

QUICKSILVER RESOURCES INC-EBUSINESS  
DO NOT MAIL-801 CHERRY ST  
FORT WORTH, Texas

Horsegulch Federal 13-12

DHS 6

## **Post Job Summary**

### **Cement Multiple Stages**

Prepared for: Ryan Hord  
Date Prepared: October 7, 2011  
Version: 1

Service Supervisor: DAVIS, CODY

Submitted by: Joshua Anglin

**HALLIBURTON**

## Wellbore Geometry

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Job Tubulars					MD		TVD		Excess	Shoe Joint Length
Type	Description	Size in	ID in	Wt lbm/ft	Top ft	Bottom ft	Top ft	Bottom ft	%	ft
Open Hole Section	Surface Upper Open Hole		12.250		0.00	1,000.00			100.00	0.00
Casing	Surface Casing	9.63	8.921	36.00	0.00	3,400.00				40.00
Casing	Multiple Stage Cementer	9.63	.000	0.00	1,000.00	1,000.00				0.00
Open Hole Section	Surface Lower Open Hole		12.250		1,000.00	3,400.00			50.00	
Cement Stage Tool	Multiple Stage Cementer				2,200.00	2,200.00				

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## Pumping Schedule

Stage / Plug #	Fluid #	Fluid Type	Fluid Name	Surface Density lbm/gal	Avg Rate bbl/min	Surface Volume	Downhole Volume
1	1	Spacer	MUD FLUSH III	8.40	0.00	20.0 bbl	20.0 bbl
1	2	Cement Slurry	EconoCem	12.70		18.0 sacks	18.0 sacks
1	3	Cement Slurry	VariCem V1	13.50		150.0 sacks	150.0 sacks
1	4	Spacer	Displacement	8.30	0.00	260.0 bbl	260.0 bbl
2	1	Spacer	MUD FLUSH III	8.40	0.00	.0 bbl	.0 bbl
2	2	Cement Slurry	VariCem	12.30		215.0 sacks	215.0 sacks
2	3	Cement Slurry	VariCem V1	13.50		50.0 sacks	50.0 sacks
2	4	Mud	Displacement	0.00	0.00	.0 bbl	.0 bbl
3	1	Spacer	SUPER FLUSH 101	10.00	0.00	20.0 bbl	20.0 bbl
3	2	Cement Slurry	VariCem Lead	12.30		245.0 sacks	245.0 sacks
3	3	Cement Slurry	VariCem Tail	13.50		50.0 sacks	50.0 sacks
3	4	Spacer	Displacement	8.30	0.00	93.0 bbl	93.0 bbl
3	5	Cement Slurry	Top Out Cement	15.60			93.0 bbl

## Fluids Pumped

**Stage/Plug # 1      Fluid 1:**      MUD FLUSH III  
MUD FLUSH III - SBM (528788)

Fluid Density: 8.40 lbm/gal  
Fluid Volume: 20.00 bbl  
Pump Rate: 0.00 bbl/min

**Stage/Plug # 1      Fluid 2:**      EconoCem  
ECONOCEM (TM) SYSTEM

Fluid Weight: 12.70 lbm/gal  
Slurry Yield: 1.87 ft<sup>3</sup>/sack  
Total Mixing Fluid: 9.93 Gal

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Surface Volume: 18.0 sacks  
Sacks: 18.0 sacks  
Calculated Fill: 700.00 ft

Calculated Top of Fluid: 2,200.00 ft  
Estimated Top of Fluid:

**Stage/Plug # 1      Fluid 3:**      VariCem V1  
                                 VARICEM (TM) CEMENT  
0.125 lbm   Poly-E-Flake  
3 lbm      Gilsonite

Fluid Weight: 13.50 lbm/gal  
Slurry Yield: 1.73 ft<sup>3</sup>/sack  
Total Mixing Fluid: 8.77 Gal  
Surface Volume: 150.0 sacks  
Sacks: 150.0 sacks  
Calculated Fill: 500.00 ft  
Calculated Top of Fluid: 2,900.00 ft  
Estimated Top of Fluid:

