around to check all equipment
Event	29	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	6/28/2014	21:05:12	USER				discussed route weather other traffic following distance
Event	30	Depart Location for Service Center or Other Site	Depart Location for Service Center or Other Site	6/28/2014	21:10:45	USER				thank you for using halliburton energy services

2.0 Custom Graphs

2.1 Custom Graph





