

# HALLIBURTON

iCem<sup>®</sup> Service

## **BISON OIL AND GAS LLC**

Date: Monday, January 15, 2018

### **Castor 8-59 19-24-12 Production**

Job Date: Tuesday, December 12, 2017

Sincerely,

**Bryce Hinsch**

## Legal Notice

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## 1.0 Cementing Job Summary

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### 1.1 Executive Summary

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Halliburton appreciates the opportunity to perform the cementing services on the **Castor 8-59 19-24-12** 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 15 bbls of cement were brought 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]**

*The Road to Excellence Starts with Safety*

<b>Sold To #:</b> 380957		<b>Ship To #:</b> 3837907		<b>Quote #:</b>		<b>Sales Order #:</b> 0904495405					
<b>Customer:</b> BISON OIL & GAS II LLC				<b>Customer Rep:</b> Michael Magness							
<b>Well Name:</b> CASTOR 8-59			<b>Well #:</b> 19-24-12		<b>API/UWI #:</b> 05-123-45842-00						
<b>Field:</b> WILDCAT		<b>City (SAP):</b> RAYMER		<b>County/Parish:</b> WELD		<b>State:</b> COLORADO					
<b>Legal Description:</b> NE SE-19-8N-59W-1533FSL-410FEL											
<b>Contractor:</b> ENSIGN DRLG				<b>Rig/Platform Name/Num:</b> ENSIGN 160							
<b>Job BOM:</b> 7523 7523											
<b>Well Type:</b> HORIZONTAL OIL											
<b>Sales Person:</b> HALAMERICA/H139013				<b>Srv Supervisor:</b> Nicholas Roles							
<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>		13420ft				<b>Job Depth TVD</b>					
<b>Water Depth</b>						<b>Wk Ht Above Floor</b>					
<b>Perforation Depth (MD)</b>		<b>From</b>				<b>To</b>					
<b>Well Data</b>											
<b>Description</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			0	1930		1930	
Casing		5.5	4.67	23			0	13420	0	13420	
Open Hole Section			8.5				1930	13428	1930	13428	
<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					Top Plug	5.5	1	HES		
Float Shoe	5.5			13420		Bottom Plug	5.5	2	HES		
Float Collar	5.5					SSR plug set	5.5		HES		
Insert Float	5.5					Plug Container	5.5		HES		
Stage Tool	5.5					Centralizers	5.5		HES		
<b>Fluid Data</b>											
<b>Stage/Plug #: 1</b>											
<b>Fluid #</b>	<b>Stage Type</b>	<b>Fluid Name</b>			<b>Qty</b>	<b>Qty UoM</b>	<b>Mixing Density lbm/gal</b>	<b>Yield ft3/sack</b>	<b>Mix Fluid Gal</b>	<b>Rate bbl/min</b>	<b>Total Mix Fluid Gal</b>
1	12.0 lb/gal Tuned Spacer III	Tuned Spacer III			80	bbl	12	3.16		5	
0.40 gal/bbl		<b>MUSOL(R) A, BULK (100003696)</b>									
34 gal/bbl		<b>FRESH WATER</b>									

176.58 lbm/bbl		BARITE, BULK (100003681)							
0.40 gal/bbl		DUAL SPACER SURFACTANT B, 5 GAL PAIL (100003665)							
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	13.2# ElastiCemLead	ELASTICEM (TM) SYSTEM	1050	sack	13.2	1.57		8	7.54
0.20 %		HALAD(R)-344, 50 LB (100003670)							
7.54 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
3	13.2# NeoCem Tail	NeoCem TM	840	sack	13.2	2.04		8	9.75
0.07 %		SCR-100 (100003749)							
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	Fresh Water	Fresh Water	297	bbl	9.25			8	
Cement Left In Pipe		Amount	46 ft		Reason			Shoe Joint	
Comment Got 15bbls cement to surface. Estimated TOT-6430'									

## 2.0 Real-Time Job Summary

### 2.1 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	DH Density (ppg)	Comb Pump Rate (bbl/min)	DS Pump Press (psi)	Comments
Event	1	Call Out	Call Out	12/12/2017	10:00:00	USER				Called out by Service Coordinator for O/L at 1800
Event	2	Depart Yard Safety Meeting	Depart Yard Safety Meeting	12/12/2017	13:45:00	USER				Held meeting with all personnel in convoy to discuss directions and hazards associated with drive, all fit to drive.
Event	3	Depart from Service Center or Other Site	Depart from Service Center or Other Site	12/12/2017	14:00:00	USER				Journey Management prior to departure
Event	4	Arrive at Location from Service Center	Arrive at Location from Service Center	12/12/2017	16:00:00	USER				Upon arrival met with company man to discuss job details and calculations, performed hazard hunt and site assessment. Rig had 2000' casing left to run.
Event	5	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	12/12/2017	16:15:00	USER				Discussed rigging up hazards and procedure according to HMS.
Event	6	Other	Other	12/12/2017	17:00:00	USER				Water test- PH-5, Chlor-0, Temp-45. Cement temp-50.
Event	7	Pre-Job Safety Meeting	Pre-Job Safety Meeting	12/12/2017	19:00:00	USER				Held safety meeting with all job associated personnel to discuss job procedure, hazards and stop work authority.
Event	8	Start Job	Start Job	12/12/2017	19:57:09	COM4	8.33	0.00	-3.00	
Event	9	Start Job	Start Job	12/12/2017	20:18:58	COM4	8.34	0.00	-4.00	T