**Stage/Plug # 1      Fluid 4:**      Displacement  
DUMMY MUD / FLUSH / SPACER SBC MATERIAL

Fluid Density: 8.30 lbm/gal  
Fluid Volume: 260.00 bbl  
Pump Rate: 0.00 bbl/min

**Stage/Plug # 2      Fluid 1:**      MUD FLUSH III  
MUD FLUSH III - SBM (528788)

Fluid Density: 8.40 lbm/gal  
Fluid Volume: 0.00 bbl  
Pump Rate: 0.00 bbl/min

**Stage/Plug # 2      Fluid 2:**      VariCem  
                                 VARICEM (TM) CEMENT

Fluid Weight: 12.30 lbm/gal  
Slurry Yield: 2.22 ft<sup>3</sup>/sack  
Total Mixing Fluid: 12.52 Gal  
Surface Volume: 215.0 sacks  
Sacks: 215.0 sacks  
Calculated Fill: 1,016.94 ft  
Calculated Top of Fluid: 1,000.00 ft  
Estimated Top of Fluid:

**Stage/Plug # 2      Fluid 3:**      VariCem V1  
                                 VARICEM (TM) CEMENT  
0.125 lbm   Poly-E-Flake

Fluid Weight: 13.50 lbm/gal  
Slurry Yield: 1.72 ft<sup>3</sup>/sack  
Total Mixing Fluid: 9.07 Gal  
Surface Volume: 50.0 sacks  
Sacks: 50.0 sacks  
Calculated Fill: 183.06 ft  
Calculated Top of Fluid: 2,016.94 ft  
Estimated Top of Fluid:

**Stage/Plug # 2      Fluid 4:**      Displacement

Fluid Density: 0.00 lbm/gal  
Fluid Volume: 0.00 bbl  
Pump Rate: 0.00 bbl/min  
Fluid Gels:  
Mud PV/YP:

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**Stage/Plug # 3      Fluid 1:**      SUPER FLUSH 101  
SUPER FLUSH 101 - SBM (12199)

Fluid Density:    10.00 lbm/gal  
Fluid Volume:    20.00 bbl  
Pump Rate:       0.00 bbl/min

**Stage/Plug # 3      Fluid 2:**      VariCem Lead  
                                 VARICEM (TM) CEMENT  
0.125 lbm    Poly-E-Flake

Fluid Weight:    12.30 lbm/gal  
Slurry Yield:     2.24 ft<sup>3</sup>/sack  
Total Mixing Fluid: 12.95 Gal  
Surface Volume:   245.0 sacks  
                         Sacks:    245.0 sacks  
Calculated Fill:   862.70 ft  
Calculated Top of Fluid: 0.00 ft  
Estimated Top of Fluid:

**Stage/Plug # 3      Fluid 3:**      VariCem Tail  
                                 VARICEM (TM) CEMENT  
0.125 lbm    Poly-E-Flake

Fluid Weight:    13.50 lbm/gal  
Slurry Yield:     1.72 ft<sup>3</sup>/sack  
Total Mixing Fluid: 9.07 Gal  
Surface Volume:   50.0 sacks  
                         Sacks:    50.0 sacks  
Calculated Fill:   137.30 ft  
Calculated Top of Fluid: 862.70 ft  
Estimated Top of Fluid:

**Stage/Plug # 3      Fluid 4:**      Displacement  
DUMMY MUD / FLUSH / SPACER SBC MATERIAL

Fluid Density:    8.30 lbm/gal  
Fluid Volume:    93.00 bbl  
Pump Rate:       0.00 bbl/min

**Stage/Plug # 3      Fluid 5:**      Top Out Cement  
                                 HALCEM (TM) SYSTEM  
2 %    Calcium Chloride, Pellet

Fluid Weight:    15.60 lbm/gal  
Slurry Yield:     1.19 ft<sup>3</sup>/sack  
Total Mixing Fluid: 5.20 Gal  
Estimated Top of Fluid:

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## Job Summary

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### Job Information

Job Start Date	9/15/2011 4:30:00 AM
Job MD	3,400.0 ft
Job TVD	3,400.0 ft
Height of Plug Container/Swage Above Rig Floor	3.0 ft
Surface Temperature at Time of Job	70 degF
Mud Type	LSND
Actual Mud Density	9 lbm/gal
Time Circulated before job	1.50 hour(s)
Pipe Movement During Hole Circulation	Reciprocated
Time From End Mud Circ. to Job Start	15.00 minute
Pipe Movement During Cementing	Reciprocated
Calculated Displacement	170.08 bbl
Amount of Cement Returns	23.00 bbl
Job Displaced by (rig/halco)	Cement Unit HP Pumps

