

**APOLLO OPERATING**  
**1538 WAZEE ST #200**  
**DENVER, Colorado**

Murdock  
Murdock 34SW-BL

Ensign/Ensign/136

## Post Job Summary

# Cement Production Casing

Date Prepared: 10/30/2012  
Version: 1

Service Supervisor: PICKELL, CHRISTOPHER

Submitted by: MCKAY, ADAM

HALLIBURTON

## Wellbore Geometry

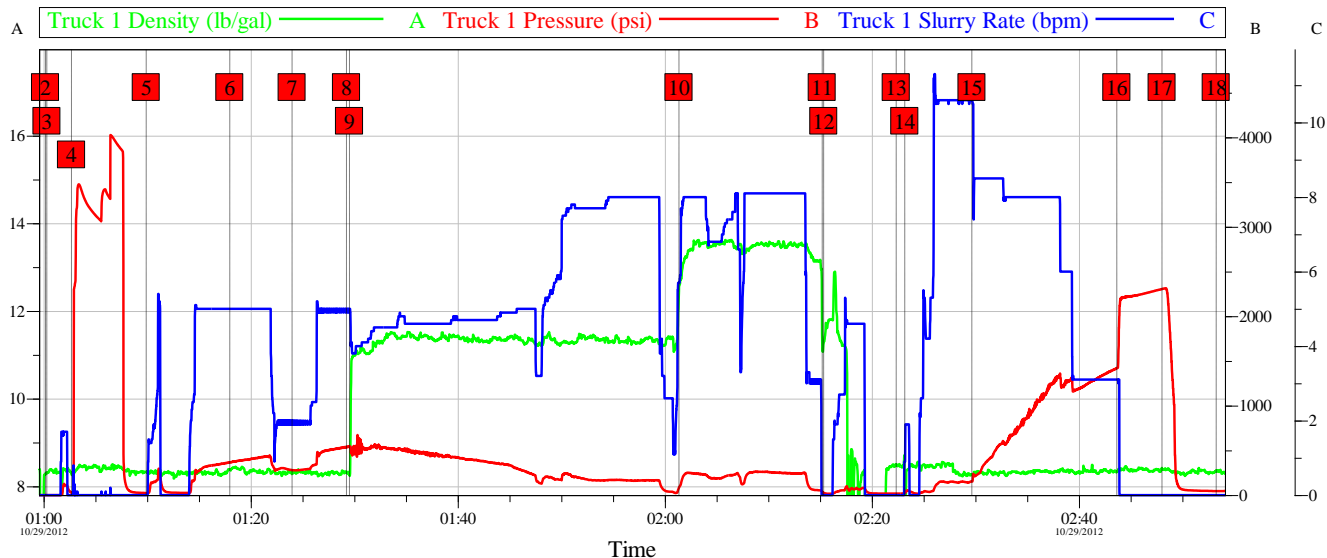
Job Tubulars					MD		Shoe Joint Length ft
Type	Description	Size in	ID in	Wt lbm/ft	Top ft	Bottom ft	
Casing	Surface Casing	8.63	8.097	24.00	0.00	600.00	
Open Hole Section	Open Hole		7.875		600.00	8,250.00	
Casing	Production Casing	4.50	4.000	11.60	0.00	8,229.00	17.00

## Pumping Schedule

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	5.00	20.0 bbl	20.0 bbl
1	2	Spacer	MUD FLUSH III	8.40	5.00	24.0 bbl	24.0 bbl
1	3	Spacer	Fresh Water Spacer	8.33	5.00	20.0 bbl	20.0 bbl
1	4	Cement Slurry	Extendacem 11.3#	11.30	5.00	380.0 sacks	380.0 sacks
1	5	Cement Slurry	FracCem B2 13.5#	13.50	8.00	300.0 sacks	300.0 sacks
1	6	Spacer	ClayWeb III	8.33	7.00	-	-

