

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

Pertlaw 24-33

DHS 6

Post Job Summary **Cement Production Casing**

Date Prepared: September 5, 2012
Version: 1

Service Supervisor: BIRCHELL, DEVIN

Submitted by: Charli A Brown

HALLIBURTON

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Wellbore Geometry

Job Tubulars					MD		Shoe Joint Length ft
Type	Description	Size in	ID in	Wt lbm/ft	Top ft	Bottom ft	
Casing	Intermediate Casing	7.00	6.276	26.00	0.00	6,400.00	40.00
Open Hole Section	Production Open Hole		6.125		6,400.00	7,800.00	0.00
Casing	Production Casing	4.50	3.920	13.50	0.00	7,800.00	40.00

Pumping Schedule

Fluid #	Fluid Type	Fluid Name	Density lbm/gal	Avg Rate bbl/min	Volume
1	Spacer	TUNED SPACER III	10.00	2.00	20.0bbl
2	Spacer	Mud Recovery Spacer	10.00	5.00	80.0bbl
3	Spacer	MUD FLUSH III	8.40	5.00	10.0bbl
4	Cement Slurry	LifeCem	13.50	5.00	210sks
5	Spacer	KCl Displacement	8.40	3.00	116bbl

Fluids Pumped

Stage/Plug # 1 Fluid 1: TUNED SPACER III
TUNED SPACER III - SBM (483826)

Fluid Density: 10.00 lbm/gal
Pump Rate: 2.00 bbl/min

Stage/Plug # 1 Fluid 2: Mud Recovery Spacer
MUD RECOVERY

Fluid Density: 10.00 lbm/gal
Pump Rate: 5.00 bbl/min

Stage/Plug # 1 Fluid 3: MUD FLUSH III
MUD FLUSH III - SBM (528788)

Fluid Density: 8.40 lbm/gal
Pump Rate: 5.00 bbl/min

Stage/Plug # 1 Fluid 4: LifeCem
LIFECEM (TM) CEMENT

Fluid Weight: 13.50 lbm/gal
Slurry Yield: 1.73 ft³/sack
Total Mixing Fluid: 7.40 Gal
Calculated Fill: 3,400.00 ft
Calculated Top of Fluid: 4,400.00 ft
Pump Rate: 5.00 bbl/min

Stage/Plug # 1 Fluid 5: KCl Displacement
KCL DISPLACEMENT WATER

Fluid Density: 8.40 lbm/gal
Pump Rate: 3.00 bbl/min

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Job Summary

Job Information

Job Start Date	8/21/2012
Job MD	7,800.0 ft
Job TVD	7,880.0 ft
Height of Plug Container/Swage Above Rig Floor	25.0 ft
Surface Temperature at Time of Job	68 degF
Mud Type	INTEGRADE
Actual Mud Density	10 lbm/gal
Pipe Movement During Cementing	Reciprocated
Calculated Displacement	115.84 bbl
Job Displaced by (rig/halco)	Cement Unit HP Pumps
Annular flow Before Job? (Water/Gas)	Unknown
Annular flow After Job? (Water/Gas)	No

Cementing Equipment

Number of Centralizers Used	40
Pipe Centralization	Above and Below Production Intervals
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	1,300.0 psig

Service Supervisor Reports

Job Log

Date/Time	Activity Code	Pump Rate	Volume	Pressure (psig)	Comments
08/21/2012 08:00	Call Out				Called Out Cement Crew For Quicksilver Pertlaw 24-33
08/21/2012 09:20	Pre-Convoy Safety Meeting				Discussed Hazards On Route To Location
08/21/2012 09:30	Depart from Service Center				
08/21/2012 12:30	Arrive At Loc				Arrived To Location Talked With Company Rep On Volumes, Rates, Depths
08/21/2012 12:35	Pre-Rig Up Safety Meeting				Discussed Hazards For Rigging Up Iron and Water Hoses