### Cementing Equipment

Pipe Centralization	Through Entire Cement Column
Brand of Float Equipment Used	HALLIBURTON
Did Float Equipment Hold?	Yes
Plug set used?	Yes
Brand of Plug set used?	HALLIBURTON
Did Plugs Bump?	Yes
Calculated Pressure to Bump Plugs	400.0 psig
Brand of Stage Cementing Tools Used	HALLIBURTON
Did Stage Cementing Tool Open Properly?	Yes

## Service Supervisor Reports

### Job Log

Date/Time	Chart #	Activity Code	Pump Rate	Cum Vol	Pump	Pressure (psig)	Comments
09/14/2011 18:00		Call Out					
09/14/2011 20:00		Depart Yard Safety Meeting					JOURNEY MANAGMENT
09/14/2011 20:15		Crew Leave Yard					
09/14/2011 23:30		Arrive At Loc					RIG RUNNING CASING
09/14/2011 23:45		Safety Meeting - Assessment of Location					OVER HEAD LINES RED ZONES
09/15/2011 00:01		Other					MEET W/ CO MAN AND GO OVER NUMBERS
09/15/2011 00:15		Other					SPOT TRUCKS USING TWO SPOTTERS
09/15/2011 02:00		Safety Meeting - Pre Rig-Up					PINCH POINTS RED ZONES LINE OF FIRE
09/15/2011 02:10		Rig-Up Equipment					
09/15/2011 04:00		Rig-Up Completed					
09/15/2011 04:30		Safety Meeting - Pre Job					GO OVER JOB PROCESS
09/15/2011 05:06		Pump Water					PUMP 2 BBLS TO FILL LINES
09/15/2011 05:07		Pressure Test				5000.0	PRESSURE TEST TO 5000PSI
09/15/2011 05:12		Pump Spacer	5			90.0	PUMP 20BBLS MUD FLUSH
09/15/2011 05:15		Other					SHUT DOWN RIG PULLS UP TO HIGH AND BREAKS VALUVE HES FIXES IT AND RESUMES PUMPING
09/15/2011 05:22		Pump Spacer	5			100.0	FINSH SPACER
09/15/2011 05:23		Pump Lead Cement	5			176.0	PUMP 85BBLS LEAD CMT 12.3# 2.22YIELD 12.52GAL/SK 215SKS

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Date/Time	Chart #	Activity Code	Pump Rate	Cum Vol	Pump		Pressure (psig)		Comments
09/15/2011 05:59		Pump Lead Cement	5					180.0	PUMP 60BBLS LEAD CMT 12.7# 1.87YIELD 9.93GAL/SK 180SKS
09/15/2011 06:10		Pump Tail Cement	5					190.0	PUMP 46.2BBLS TAIL CMT 13.5# 1.73YIELD 8.77GAL/SK 150SKS
09/15/2011 06:20		Shutdown							
09/15/2011 06:22		Drop Plug							
09/15/2011 06:25		Pump Displacement	8					160.0	PUMP 180BBLS H2O DISPLACEMENT
09/15/2011 06:38		Slow Rate	3					80.0	SLOW RATE TO GO THOURGH TOOL (80-100)
09/15/2011 06:44		Other	8					200.0	UP RATE 100BBLS GONE
09/15/2011 06:50		Displ Reached Cmmt	8					350.0	150BBLS GONE
09/15/2011 06:53		Other							PUMP MUD DISPLACEMENT (80BBLS TOTAL)
09/15/2011 07:00		Slow Rate	4					500.0	210BBLS GONE
09/15/2011 07:08		Slow Rate	3					700.0	245BBLS GONE
09/15/2011 07:12		Bump Plug	3					800.0	TOTAL DISPLACMENT 260.4BBLS
09/15/2011 07:15		Check Floats							1.5BBLS BACK
09/15/2011 07:16		Drop Opening Device For Multiple Stage Cementer							
09/15/2011 07:26		Open Multiple Stage Cementer	2					200.0	TOOL OPENS WITH 200PSI CIRCULATE 10BBLS
09/15/2011 07:30		Other							TURN WELL OVER TO RIG TO CIRCULATE WOC RIG SAW A TRACE OF CMT BACK. WAIT FOR NEW CEMENT HEAD TO COME FROM VERNAL
09/15/2011 16:30		Safety Meeting - Pre Job							GO OVER JOB PROCESS