## Data Acquisition

### MURDOCK 34SW-BL APOLLO



### Global Event Log

Intersection	TIP	Intersection	TIP	Intersection	TIP
2 Start Job	01:00:10 0.000	3 Prime Pumps	01:00:18 0.000	4 Test Lines	01:02:41 28.00
5 Pump Water W/Clayweb	01:09:54 24.00	6 Pump Mudflush	01:17:58 365.4	7 Pump Water W/Clayweb	01:23:59 281.0
8 Drop Bottom Plug	01:29:14 535.8	9 Pump Extendacem 11.3#	01:29:32 547.0	10 Pump Fracem 13.5#	02:01:22 82.51
11 Shutdown	02:15:12 38.46	12 Clean Lines	02:15:20 25.79	13 Drop Top Plug	02:22:21 18.00
14 Pump Displacement	02:23:10 20.87	15 Displ Reached Cmmt	02:29:39 151.1	16 Bump Plug	02:43:39 1419
17 Check Floats	02:48:01 2305	18 End Job	02:53:15 46.00		

Customer: APOLLO  
Well Description: MURDOCK 34SW-BL  
SERVICE SUPERVISOR CHRISTOPHER PICKELL

Job Date: 29-Oct-2012  
UWI:  
SERVICE OPERATOR VAUGHN OTERI

Sales Order #: 0

OptiCem v6.4.10  
29-Oct-12 03:03

## Service Supervisor Reports

### Job Log

Date/Time	Chart #	Activity Code	Pump Rate	Cum Vol	Pump	Pressure (psig)	Comments
10/28/2012 01:00		Start Job					
10/28/2012 01:02		Test Lines	1	1		3500.0	PRESSURE TEST LINES TO 3500 PSI. CHECK FOR VISIBLE LEAKS AND PRESSURE LOSS
10/29/2012 01:09		Pump Spacer 1	4.7	20		450.0	PUMP WATER WITH CLAYWEB
10/29/2012 01:17		Pump Spacer 2	4.7	24		500.0	PUMP MUDFLUSH
10/29/2012 01:23		Pump Spacer 1	4.7	20		535.0	PUMP WATER WITH CLAYWEB
10/29/2012 01:29		Drop Bottom Plug					PLUG PRELOADED. WITNESSED BY COMPANY MAN
10/29/2012 01:29		Pump Lead Cement	8	166.5		250.0	PUMP EXTENDACEM CEMENT 380 SKS 11.3 PPG 2.46 CUFT/SK 14.12 GAL/SK MIXED WITH RIG WATER
10/29/2012 02:01		Pump Tail Cement	8	93		150.0	PUMP FRACCEM CEMENT 300 SKS 13.5 PPG 1.74 CUFT/SK 8.30 GAL/SK MIXED WITH RIG WATER
10/29/2012 02:15		Shutdown					
10/29/2012 02:15		Clean Lines					WASH PUMPS AND LINES
10/29/2012 02:22		Drop Top Plug					PLUG LOADED WHILE WASHING PUMPS AND LINES
10/29/2012 02:23		Pump Displacement	10.5	127.3		1400.0	PUMP DISPLACEMENT USING RIG WATER
10/29/2012 02:29		Displ Reached Cmmt					DISPLACEMENT REACHED CEMENT WITH 45 BBL AWAY
10/29/2012 02:43		Bump Plug	3			1419.0	CALCULATED PRESSURE TO LAND WAS 1181. PLUG LANDED AT 1419 PSI
10/29/2012 02:48		Check Floats					PRESSURE WAS HELD FOR 3 MINUTES THEN RELEASED. FLOATS HELD. 1 BBL BACK TO TANKS
10/29/2012 02:53		End Job					

# HALLIBURTON

## The Road to Excellence Starts with Safety

<b>Sold To #:</b> 353960		<b>Ship To #:</b> 2959061		<b>Quote #:</b>		<b>Sales Order #:</b> 9926445	
<b>Customer:</b> APOLLO OPERATING				<b>Customer Rep:</b> Montoya, Chris			
<b>Well Name:</b> Murdock			<b>Well #:</b> 34SW-BL			<b>API/UWI #:</b>	
<b>Field:</b> WATTENBURG		<b>City (SAP):</b> JOHNSTOWN		<b>County/Parish:</b> Larimer		<b>State:</b> Colorado	
<b>Contractor:</b> Ensign			<b>Rig/Platform Name/Num:</b> Ensign 136				
<b>Job Purpose:</b> Cement Production Casing							
<b>Well Type:</b> Development Well			<b>Job Type:</b> Cement Production Casing				
<b>Sales Person:</b> AARON, WESLEY			<b>Srvc Supervisor:</b> PICKELL, CHRISTOPHER			<b>MBU ID Emp #:</b> 396838	