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Date/Time	Activity Code	Pump Rate	Volume	Pressure (psig)	Comments
08/21/2012 12:40	Rig-Up Equipment				
08/21/2012 12:50	Wait on Customer				Wait For Rig and Casing Crews to Finish Running Casing
08/21/2012 21:10	Pre-Job Safety Meeting				Discussed Job Procedures With Cement and Rig Crews
08/21/2012 21:20	Rig-Up Completed				Finished Rigging Up To The Floor And Well Head
08/21/2012 21:34	Prime Pumps				Primed Pumps and Lines For Pressure Test
08/21/2012 21:37	Pressure Test			5000.0	Test Pump and Lines to 5000 psi
08/21/2012 21:43	Pump Spacer	2	20	280.0	Pumped 20 bbls Tuned Spacer III at 10 ppg
08/21/2012 21:55	Pump Spacer 1	5	80	156.0	Pumped 80 bbls Mud Recovery Spacer ay 10 ppg
08/21/2012 22:11	Pump Spacer 2	5	10	103.0	Pumped 10 bbls Mud Flush III at 8.4ppg
08/21/2012 22:13	Pump Lead Cement	5	64	303.0	Pumped (210sk) 13.5 ppg Slurry, Yield 1.73 ft ³ /sk Water 7.4 gal/sk
08/21/2012 22:28	Clean Lines				Cleaned Pump And Lines To Haul Off Pit
08/21/2012 22:33	Drop Plug				
08/21/2012 22:35	Pump Displacement	4			Pumped 116 bbls KCL Water Displacement
08/21/2012 23:01	Slow Rate	3		1192.0	Slowed Rate To Bump Plug
08/21/2012 23:02	Spacer Returns to Surface	3	94	1243.0	94 bbls Displacement Away Spacer Returns To Surface (22 bbls)
08/21/2012 23:09	Bump Plug	3	116	1760.0	Bumped Plug With 1760 psi Took Pressure To 2525 psi
08/21/2012 23:11	Check Floats				Checked Floats, Floats Held With 1 bbl Back To Truck
08/21/2012 23:12	Job Complete				
08/21/2012 23:15	Pre-Rig Down Safety Meeting				Discussed Hazards For Rigging Down Iron and Water Hoses
08/21/2012 23:20	Rig-Down Equipment				
08/22/2012 00:30	Rig-Down Completed				
08/22/2012 00:40	Pre-Convoy Safety Meeting				Discussed Hazards On Route To Service Center
08/22/2012 00:50	Depart Location for Service Center or Other Site				Thank You For Using Halliburton Energy Services

The Road to Excellence Starts with Safety

Sold To #: 346707	Ship To #: 2920610	Quote #:	Sales Order #: 9754807
Customer: QUICKSILVER RESOURCES INC-EBUSINESS		Customer Rep: Damme, Dustin	
Well Name: Pertlaw		Well #: 24-33	API/UWI #:
Field:	City (SAP): CRAIG	County/Parish: Moffat	State: Colorado
Contractor: DHS		Rig/Platform Name/Num: 6	
Job Purpose: Cement Production Casing			
Well Type: Exploratory / Wildcat		Job Type: Cement Production Casing	
Sales Person: SCOTT, KYLE	Srvc Supervisor: BIRCHELL, DEVIN		MBU ID Emp #: 466993

Job Personnel

HES Emp Name	Exp Hrs	Emp #	HES Emp Name	Exp Hrs	Emp #	HES Emp Name	Exp Hrs	Emp #
BIRCHELL, DEVIN Ray	0.0	466993	ELDER, DENNIS R	0.0	505202	HAMMOND, QUINN R	0.0	472403
SLAUGH, CODY B	0.0	104465	STINCHFIELD, ZACHARIAH Scott	0.0	524221	WILLIAMS, DAVID J	0.0	518688

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

TOTAL	Total is the sum of each column separately							
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Job

Formation Name	Formation Depth (MD)	Top	Bottom	Form Type	Job depth MD	Job Depth TVD	Water Depth	Perforation Depth (MD)	From	To
				BHST	7800. ft	7880. ft				

Job Times

Date	Time	Time Zone
21 - Aug - 2012	00:00	MST
21 - Aug - 2012	12:30	MST
21 - Aug - 2012	00:00	MST
21 - Aug - 2012	02:00	GMT
21 - Aug - 2012	00:00	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
Production Open Hole				6.125				6400.	7800.		
Intermediate Casing	Unknown		7.	6.276	26.		L-80	.	6400.		
Production Casing	Unknown		4.5	3.92	13.5		P-110	.	7800.		