# HALLIBURTON

Date/Time	Chart #	Activity Code	Pump Rate	Cum Vol	Pump		Pressure (psig)	Comments
09/15/2011 16:50		Pump Water						PUMP 2BBLS TO FILL LINES
09/15/2011 16:52		Pressure Test					5000.0	PRESSURE TEST TO 5000PSI
09/15/2011 16:57		Pump Spacer	5				80.0	20BBLS SUPERFLUSH
09/15/2011 17:01		Pump Water	5				100.0	10BBLS H2O
09/15/2011 17:03		Pump Lead Cement	5				100.0	97.7BBLS LEAD CMT 12.3# 2.24YIELD 12.95GAL/SK 245SKS
09/15/2011 17:20		Pump Tail Cement	5				120.0	46.2BBLS TAIL CMT 13.5# 1.72YIELD 9.07GAL/SK 100SKS
09/15/2011 17:27		Shutdown						
09/15/2011 17:28		Clean Lines						CLEAN PUMPS AND LINE TO PIT
09/15/2011 17:29		Drop Plug						
09/15/2011 17:33		Pump Displacement	6				100.0	PUMP H2O DISPLACEMENT
09/15/2011 17:38		Displ Reached Cmmt	6				160.0	35BBLS GONE
09/15/2011 17:40		Slow Rate	5				180.0	40BBLS GONE
09/15/2011 17:44		Slow Rate	4				245.0	60BBLS GONE
09/15/2011 17:46		Cement Returns to Surface	4				260.0	70BBLS GONE
09/15/2011 17:47		Slow Rate	3				300.0	75BBLS GONE
09/15/2011 17:53		Bump Plug	3				400.0	TOTAL DISPLACEMENT 93.5BBLS PRESSURE OVER 1000PSI TO CLOSE TOOL. TOOL CLOSES. TOTAL CMT TO SURFACE WAS 23BBLS
09/15/2011 17:55		Check Floats						1BBL BACK
09/15/2011 18:00		Safety Meeting - Pre Rig-Down						PINCH POINTS RED ZONES LINE OF FIRE

# HALLIBURTON

Date/Time	Chart #	Activity Code	Pump Rate	Cum Vol	Pump		Pressure (psig)		Comments
09/15/2011 18:05		Rig-Down Equipment							
09/15/2011 19:45		Rig-Down Completed							
09/15/2011 19:55		Safety Meeting - Departing Location							JOURNEY MANAGMENT
09/15/2011 20:00		Depart Location for Service Center or Other Site							

### The Road to Excellence Starts with Safety

<b>Sold To #:</b> 346707	<b>Ship To #:</b> 2878085	<b>Quote #:</b>	<b>Sales Order #:</b> 8467722
<b>Customer:</b> QUICKSILVER RESOURCES INC-EBUSINESS		<b>Customer Rep:</b> Hord, Ryan	
<b>Well Name:</b> Horsegulch Federal		<b>Well #:</b> 13-12	<b>API/UWI #:</b>
<b>Field:</b>	<b>City (SAP):</b> CRAIG	<b>County/Parish:</b> Moffat	<b>State:</b> Colorado
<b>Legal Description:</b> Section 12 Township 6N Range 93W			
<b>Contractor:</b> DHS		<b>Rig/Platform Name/Num:</b> DHS6	
<b>Job Purpose:</b> Cement Multiple Stages			
<b>Well Type:</b> Exploratory / Wildcat		<b>Job Type:</b> Cement Multiple Stages	
<b>Sales Person:</b> SCOTT, KYLE		<b>Srvc Supervisor:</b> DAVIS, CODY	<b>MBU ID Emp #:</b> 446891

### Job Personnel

HES Emp Name	Exp Hrs	Emp #	HES Emp Name	Exp Hrs	Emp #	HES Emp Name	Exp Hrs	Emp #
DAVIS, CODY R		446891	GOODRICH, BENJAMIN Franklin		481342	POLLOCK, PATRICK		494362
SAGE, JAMES Edwin		470468	STILL, MICHEAL Wayne		258213	WEYERMAN, JEREMY Todd		477287
WILLIAMS, CAMERON Kent		438405						

### Equipment

HES Unit #	Distance-1 way	HES Unit #	Distance-1 way	HES Unit #	Distance-1 way	HES Unit #	Distance-1 way

### Job Hours

Date	On Location Hours	Operating Hours	Date	On Location Hours	Operating Hours	Date	On Location Hours	Operating Hours
<b>TOTAL</b>			Total is the sum of each column separately					

