

EXXONMOBIL CORPORATION

HOUSTON, Texas

PCU 296-5A6

H&P 321      970-422/-4867

## **Post Job Summary**

### **Cement Intermediate Casing**

Prepared for: Todd Teren  
Date Prepared: March 25, 2011  
Version: 1

Service Supervisor: DAVIS, CODY

Submitted by: Joshua Anglin

**HALLIBURTON**

## Wellbore Geometry

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
Casing	10 3/4" Surface Casing	10.75	9.950	45.50	0.00	4,853.00	0.00	4,573.00		
Open Hole Section	9 7/8" Intermediate Open Hole		9.950		4,853.00	10,586.00	4,573.00	10,253.00	100.00	0.00
Casing	7" Intermediate Casing	7.00	6.276	26.00	0.00	10,578.00	0.00	10,245.00		

## Pumping Schedule

Stage /Plug #	Fluid #	Fluid Type	Fluid Name	Surface Density lbm/gal	Avg Rate bbl/min	Surface Volume	Downhole Volume
1	1	Spacer	TUNED SPACER III	10.00	6.00	80.0 bbl	80.0 bbl
1	2	Cement Slurry	New Vernal Tuned Light	11.00	6.00	1435.0 sacks	1435.0 sacks
1	3	Spacer	Drilling Mud	0.00	0.00	397.0 bbl	397.0 bbl

# HALLIBURTON

## Fluids Pumped

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**Stage/Plug # 1      Fluid 1:**      TUNED SPACER III  
TUNED SPACER III - SBM (483826)  
59.8 lbm/bbl      Barite

Fluid Density:      10.00 lbm/gal  
Fluid Volume:      80.00 bbl  
Pump Rate:      6.00 bbl/min

**Stage/Plug # 1      Fluid 2:**      New Vernal Tuned  
Light  
TUNED LIGHT (TM) SYSTEM  
0.2 lbm      WG-17  
0.5 lbm      D-AIR 3000  
0.5 lbm      HR-601

Fluid Weight:      11.00 lbm/gal  
Slurry Yield:      2.21 ft<sup>3</sup>/sack  
Total Mixing Fluid:      9.70 Gal  
Surface Volume:      1435.0 sacks  
Sacks:      1435.0 sacks  
Calculated Fill:      6,217.00 ft  
Calculated Top of Fluid:      4,324.00 ft  
Estimated Top of Fluid:  
Pump Rate:      6.00 bbl/min

**Stage/Plug # 1      Fluid 3:**      Drilling Mud  
DUMMY MUD / FLUSH / SPACER SBC MATERIAL

Fluid Density:      0.00 lbm/gal  
Fluid Volume:      397.00 bbl  
Pump Rate:      0.00 bbl/min

## Job Summary

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### Job Information

Job Start Date	3/10/2011 5:20:00 PM
Job MD	10,578.0 ft
Job TVD	10,245.0 ft
Height of Plug Container/Swage Above Rig Floor	3.0 ft
Surface Temperature at Time of Job	35 degF
Mud Type	Water Based Mud
Actual Mud Density	9 lbm/gal
Time Circulated before job	3.00 hour(s)
Pipe Movement During Hole Circulation	Rotated and Reciprocated
Time From End Mud Circ. to Job Start	15.00 minute
Pipe Movement During Cementing	Reciprocated
Calculated Displacement	397 bbl
Job Displaced by (rig/halco)	Cement Unit HP Pumps
Annular flow Before Job? (Water/Gas)	Unknown
Annular flow After Job? (Water/Gas)	Unknown

### Cementing Equipment

Pipe Centralization	Through Entire Cement Column
Brand of Float Equipment Used	Weatherford
Did Float Equipment Hold?	Yes
Plug set used?	Yes
Brand of Plug set used?	Weatherford
Did Plugs Bump?	Yes
Calculated Pressure to Bump Plugs	1,400.0 psig
Did Stage Cementing Tool Open Properly?	Unknown

