

EXXONMOBIL CORPORATION
HOUSTON, Texas

PCU 197-36A1 Surface

H&P 326

Post Job Summary

Cement Multiple Stages

Date Prepared: October 1, 2010
Version: 1

Service Supervisor: Benjamin Anderson
Submitted by: Simukayi Mutasa

HALLIBURTON

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Wellbore Geometry

Job Tubulars					MD		TVD		Excess %	Shoe Joint Length ft
Type	Description	Size in	ID in	Wt lbm/ft	Top ft	Bottom ft	Top ft	Bottom ft		
Open Hole Section	Surface Open Hole		14.750		0.00	1,594.00	0.00	1,564.00	75.00	
Open Hole Section	Surface Open Hole		14.750		1,594.00	4,210.00	1,564.00	4,109.00	25.00	
Casing	Surface Casing	10.75	9.950	45.50	0.00	4,210.00	0.00	4,109.00		80.00
Cement Stage Tool	Multiple Stage Cementer		.000		1,594.00	1,594.00				0.00

Pumping Schedule

Stage #	Fluid #	Fluid Type	Fluid Name	Surface Density	Surface Volume
1	1	Spacer	FreshWater Ahead	8.33	50.0 bbl
1	2	Cement Slurry	First Stage Lead Cement	12.70	770.0 sacks
1	3	Cement Slurry	First Stage Tail Cement	15.80	350.0 sacks
1	4	Spacer	Drilling Fluid / Mud	8.90	394.0 bbl
2	1	Spacer	Freshwater Ahead	8.33	50.0 bbl
2	2	Cement Slurry	Second Stage Lead Cement	12.70	800.0 sacks
2	3	Spacer	Drilling Fluid / Mud	8.90	155.0 bbl
2	4	Cement Slurry	Top Out	15.80	400.0 sacks

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Fluids Pumped

Stage/Plug # 1 **Fluid 1:** FreshWater Ahead
SPACER

Fluid Density: 8.33 lbm/gal
Fluid Volume: 50.00 bbl
Pump Rate: 6.00 bbl/min

Stage/Plug # 1 **Fluid 2:** First Stage Lead
Cement
ECONOCEM (TM) SYSTEM
0.6 % HR-7
0.25 lbm Poly-E-Flake

Fluid Weight: 12.70 lbm/gal
Slurry Yield: 1.87 ft3/sack
Total Mixing Fluid: 9.89 Gal
Surface Volume: 770.0 sacks
Sacks: 770.0 sacks
Calculated Fill: 2,062.82 ft
Calculated Top of Fluid: 1,594.00 ft
Pump Rate: 6.00 bbl/min

Stage/Plug # 1 **Fluid 3:** First Stage Tail Cement
HALCEM (TM) SYSTEM
0.25 % HR-800
0.25 lbm Poly-E-Flake

Fluid Weight: 15.80 lbm/gal
Slurry Yield: 1.15 ft3/sack
Total Mixing Fluid: 4.95 Gal
Surface Volume: 350.0 sacks
Sacks: 350.0 sacks
Calculated Fill: 516.18 ft
Calculated Top of Fluid: 3,656.82 ft
Pump Rate: 6.00 bbl/min

Stage/Plug # 1 **Fluid 4:** Drilling Fluid / Mud
DRILLING MUD

Fluid Density: 8.90 lbm/gal
Fluid Volume: 394.00 bbl
Pump Rate: 6.00 bbl/min

Stage/Plug # 2 **Fluid 1:** Freshwater Ahead
SPACER

Fluid Density: 8.33 lbm/gal
Fluid Volume: 50.00 bbl
Pump Rate: 6.00 bbl/min

Stage/Plug # 2 **Fluid 2:** Second Stage Lead
Cement
ECONOCEM (TM) SYSTEM
0.25 lbm Poly-E-Flake

Fluid Weight: 12.70 lbm/gal
Slurry Yield: 1.87 ft3/sack
Total Mixing Fluid: 9.92 Gal
Surface Volume: 800.0 sacks
Sacks: 800.0 sacks
Calculated Fill: 1,594.00 ft
Calculated Top of Fluid: 0.00 ft
Pump Rate: 6.00 bbl/min