### Job

### Job Times

Formation Name							Date	Time	Time Zone
Formation Depth (MD)	Top			Bottom		Called Out	14 - Sep - 2011	18:00	MST
Form Type				BHST		On Location	14 - Sep - 2011	23:30	MST
Job depth MD	3400. ft		Job Depth TVD	3400. ft		Job Started	15 - Sep - 2011	04:30	MST
Water Depth				Wk Ht Above Floor	3. ft	Job Completed	15 - Sep - 2011	17:55	MST
Perforation Depth (MD)	From			To		Departed Loc	15 - Sep - 2011	20:00	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
Multiple Stage Cementer	Unknown							2200.	2200.		
Surface Lower Open Hole				12.25				1000.	3400.		
Surface Upper Open Hole				12.25				.	1000.		
Multiple Stage Cementer	Unknown		9.625	.	.		L-80	1000.	1000.		
Surface Casing	Unknown		9.625	8.921	36.		J-55	.	3400.		

Sales/Rental/3 <sup>rd</sup> Party (HES)				
Description	Qty	Qty uom	Depth	Supplier
CENTRALIZER-9-5/8"-CSG-12 1/4"-HINGED	0	EA		
COLLAR-STOP-9 5/8"-FRICTION-HINGED	0	EA		
KIT,HALL WELD-A	3	EA		
CLR,FLT,9-5/8 8RD 29.3-40PPF,2-3/4	1	EA		
SHOE,FLT,9-5/8 8RD,2-3/4 SUPER SEAL	1	EA		
PLUG SET,FREE FALL,9-5/8 8RD&BUTRS	1	EA		
CMTR,TY P ESII,9-5/8 LG 8RD 32.3-40,L80	1	EA		

### 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

Fluid #	Stage Type	Fluid Name	Qty	Qty uom	Mixing Density lbm/gal	Yield ft3/sk	Mix Fluid Gal/sk	Rate bbl/min	Total Mix Fluid Gal/sk
1	MUD FLUSH III	MUD FLUSH III - SBM (528788)	20.00	bbl	8.4	.0	.0	.0	
2	EconoCem	ECONOCEM (TM) SYSTEM (452992)	18.0	sacks	12.7	1.87	9.93		9.93
		9.93 Gal FRESH WATER							
3	VariCem V1	VARICEM (TM) CEMENT (452009)	150.0	sacks	13.5	1.73	8.77		8.77
		0.125 lbm POLY-E-FLAKE (101216940)							
		3 lbm GILSONITE, 50 LB BAG (100001618)							
		8.766 Gal FRESH WATER							
4	Displacement		260.00	bbl	8.3	.0	.0	.0	

#### Stage/Plug #: 2

Fluid #	Stage Type	Fluid Name	Qty	Qty uom	Mixing Density uom	Yield uom	Mix Fluid uom	Rate uom	Total Mix Fluid uom
1	MUD FLUSH III	MUD FLUSH III - SBM (528788)	0.00	bbl	8.4	.0	.0	.0	
2	VariCem	VARICEM (TM) CEMENT (452009)	215.0	sacks	12.3	2.22	12.52		12.52
		12.52 Gal FRESH WATER							
3	VariCem V1	VARICEM (TM) CEMENT (452009)	50.0	sacks	13.5	1.72	9.07		9.07
		0.125 lbm POLY-E-FLAKE (101216940)							
		9.065 Gal FRESH WATER							
4	Displacement		0.00	bbl	.			.0	

#### Stage/Plug #: 3

Fluid #	Stage Type	Fluid Name	Qty	Qty uom	Mixing Density uom	Yield uom	Mix Fluid uom	Rate uom	Total Mix Fluid uom
1	SUPER FLUSH 101	SUPER FLUSH 101 - SBM (12199)	20.00	bbl	10.	.0	.0	.0	

#### Stage/Plug #: 3

Stage/Plug #: 3									
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
2	VariCem Lead	VARICEM (TM) CEMENT (452009)	245.0	sacks	12.3	2.24	12.95		12.95
	0.125 lbm	POLY-E-FLAKE (101216940)							
	12.954 Gal	FRESH WATER							
3	VariCem Tail	VARICEM (TM) CEMENT (452009)	50.0	sacks	13.5	1.72	9.07		9.07
	0.125 lbm	POLY-E-FLAKE (101216940)							
	9.065 Gal	FRESH WATER							
4	Displacement		93.00	bbl	8.3	.0	.0	.0	
5	Top Out Cement	HALCEM (TM) SYSTEM (452986)		sacks	15.6	1.19	5.2		5.2
	2 %	CALCIUM CHLORIDE, PELLET, 50 LB (101509387)							
	5.202 Gal	FRESH WATER							
Calculated Values		Pressures		Volumes					
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	
Rates									
Circulating		Mixing		Displacement		Avg. Job			
Cement Left In Pipe	Amount	40 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					