Sales/Rental/3rd Party (HES)

Description	Qty	Qty uom	Depth	Supplier
PLUG,CMTG,TOP,4 1/2,HWE,3.65 MIN/4.14 MA	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 ool										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	TUNED SPACER III	TUNED SPACER III - SBM (483826)		bbl	10.	.0	.0	.0				
	37.49 gal/bbl	FRESH WATER										
	0.5 gal/bbl	MUSOL(R) A, BULK (100003696)										
	0.5 gal/bbl	SEM-7, 55 GAL DRUM (100001626)										
	65 lbm/bbl	BARITE, 100 LB SK (100003680)										
2	Mud Recovery Spacer			bbl	10.	.0	.0	.0				
	47.5 lbm/bbl	BARITE, BULK (100003681)										
	12.5 lbm/bbl	HALLIBURTON GEL, 50 LB SK (100064040)										
	0.05 gal/bbl	ANHIB II (100003821)										
3	MUD FLUSH III	MUD FLUSH III - SBM (528788)		bbl	8.4	.0	.0	.0				
4	LifeCem	LIFECM (TM) CEMENT (532084)		sacks	13.5	1.73	7.4		7.4			
	0.5 %	HALAD(R)-344, 50 LB (100003670)										
	0.15 %	HR-601, 50 LB BAG (101328348)										
	1 %	MICROBOND M, 50 LB SK (100012233)										
	22.86 %	SAND-SSA-1 - SILICA FLOUR - 200 MESH, BULK (100003691)										
	0.125 lbm	POLY-E-FLAKE (101216940)										
	7.399 Gal	FRESH WATER										
5	KCl Displacement			bbl	8.4	.0	.0	5.0				
	7.15 lbm/bbl	POTASSIUM CHLORIDE 7% (100001585)										
	42 gal/bbl	WATER - FRESH - GAL (24047)										
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								

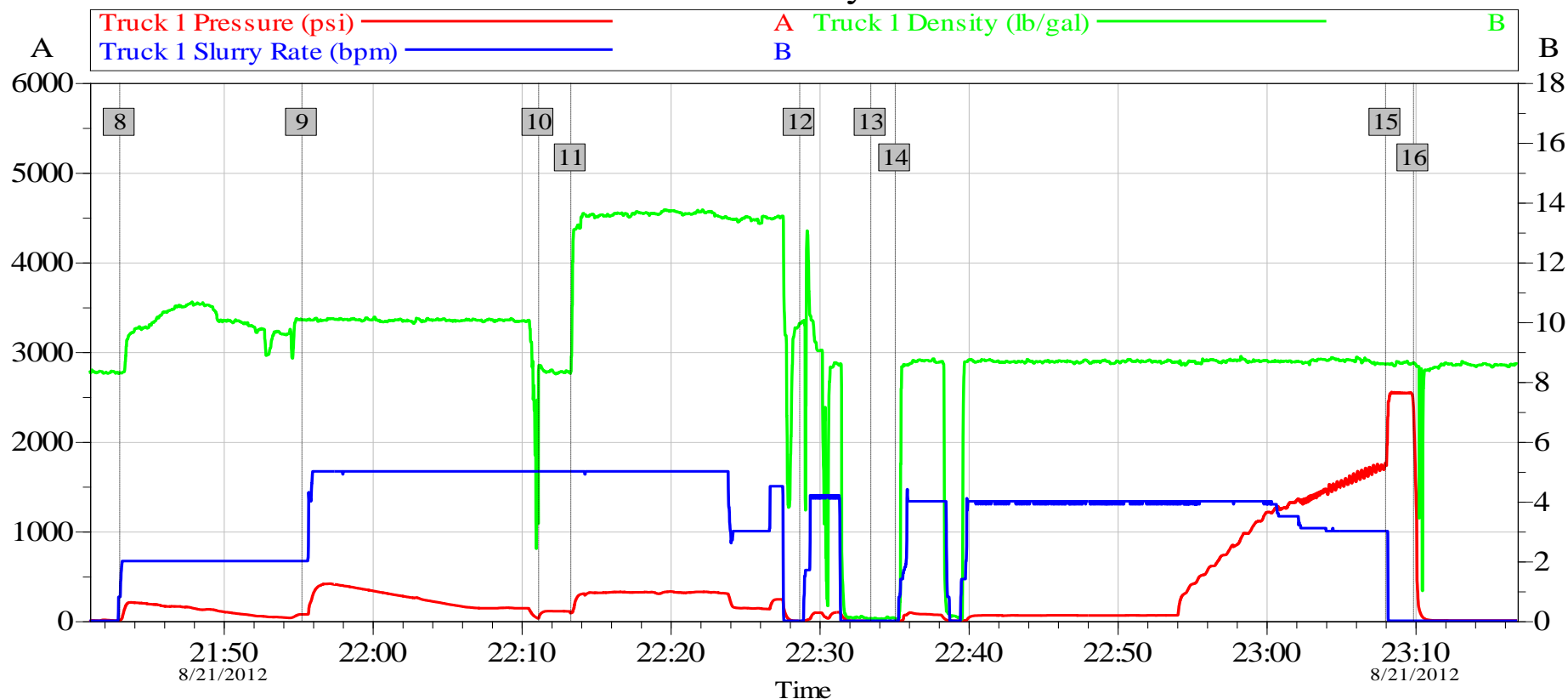
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Data Acquisition