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Stage/Plug # 2 **Fluid 3:** Drilling Fluid / Mud
DRILLING MUD

Fluid Density: 8.90 lbm/gal
Fluid Volume: 155.00 bbl
Pump Rate: 6.00 bbl/min

Stage/Plug # 2 **Fluid 4:** Top Out
Top Out

94 lbm Premium Cement
2 % Calcium Chloride

Fluid Weight: 15.80 lbm/gal
Slurry Yield: 1.16 ft³/sack
Total Mixing Fluid: 5.01 Gal
Surface Volume: 400.0 sacks
Sacks: 400.0 sacks
Pump Rate: 2.00 bbl/min

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Job Summary

Job Information

Job Start Date	9/24/2010 8:38:00 PM
Job MD	4,210.0 ft
Job TVD	4,109.0 ft
Height of Plug Container/Swage Above Rig Floor	4.0 ft
Surface Temperature at Time of Job	70 degF
Mud Type	Water Based Mud
Actual Mud Density	8.90 lbm/gal
Pipe Movement During Cementing	Reciprocated
Calculated Displacement	155.00 bbl
Amount of Cement Returns	120.00 bbl
Job Displaced by (rig/halco)	Cement Unit HP Pumps
Length of Rat Hole	17.00 ft

Cementing Equipment

Did Float Equipment Hold?	Yes
Plug set used?	Yes
Brand of Plug set used?	Weatherford
Did Plugs Bump?	Yes
Calculated Pressure to Bump Plugs	624.0 psig
Did Stage Cementing Tool Open Properly?	Yes

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Service Supervisor Reports

Job Log

Date/Time	Chart #	Activity Code	Pump Rate	Pressure (psig)	Comments
09/23/2010 17:00		Call Out			CREW CALLED OUT, GOT TRUCKS PREPPED FOR CONVOY AND JOB
09/23/2010 18:20		Pre-Convoy Safety Meeting			DISCUSSED CONVOY PROCEDURES, ROUTE, STOPS, TRAFFIC, WILDLIFE, ROAD HAZARDS, EMERGENCY AND BREAKDOWN PROCEDURES
09/23/2010 22:30		Arrive at Location from Service Center			RIG RUNNING CASING
09/23/2010 22:50		Pre-Rig Up Safety Meeting			DISCUSSED RIG UP PROCEDURES, RED ZONES, LIFTING TECHNIQUES, PINCH POINTS, HAMMERING, SLIPS/TRIPS/FALLS
09/23/2010 23:00		Rig-Up Equipment			RIGGED UP SAFELY AND TO BOTH HALLIBURTON AND EXXON STANDARDS
09/24/2010 00:27		Other			RIGGED DOWN IRON OFF OF RIG FLOOR AND RIGGED UP TO CELLAR FOR TOPOUT
09/24/2010 00:27		Pre-Job Safety Meeting			DISCUSSED JOB PROCEDURES FOR TOPOUT, RIG ISSUES, SAFETY ISSUES, HAZARDS WITH PRESSURE, EMERGENCY AND EVACUATION PROCEDURES
09/24/2010 01:38		Other			WAITING FOR RIG TO FINISH RUNNING CASING
09/24/2010 10:00		Other			CASING ON BOTTOM, RIG CIRCULATING TWO HOLE VOLUMES
09/24/2010 14:00		Pre-Job Safety Meeting			DISCUSSED JOB PROCEDURES FOR 1ST STAGE, RIG ISSUES, SAFETY ISSUES, HAZARDS WITH PRESSURE, EMERGENCY AND EVACUATION PROCEDURES
09/24/2010 14:36		Test Lines		250.0	LOW PRESSURE TEST IS GOOD
09/24/2010 14:44		Test Lines		5000.0	HIGH PRESSURE TEST IS GOOD
09/24/2010 14:47		Pump Spacer	5	280.0	PUMP FRESH WATER SPACER @ 8.33 PPG
09/24/2010 14:58		Pump Lead Cement	6	450.0	MIXED @ 12.7 PPG, 770 SKS, YLD 1.88, WTR 9.98, WITH 0.6% HR-7, 0.25 LBM POLY-E-FLAKE ADDITIVES
09/24/2010 15:47		Pump Tail Cement	4	310.0	MIXED @ 15.8 PPG, 350 SKS, YLD 1.15, WTR 4.95, WITH 0.25% HR-800, 0.25 LBM POLY-E-FLAKE ADDITIVES
09/24/2010 16:05		Drop Top Plug			PLUG DROPPED BY WEATHERFORD TOOL HAND
09/24/2010 16:08		Pump Displacement	8	925.0	PUMPED WATER BASED MUD @ 9.4 PPG
09/24/2010 16:29		Slow Rate	4	312.0	SLOWED RATE TO GO THRU THE DV TOOL
09/24/2010 16:34		Resume	8	355.0	PICKED RATE BACK UP TO PREVIOUS
09/24/2010 16:38		Drop Plug			WEATHERFOR TOOL HAND DROPPED CLOSING PLUG
09/24/2010 17:12		Bump Plug	3	810.0	TOOK 500 PSI OVER TO 1400 PSI AS PER COMPANY MAN AND WEATHERFORD TOOL HAND
09/24/2010 17:15		Check Floats			FLOATS HELD, GOT 2 BBLS BACK
09/24/2010 17:25		Drop Opening Device For Multiple Stage Cementer			WEATHERFORD HAND DROPPED BOM, WAITING FOR 20 MIN. FOR BOM TO GET TO TOOL
09/24/2010 17:45		Circulate Well			OPENED THE TOOL AND BROKE CIRCULATION AND TURNED JOB BACK OVER TO THE WELL
09/24/2010 17:50		Wait on Orders - Start Time			RIG IS CIRCULATING WHILE WAITING FOR CEMENT TO SET UP FOR THE FIRST STAGE
09/24/2010 20:00		Wait on Orders - End Time			DONE WAITING AND IS NOW STARTING SECOND STAGE
09/24/2010 20:15		Pre-Job Safety Meeting			DISCUSSED JOB PROCEDURES FOR 2ND STAGE, RIG ISSUES, SAFETY ISSUES, HAZARDS WITH PRESSURE, EMERGENCY AND EVACUATION PROCEDURES
09/24/2010 20:39		Pump Spacer	6	242.0	PUMP FRESH WATER SPACER @ 8.33 PPG