# HALLIBURTON

## Lab Data

# HALLIBURTON

Cementing Rockies, Vernal

LAB RESULTS - Lead

### Job Information

Request/Slurry	176232/1	Rig Name	DHS DRILLING #6	Date	13/SEP/2011
Submitted By	Craig Dube	Job Type	Surface Casing	Bulk Plant	Vernal
Customer	Quicksilver Resources Inc.	Location		Well	Horsegulch Federal 13-12

### Well Information

Casing/Liner Size	10 3/4"	Depth MD	3400 ft	BHST	124 F
Hole Size	14 3/4"	Depth TVD	3400 ft	BHCT	98 F

### Drilling Fluid Information

Mud Company	Type	Density	8.8 PPG	PV/YP
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### Cement Information - Lead Design

<u>Conc</u>	<u>UOM</u>	<u>Cement/Additive</u>	<u>Sample Type</u>	<u>Sample Date</u>	<u>Lot No.</u>	<u>Cement Properties</u>		
9.93	gal/sack	Field (Fresh) Water	Lab	Jul 22, 2010	7/22/2010	Slurry Density	12.70	PPG
						Slurry Yield	1.87	ft3/sk
						Water Requirement	9.93	GPS
						Total Mix Fluid	9.93	GPS
						Water Source	Field (Fresh) Water	
						Water Chloride	N/A	ppm

### Operation Test Results Request ID 176232/1

#### Thickening Time, Request Test ID:1754801, Historical Data

Temp (°F)	Pressure (psi)	Reached in (min)	Start BC	30 Bc (hh:mm)	40 Bc (hh:mm)	50 Bc (hh:mm)	70 Bc (hh:mm)	100 Bc (hh:mm)
98	1,970	23	16	05:15	05:15	05:15	05:15	05:15

Shutdown at 1:30 for 15 minutes = 11-14. Shutdown at 5 hours for 15 minutes = 28-142.

### Additional Comments

1st stage Lead

#### Job Information

<b>Request/Slurry</b>	176250/4	<b>Rig Name</b>	DHS DRILLING #6	<b>Date</b>	13/SEP/2011
<b>Submitted By</b>	Craig Dube	<b>Job Type</b>	Surface Casing	<b>Bulk Plant</b>	Vernal
<b>Customer</b>	Quicksilver Resources Inc.	<b>Location</b>		<b>Well</b>	Horsegulch Federal 13-12

#### Well Information

<b>Casing/Liner Size</b>	9 5/8"	<b>Depth MD</b>	2200 ft	<b>BHST</b>	109 F
<b>Hole Size</b>	12 1/4"	<b>Depth TVD</b>	2200 ft	<b>BHCT</b>	91 F

#### Drilling Fluid Information

<b>Mud Company</b>	<b>Type</b>	<b>Density</b>	<b>PV/YP</b>
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#### Cement Information - Tail Design

<u>Conc</u>	<u>UOM</u>	<u>Cement/Additive</u>	<u>Sample Type</u>	<u>Sample Date</u>	<u>Lot No.</u>	<b>Cement Properties</b>		
9.16	gal/sack	Fresh Water	Lab	May 29, 2011	5-29-2011	Slurry Density	13.50	PPG
						Slurry Yield	1.73	ft3/sk
						Water Requirement	9.16	GPS
						Total Mix Fluid	9.16	GPS
						Water Source	Fresh Water	
						Water Chloride	N/A	ppm