QuickSilver Pertlaw 24-33 Production

QuickSilver Pertlaw 24-33 Production

Job Summary Chart



Global Event Log

8	Pump Spacer 1	21:43:04	9	Pump Spacer 1	21:55:18	10	Pump Spacer 2	22:11:10
11	Pump Cement	22:13:20	12	Clean Lines	22:28:42	13	Drop Plug	22:33:28
14	Pump Displacement	22:35:07	15	Bump Plug	23:08:02	16	Check Floats	23:09:54

Customer: QuickSilver
Job Description: Production
Service Supervisor: Devin Birchell

Job Date: 21-Aug-2012
UWI:
Service Operator: Quinn Hammond

Sales Order #: 9754807
Elite #: 10872435
Service Leader: Cody Slaugh

OptiCem v6.4.10
21-Aug-12 23:42

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Lab Data

LAB RESULTS - Primary

Cementing Rockies, Vernal

Job Information

Request/Slurry	264610/1	Rig Name	DHS DRILLING #6	Date	19/AUG/2012
Submitted By	Charli Brown	Job Type	Production Casing	Bulk Plant	Vernal
Customer	Quicksilver Resources Inc.	Location	Moffat	Well	PERTLAW 24-33

Well Information

Casing/Liner Size	4 1/2"	Depth MD	7800 ft	BHST	181 F
Hole Size	6 1/8"	Depth TVD	7800 ft	BHCT	133 F

Drilling Fluid Information

Mud Supplier Name	Mud Trade Name	Density	9.5 PPG
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Cement Information - Lead Design

Conc	UOM	Cement/Additive	Sample Type	Sample Date	Lot No.	Cement Properties	
						Slurry Density	13.50 PPG
						Slurry Yield	1.73 ft3/sk
100.00	% BWOC	Cement Blend	Bulk	Aug 19, 2012		Water Requirement	7.46 GPS
7.46	gal/sack	Fresh Water	Lab	Mar 08, 2012	3/8/12	Total Mix Fluid	7.46 GPS
0.150	% BWOC	HR-601	Bulk	Aug 19, 2012	HR06B-07S300		
0.125	lb/sk	Pol-E-Flake	Bulk	Aug 19, 2012	4-10-2012		

Operation Test Results Request ID 264610/1

Thickening Time, Request Test ID:2833470

Temp (°F)	Pressure (psi)	Reached in (min)	Start BC	30 Bc (hh:mm)	50 Bc (hh:mm)	70 Bc (hh:mm)	100 Bc (hh:mm)
133	4,760	40	14	03:56	03:59	04:15	04:29

Mixability (0 - 5) - 0 is not mixable, Request Test ID:2833460

Mixability rating (0 - 5)