## Service Supervisor Reports

### Job Log

Date/Time	Chart #	Activity Code	Pump Rate	Cum Vol	Pump		Pressure (psig)		Comments
03/07/2011 21:00		Call Out							
03/07/2011 22:00		Depart Yard Safety Meeting							JOURNEY MANAGMENT
03/07/2011 22:30		Crew Leave Yard							
03/08/2011 06:00		Arrive at Location from Service Center							RIG RUNNING CASING
03/08/2011 06:05		Safety Meeting - Assessment of Location							OVER HEAD LINES RED ZONES
03/08/2011 06:15		Other							MEET W/ CO MAN AND GO OVER NUMBERS
03/08/2011 06:25		Other							SPOT TRUCKS USING TWO SPOTTERS
03/08/2011 06:30		Safety Meeting - Pre Rig-Up							PINCH POINTS RED ZONES LINE OF FIRE
03/08/2011 06:40		Rig-Up Equipment							RIG UP TO RED ZONES
03/08/2011 08:30		Other							WAIT ON RIG TO RUN CASING
03/10/2011 16:20		Safety Meeting - Pre Rig-Up							PINCH POINTS RED ZONES LINE OF FIRE
03/10/2011 16:30		Rig-Up Equipment							
03/10/2011 17:00		Rig-Up Completed							
03/10/2011 17:20		Safety Meeting - Pre Job							GO OVER JOB PROCESS
03/10/2011 17:47		Pump Water							2BBLS TO FILL LINES
03/10/2011 17:52		Pressure Test						250.0	TO 250PSI
03/10/2011 17:55		Pressure Test						5000. 0	TO 5000PSI
03/10/2011 18:00		Pump Spacer	5					500.0	80BBLS TUNE SPACER
03/10/2011 18:15		Shutdown							

# HALLIBURTON

Date/Time	Chart #	Activity Code	Pump Rate	Cum Vol	Pump		Pressure (psig)		Comments
03/10/2011 18:16		Drop Bottom Plug							
03/10/2011 18:16		Pump Cement	6.5				550.0		564.8BBLS TUNE LIGHT CMT 11# 2.21YIELD 9.7GAL/SK 1435SKS
03/10/2011 20:00		Shutdown							
03/10/2011 20:05		Drop Top Plug							
03/10/2011 20:07		Pump Displacement - Start	8				320.0		PUMP MUD DISPLACEMENT
03/10/2011 20:57		Slow Rate	2				1400.0		380BBLS GONE
03/10/2011 21:05		Bump Plug	2				800.0		TOTAL DISPLACEMENT 397BBLS PRESSURE OVER 500PSI TO 1300PSI
03/10/2011 21:10		Check Floats							1.75BBLS BACK
03/10/2011 21:20		Safety Meeting - Pre Rig-Down							PINCH POINTS RED ZONE LINE OF FIRE
03/10/2011 21:30		Rig-Down Equipment							
03/10/2011 22:50		Rig-Down Completed							
03/10/2011 22:55		Safety Meeting - Departing Location							JOURNEY MANAGMENT
03/10/2011 23:00		Depart Location for Service Center or Other Site							

*The Road to Excellence Starts with Safety*

Sold To #: 331699	Ship To #: 2753382	Quote #:	Sales Order #: 8013710
Customer: EXXONMOBIL CORPORATION	Customer Rep: Murawski, Victoria		
Well Name: PCU	Well #: 296-5A6	API/UWI #: 05103112400000	
Field:	City (SAP): MEEKER	County/Parish: Rio Blanco	State: Colorado
Legal Description: Section 5 Township 2S Range 96W			
Contractor: H&P	Rig/Platform Name/Num: 321	970-422-4867	
Job Purpose: Cement Intermediate Casing			
Well Type: Development Well	Job Type: Cement Intermediate Casing		
Sales Person: MCNARY, GEORGE	Srvc Supervisor: DAVIS, CODY	MBU ID Emp #: 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	DEARING, KEN A		239372	PACE, GARRET L		475041
SAGE, JAMES Edwin		470468	STILL, MICHEAL Wayne		258213	WALSH, JAMES Ronald		457722
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
TOTAL			Total is the sum of each column separately					

## Job

## Job Times

Formation Name	Top	Bottom	Called Out	Date	Time	Time Zone
Formation Depth (MD)			On Location	07 - Mar - 2011	21:00	MST
Form Type		BHST	On Location	08 - Mar - 2011	06:00	MST
Job depth MD	10578. ft	Job Depth TVD	Job Started	10 - Mar - 2011	17:20	MST
Water Depth		Wk Ht Above Floor	Job Completed	10 - Mar - 2011	21:10	MST
Perforation Depth (MD)	From	To	Departed Loc	10 - Mar - 2011	23:00	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
9 7/8" Intermediate Open Hole				9.95				4853.	10586.	4573.	10253.
10 3/4" Surface Casing	Unknown		10.75	9.95	45.5		J-55	.	4853.	.	4573.
7" Intermediate Casing	Unknown		7.	6.276	26.		P-110	.	10578.	.	10245.