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Date/Time	Chart #	Activity Code	Pump Rate	Pressure (psig)	Comments
09/24/2010 20:52		Pump Cement	6	355.0	MIXED @ 12.7 PPG, 770 SKS, YLD 1.88, WTR 9.98, WITH 0.6% HR-7, 0.25 LBM POLY-E-FLAKE ADDITIVES
09/24/2010 21:43		Drop Top Plug			PLUG CONTAINER CAP WAS BROKE LOOSE. WEATHERFORD TOOL HAND DROPPED TOP CLOSING PLUG AND WITNESSED BY MIKE SADLER, AND ADAM RYAN OF EXXONMOBIL, AS WELL AS WESTON SPENCER (HALLIBURTON SERVICE LEADER)
09/24/2010 21:45		Pump Displacement			PUMP 20 BBLSO FRESH WATER TO WASH UP ON TOP OF PLUG, 120 BBL OF DRILLING MUD AND 15 BBL OF FRESH WATER FOR DISPLACEMENT
09/24/2010 21:46		Displ Reached Cmmt			DISPLACEMENT REACHED CEMENT WITH 15 BBL OF DISPLACEMENT AWAY.
09/24/2010 21:51		Cement Returns to Surface			CEMENT RETURNS TO SURFACE WITH 25 BBL OF DISPLACEMENT AWAY.
09/24/2010 22:16		Bump Plug	4	700.0	TOOK 1500 PSI OVER TO 2200 PSIAS PER COMPANY MAN AND THE WEATHERFORD TOOL HAND
09/24/2010 22:17		Check Floats			FLOATS HELD, GOT 1.25 BBL BACK
09/24/2010 22:20		Pressure Up			PRESSURED BACK UP TO 2200 PSI
09/24/2010 22:22		Check Floats			CHECKED FLOATS, GOT 1.25 BBL
09/24/2010 22:25		Shutdown			SHUTDOWN TO WAIT TO START THE TOPOUT
09/24/2010 23:30		Pre-Job Safety Meeting			DISCUSSED JOB PROCEDURES FOR TOPOUT, RIG ISSUES, SAFETY ISSUES, HAZARDS WITH PRESSURE, EMERGENCY AND EVACUATION PROCEDURES
09/24/2010 23:51		Pump Cement	1.3	78.0	MIXED @ 15.8 PPG, 25 SKS, YLD 1.17, WTR 5.02 WITH 2% CALCIUM CHLORIDE
09/25/2010 00:05		Clean Lines			CLEANED PUMPS AND LINES
09/25/2010 00:20		Post-Job Safety Meeting (Pre Rig-Down)			DISCUSSED JOB OUTCOME AND DISCUSSED RIG DOWN PROCEDURES, RED ZONES, LIFTING TECHNIQUES, PINCH POINTS, HAMMERING, SLIPS/TRIPS/FALLS
09/25/2010 00:30		Rig-Down Equipment			RIGGED DOWN SAFELY AND TO BOTH HALLIBURTON AND EXXON STANDARDS
09/25/2010 01:50		Pre-Convoy Safety Meeting			DISCUSSED CONVOY PROCEDURES, ROUTE, STOPS, TRAFFIC, WILDLIFE, ROAD HAZARDS, EMERGENCY AND BREAKDOWN PROCEDURES
09/25/2010 02:00		Depart Location for Service Center or Other Site			THANKS FOR USING HALLIBURTON!!!
09/25/2010 07:30		Other			RIG IS DONE SKIDDING OVER
09/25/2010 07:45		Pre-Rig Up Safety Meeting			DISCUSSED RIG UP PROCEDURES, HAMMERING, PINCH POINTS, SLIPS/TRIPS/FALLS
09/25/2010 07:50		Rig-Up Equipment			RIGGED UP SAFELY AND TO BOTH HALLIBURTON AND EXXON STANDARDS
09/25/2010 08:35		Pump Cement			MIXED @ 15.8 PPG, SKS, YLD 1.17, WTR 5.02 WITH 2% CALCIUM CHLORIDE ADDITIVES
09/25/2010 09:15		Pre-Job Safety Meeting			DISCUSSED JOB PROCEDURE FOR TOPOUT, RIG ISSUES, SAFETY ISSUES, HAZARDS WITH PRESSURE, EMERGENCY, AND EVACUATION PROCEDURES