Event	10	Test Lines	Test Lines	12/12/2017	20:23:19	USER	8.36	0.00	39.00	Pumped 5bbls fresh water to fill lines, closed manifold and performed 500psi k/o function test, proceeded to perform 5th gear stall at 1520psi, continued to bring pressure up to 5000psi. Pressure stabilized and held with no leaks
Event	11	Drop Bottom Plug	Drop Bottom Plug	12/12/2017	20:30:52	USER	8.39	0.00	-2.00	Dropped by HES supervisor, witnessed by company man.
Event	12	Pump Spacer 1	Pump Spacer 1	12/12/2017	20:32:29	COM4	8.39	0.00	-2.00	Pumped 80bbls 12# 3.16y 19.5g/s Tuned Spacer III with 35g Musol A, 35g Dual Spacer B and 10g D-Air at 5bpm 420psi.
Event	13	Check Weight	Check weight	12/12/2017	20:40:10	COM4	12.01	5.00	358.00	Weight verified with pressurized mud scales.
Event	14	Drop Bottom Plug	Drop Bottom Plug	12/12/2017	20:53:00	USER	11.80	0.00	34.00	Dropped by HES supervisor, witnessed by company man.
Event	15	Pump Lead Cement	Pump Lead Cement	12/12/2017	20:54:54	COM4	11.79	0.00	34.00	Pumped 1050sks or 294bbls 13.2# 1.57y 7.54g/s Elasticem at 8bpm 900psi.
Event	16	Check Weight	Check weight	12/12/2017	21:01:19	COM4	13.46	7.00	764.00	Weight verified with pressurized mud scales.
Event	17	Check Weight	Check weight	12/12/2017	21:08:01	COM4	13.09	7.60	854.00	Weight verified with pressurized mud scales.
Event	18	Check Weight	Check weight	12/12/2017	21:17:44	COM4	13.29	8.00	971.00	Weight verified with pressurized mud scales.
Event	19	Check Weight	Check weight	12/12/2017	21:22:36	COM4	13.20	7.80	895.00	Weight verified with pressurized mud scales.
Event	20	Pump Tail Cement	Pump Tail Cement	12/12/2017	21:40:15	COM4	13.22	7.90	927.00	Pumped 840sks or 305bbls 13.2# 2.04y 9.75g/s Neocem at 8bpm 1100psi.



Event	21	Check Weight	Check weight	12/12/2017	21:41:55	COM4	13.26	7.90	1126.00	Weight verified with pressurized mud scales.
Event	22	Shutdown	Shutdown	12/12/2017	22:23:55	USER	13.11	0.00	44.00	Shutdown, rig blew down lines and proceeded to pump 5bbls fresh water through pumps and lines to wash up.
Event	23	Drop Top Plug	Drop Top Plug	12/12/2017	22:36:15	COM4				Dropped by HES supervisor, witnessed by company man.
Event	24	Pump Displacement	Pump Displacement	12/12/2017	22:36:19	COM4				Pumped 297bbls fresh water with 20g MMCR in first 20bbls at 10bpm.
Event	25	Bump Plug	Bump Plug	12/12/2017	23:16:07	COM4				Slowed down to 2bpm at 280bbls away, final circulating pressure-1900psi, bump pressure-2400psi.
Event	26	Check Floats	Check Floats	12/12/2017	23:22:01	USER	8.36	0.00	2194.00	Released pressure and got 3bbls back to pump. Floats held.
Event	27	End Job	End Job	12/12/2017	23:24:30	COM4				Got 15bbls cement to surface. Estimated TOT-6430'
Event	28	Pre-Rig Down Safety Meeting	Pre-Rig Down Safety Meeting	12/12/2017	23:30:00	USER	8.32	0.00	-4.00	Discussed rigging down hazards and procedure according to HMS.
Event	29	Depart Location Safety Meeting	Depart Location Safety Meeting	12/13/2017	01:45:00	USER				Held meeting with all personnel in convoy to discuss directions and hazards associated with drive, all fit to drive.
Event	30	Depart Location for Service Center or Other Site	Depart Location for Service Center or Other Site	12/13/2017	02:00:00	USER				Pre journey management prior to departure.

3.0 Attachments

3.1 Bison Castor 8-59 #19-24-12 Production Job Chart