5

API Rheology, Request Test ID:2833471

Temp (°F)	600	300	200	100	60	30	6	3	Cond Time (min)	PV/YP
80	92	48	34	20	14	11	7	4	0	42.7 / 5.6

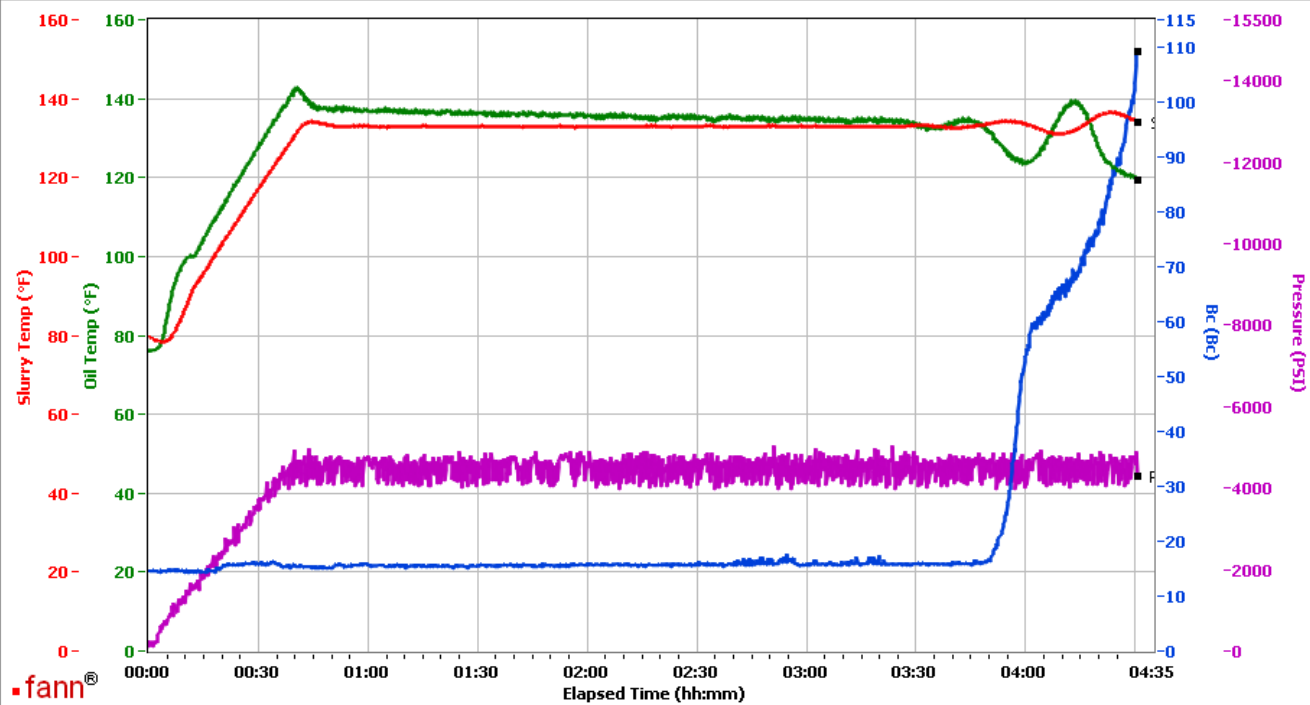
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Vernal

Fields	Values
Project Name	Quicksilver 264610-1A
Test ID	264610-1
Request ID	HPHT#6
Tested by	BSH
Customer	Quicksilver
Well No	Pertlaw 24-33
Rig	#6
Casing/Liner Size	4.5

Fields	Values
Job Type	Prod Lead
Cement Type	50/50
Cement Weight	Light Weight
Test Date	08/19/12
Test Time	08:11 PM
Temp. Units	degF
Pressure Units	PSI
SW Version	2.0.2.206

Events	Results
30.00 Bc	03h:56m
50.00 Bc	03h:59m
70.00 Bc	04h:15m
100.00 Bc	04h:29m
00h:30m	15.82
01h:00m	15.87
01h:30m	15.59
02h:00m	15.95



Data File Z:\HPHT Data Files\Vernal Consistometer #6\Quicksilver 264610-1A.tdms

Comments 50/50, 0.15 HR-601, 13.5 density, 1.73 yield