### Job Personnel

HES Emp Name	Exp Hrs	Emp #	HES Emp Name	Exp Hrs	Emp #	HES Emp Name	Exp Hrs	Emp #
CHISLUM, DENNIS	0.0	512130	HOLMES, ANDREW Malcom	0.0	520802	OTERI, VAUGHN Steeves	0.0	443828
PICKELL, CHRISTOPHER Lee	0.0	396838						

### Equipment

HES Unit #	Distance-1 way	HES Unit #	Distance-1 way	HES Unit #	Distance-1 way	HES Unit #	Distance-1 way
10679720C	31 mile	11360865C	31 mile	11562544C	31 mile	11605597	31 mile
11764054C	31 mile	11812069C	31 mile				

### Job Hours

Date	On Location Hours	Operating Hours	Date	On Location Hours	Operating Hours	Date	On Location Hours	Operating Hours

**TOTAL** Total is the sum of each column separately

### Job

### Job Times

Formation Name								
Formation Depth (MD)	Top	Bottom			Called Out	Date	Time	Time Zone
Form Type		BHST			On Location	28 - Oct - 2012	19:30	MST
Job depth MD	8250. ft	Job Depth TVD	8250. ft		Job Started	28 - Oct - 2012	23:30	MST
Water Depth		Wk Ht Above Floor	5. ft		Job Completed	29 - Oct - 2012	01:00	MST
Perforation Depth (MD)	From	To			Job Completed	29 - Oct - 2012	02:53	MST
					Departed Loc	29 - Oct - 2012	04:00	MST

### Well Data

Description	New / Used	Max pressure psig	Size in	ID in	Weight lbm/ft	Thread	Grade	Top MD ft	Bottom MD ft	Top TVD ft	Bottom TVD ft
Open Hole				7.875				600.	8250.		
Production Casing	Unknown		4.5	4.	11.6			.	8229.		
Surface Casing	Unknown		8.625	8.097	24.		J-55	.	600.		

### Tools and Accessories

Type	Size	Qty	Make	Depth	Type	Size	Qty	Make	Depth	Type	Size	Qty	Make
Guide Shoe					Packer					Top Plug			
Float Shoe					Bridge Plug					Bottom Plug			
Float Collar					Retainer					SSR plug set			
Insert Float										Plug Container			
Stage Tool										Centralizers			

### 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**

# HALLIBURTON

Fluid #	Stage Type	Fluid Name	Qty	Qty uom	Mixing Density lbm/gal	Yield ft <sup>3</sup> /sk	Mix Fluid Gal/sk	Rate bbl/min	Total Mix Fluid Gal/sk
1	Fresh Water Spacer		20.00	bbl	8.33				
2	MUD FLUSH III	MUD FLUSH III - SBM (528788)	24.00	bbl	8.4				
3	Fresh Water Spacer		20.00	bbl	8.33				
4	Extendacem 11.3#	EXTENDACEM (TM) SYSTEM (452981)	380.0	sacks	11.3	2.46	14.17	6.0	14.17
14.17 Gal		FRESH WATER							
5	FracCem B2 13.5#	FRACCEM (TM) SYSTEM (452963)	300.0	sacks	13.5	1.73	8.24	6.0	8.24
8.24 Gal		FRESH WATER							
6	ClayWeb III			Gal	8.33				
2.5 gal/Mgal		CLA-WEB - TOTE (101985045)							
<b>Calculated Values</b>		<b>Pressures</b>		<b>Volumes</b>					
Displacement		Shut In: Instant		Lost Returns		Cement Slurry		Pad	
Top Of Cement		5 Min		Cement Returns		Actual Displacement		Treatment	
Frac Gradient		15 Min		Spacers		Load and Breakdown		Total Job	
<b>Rates</b>									
Circulating		Mixing		Displacement		Avg. Job			
Cement Left In Pipe		Amount	17 ft	Reason	Shoe Joint				
Frac Ring # 1 @	ID	Frac ring # 2 @	ID	Frac Ring # 3 @	ID	Frac Ring # 4 @	ID		
The Information Stated Herein Is Correct				Customer Representative Signature					