## 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	TUNED SPACER III	TUNED SPACER III - SBM (483826)			80.00	bbl	10.	.0	.0	6.0		
38.32 gal/bbl		FRESH WATER										
59.8 lbm/bbl		BARITE, 100 LB SK (100003680)										
2	New Vernal Tuned Light	TUNED LIGHT (TM) SYSTEM (452984)			1435.0	sacks	11.	2.21	9.7	6.0	9.7	
0.2 lbm		WG-17, 50 LB SK (100003623)										
0.5 lbm		D-AIR 3000 (101007446)										
0.5 lbm		HR-601, 50 LB BAG (101328348)										
9.7 Gal		FRESH WATER										
3	Drilling Mud				397.00	bbl	.	.0	.0	.0		
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	0 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							

## Lab Data

### HALLIBURTON

#### Cementing Rockies, Vernal

#### LAB RESULTS - Primary

##### Job Information

Request/Slurry	132449/1	Rig Name	H&P 321	Date	02/MAR/2011
Submitted By	Joshua Anglin	Job Type	Intermediate Casing	Bulk Plant	Vernal
Customer	ExxonMobil	Location	Rio Blanco	Well	PCU 296-5A6

##### Well Information

Casing/Liner Size	7"	Depth MD	10578 ft	BHST	233 F
Hole Size	9 7/8"	Depth TVD	10245 ft	BHCT	175 F

##### Cement Information - Primary Design

Conc	UOM	Cement/Additive	Sample Type	Sample Date	Lot No.	Cement Properties		
		Tuned Light				Slurry Density	11.00	PPG
36.88	%	> Boral Craig Pozmix	Lab	Mar 03, 2011		Slurry Yield	2.21	ft3/sk
11	%	> HGS 6000 (PB)	Lab	Mar 03, 2011		Water Requirement	9.71	GPS
53.19	%	> Holcim Type V	Lab	Mar 03, 2011				
13	%	> Silicalite - Compacted	Lab	Mar 03, 2011				
100.00	% BWOC	Cement Blend	Lab	Mar 03, 2011				
0.250	% BWOC	HR-601	Lab	Mar 03, 2011	24HR12 X27S3JP	Water Source	Field (Fresh) Water	
0.500	% BWOC	D-Air 3000	Lab	Mar 03, 2011	2011031 AC	Water Chloride	N/A	ppm
0.200	% BWOC	FWCA	Lab	Mar 03, 2011	37975			
9.71	gal/sack	Field (Fresh) Water	Lab	Feb 21, 2011	02/22/20 11			

##### Operation Test Results Request ID 132449/1

##### UCA Comp. Strength, Request Test ID:1339854, Historical Data

End Temp (°F)	Pressure (psi)	50 psi (hh:mm)	500 psi (hh:mm)	12 hr CS (psi)	24 hr CS (psi)	48 hr CS (psi)	End CS (psi)	End Time (hrs)
210	3,000	05:21	06:04	1,349	1,415	1,577	1,645	72

##### Thickening Time, Request Test ID:1339853, Historical Data

Temp (°F)	Pressure (psi)	Batch Mix (min)	Reached in (min)	Start BC	30 Bc (hh:mm)	50 Bc (hh:mm)	70 Bc (hh:mm)	100 Bc (hh:mm)
175	4,985	0	60	7	04:32	04:32	04:32	05:14

##### Free Water, Request Test ID:1339856, Historical Data

Test Temp (°F)	% FW 45 Inc
175	0

##### API Rheology, Request Test ID:1339855, Historical Data

Temp (°F)	600	300	200	100	60	30	6	3	Cond Time (min)	PV/YP
80	253	159	124	89	76	67	55	52	0	105.9 / 56.9