#### Operation Test Results Request ID 176250/4

#### Thickening Time, Request Test ID:1756060, Historical Data

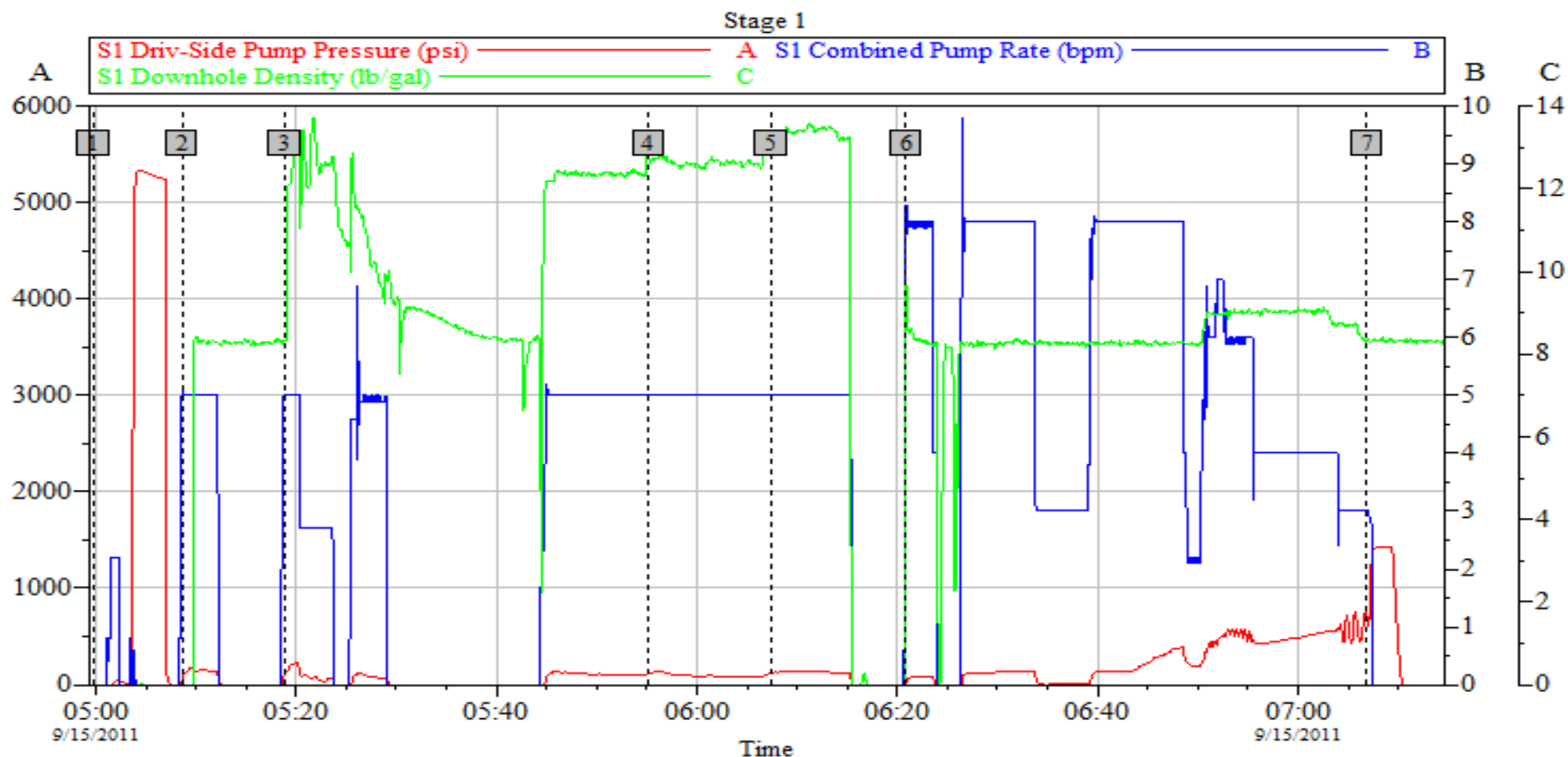
<b>Temp (°F)</b>	<b>Pressure (psi)</b>	<b>Reached in (min)</b>	<b>Start BC</b>	<b>50 Bc (hh:mm)</b>	<b>70 Bc (hh:mm)</b>	<b>100 Bc (hh:mm)</b>
91	130	18	33	01:09	01:22	01:32

#### Additional Comments

2nd Stage Tail

# HALLIBURTON

## Data Acquisition



1 Starting Job	04:59:44	2 Pump Spacer	05:08:38	3 Pump Lead Cement	05:18:54
4 Pump Lead Cement	05:55:12	5 Pump Tail Cement	06:07:27	6 Pump Displacement	06:20:53
7 Bump Plug	07:06:52				

Customer: QUICKSILVER RESOURCES INC-EBUSINESS  
Well Description: HORSEGULCH FEDERAL 13-12

Job Date: 15-Sep-2011  
UWI:

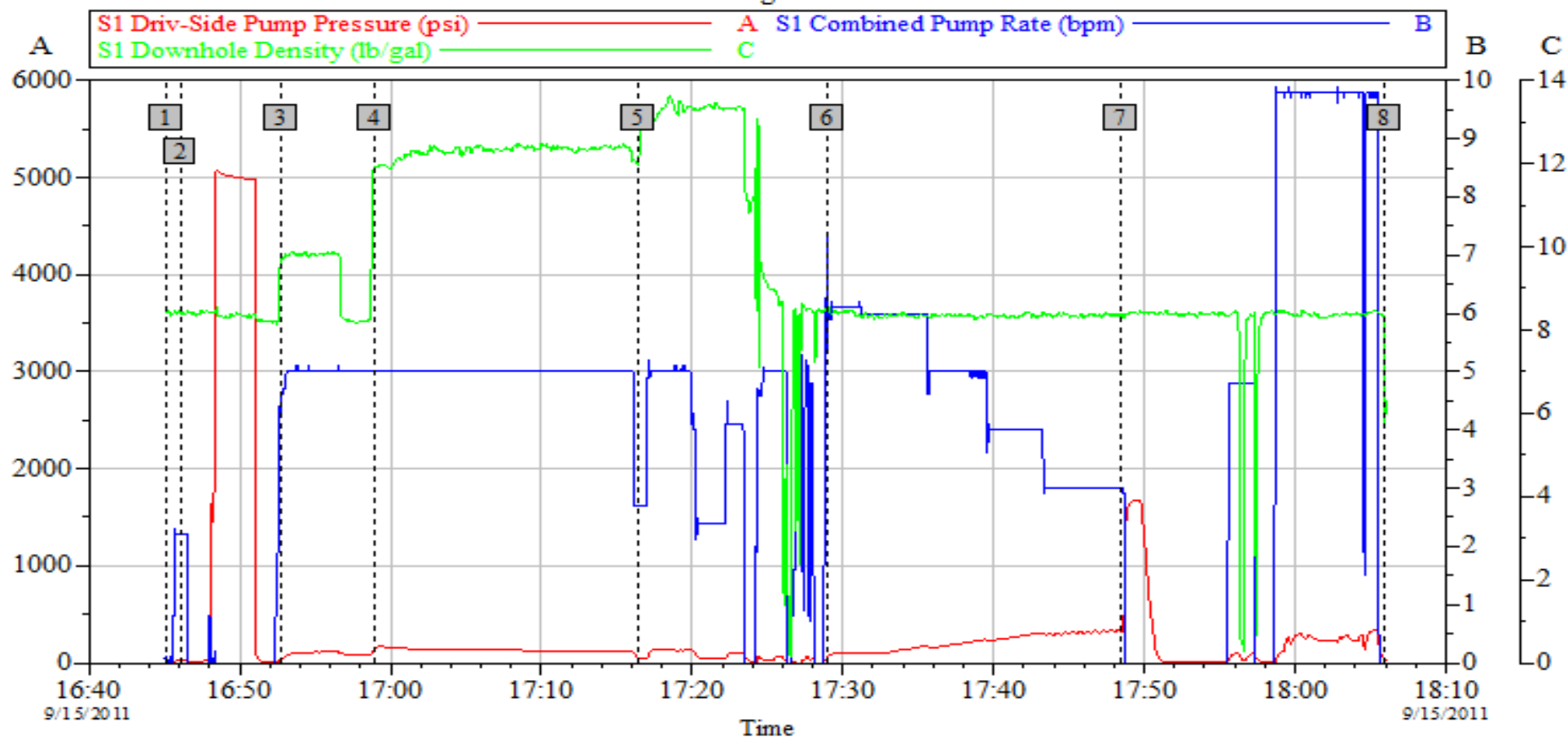
Sales Order #: 8467722

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07-Oct-11 09:22



# HALLIBURTON

## Stage 2



1 Starting Job	16:45:05	2 Start Job	16:46:02	3 Pump Spacer	16:52:44
4 Pump Lead Cement	16:58:55	5 Pump Tail Cement	17:16:26	6 Pump Displacement	17:29:00
7 Bump Plug	17:48:27	8 Ending Job	18:05:58		

Customer: QUICKSILVER RESOURCES INC-EBUSINESS  
Well Description: HORSEGULCH FEDERAL 13-12

Job Date: 15-Sep-2011  
UWI:

Sales Order #: 8467722

OptiCem v6.4.9  
07-Oct-11 09:24