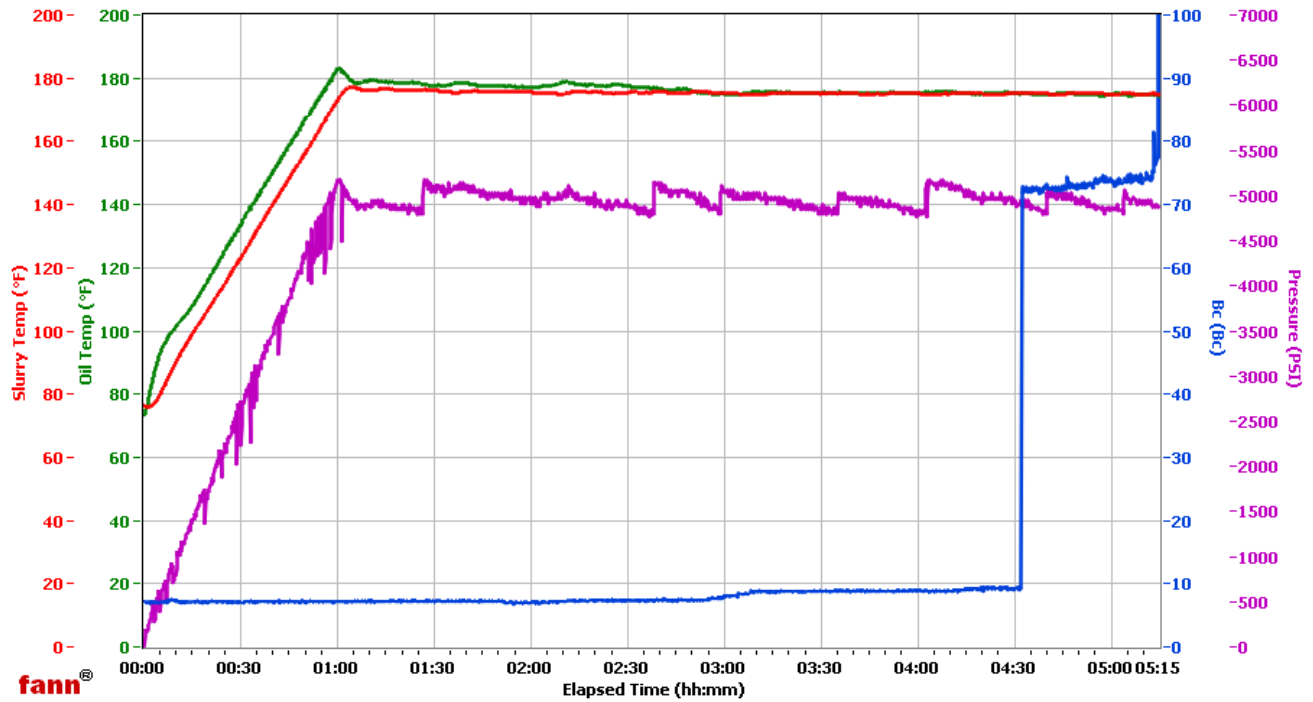
##### API Fluid Loss, Request Test ID:1339857, Historical Data

# HALLIBURTON

Test Temp (°F) 175      Test Pressure (psi) 1,000      Test Time (min) 0.75      Meas. Vol (< 30 min, cc) 23      Extr. ISO FL (cc/30 min) 291

## Vernal

Fields	Values	Fields	Values	Events	Results
Project Name	Exxonmobil 132449-1	Job Type	Int Primary	30.00 Bc	04h:32m
Test ID	132449-1	Cement Type	V	50.00 Bc	04h:32m
Request ID	HPHT #1	Cement Weight	Light Weight	60.00 Bc	04h:32m
Tested by	D.O.	Test Date	03/03/11	70.00 Bc	04h:32m
Customer	Exxonmobil	Test Time	09:12 PM	100.00 Bc	05h:14m
Well No	PCU 296-5A6	Temp. Units	degF	200.00 Bc	NaN
Rig	H8P 321	Pressure Units	PSI	03h:00m	7.83
Casing/Liner Size	7			06h:00m	NaN



Data File O:\HPHT Data Files\Vernal Consistometer #1\Exxonmobil 132449-1.tdms

Comments 53.19% V, .25% HR-601, 11 DEr, 2.21 YD.

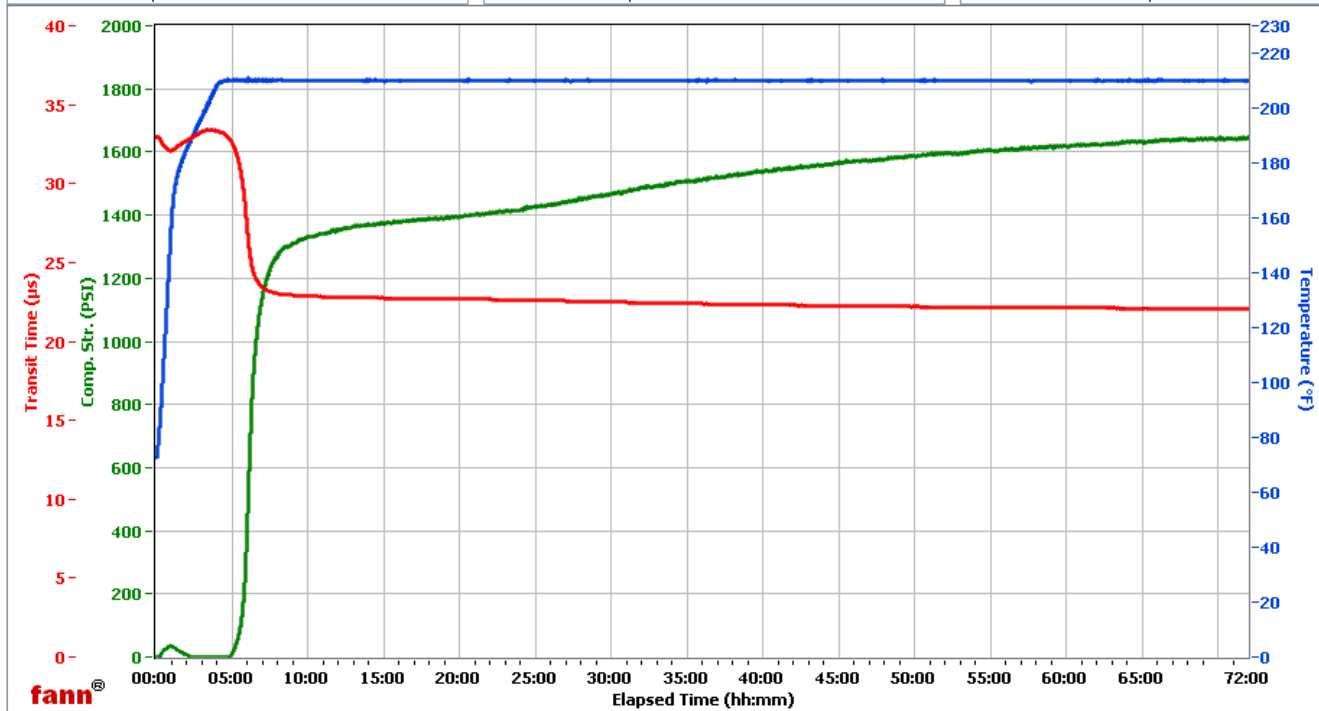
# HALLIBURTON

## Vernal

Fields	Values
Project Name	ExxonMobil 132449-1
Test ID	132449-1
Request ID	UCA 4
Tested by	vmc
Customer	ExxonMobil
Well No	PCU 296-5A6
Rig	321
Casing/Liner Size	7

Fields	Values
Job Type	Intermediate Primary
Cement Type	Tuned Light
Cement Weight	Light Weight
Test Date	3/4/2011
Test Time	8:24 AM
Temp. Units	degF
Pressure Units	PSI

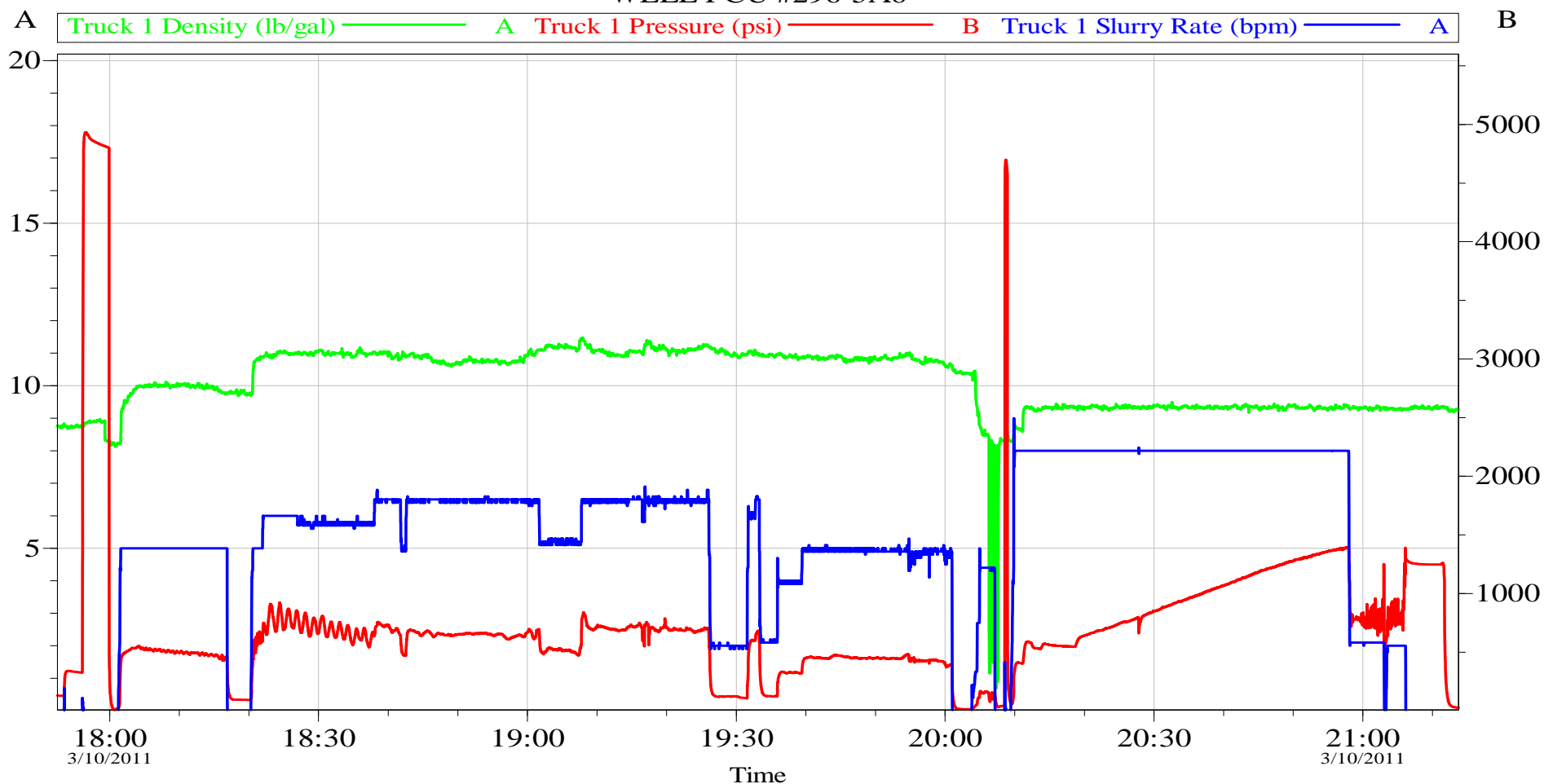
Events	Results
50.00 PSI	05h:21m
100.00 PSI	05h:34m
500.00 PSI	06h:04m
1000.00 PSI	06h:36m
12h:00m	1348.87
24h:00m	1414.53
48h:00m	1577.37
72h:00m	1645.09



Data File C:\Data Files\132449-1.tdms

Comments Tuned Light, 0.25% HR-601, 11 Den, 2.21 Yd

EXXONMOBIL 321  
7" INTERMEDIATE 3-10-11  
WELL PCU #296-5A6



Customer: EXXONMOBIL CORPORATION  
Well Description: PCU 296-5A6

Job Date: 10-Mar-2011  
UWI:

Sales Order #: 8013710

OptiCem v6.4.9  
10-Mar-11 21:47