The Road to Excellence Starts with Safety

Sold To #: 331699	Ship To #: 2807173	Quote #:	Sales Order #: 7651461
Customer: EXXONMOBIL CORPORATION	Customer Rep: Kelly, Whitnee		
Well Name: PCU	Well #: 197-36A1	API/UWI #: 05103111800000	
Field: PICEANCE CREEK	City (SAP): MEEKER	County/Parish: Rio Blanco	State: Colorado
Legal Description: Section 36 Township 1S Range 97W			
Job Purpose: Cement Multiple Stages			
Well Type: Development Well		Job Type: Cement Multiple Stages	
Sales Person: TURNER, JAMIE	Srvc Supervisor: ANDERSON, BENJAMIN	MBU ID Emp #: 342843	

Job Personnel

HES Emp Name	Exp Hrs	Emp #	HES Emp Name	Exp Hrs	Emp #	HES Emp Name	Exp Hrs	Emp #
ANDERSON, BENJAMIN L		342843	LEHAR, JARED L		377274	MCCONKIE, TRAVIS Terry		471264
PEAY, SHANE Blake		472880	SPENCER, WESTON Chad		391271	WALSH, JAMES Ronald		457722
WHITE, KAMEREON V		475856						

Equipment

HES Unit #	Distance-1 way	HES Unit #	Distance-1 way	HES Unit #	Distance-1 way	HES Unit #	Distance-1 way
10741125	45 mile	10784082	45 mile	10867527	45 mile	10948690	45 mile
11062230	45 mile	11076824	45 mile	11127544	45 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					Date	Time	Time Zone
Formation Depth (MD)	Top		Bottom		Called Out	23 - Sep - 2010 17:00	MST
Form Type		BHST			On Location	23 - Sep - 2010 22:30	MST
Job depth MD	4210. ft	Job Depth TVD	4109. ft		Job Started	24 - Sep - 2010 20:38	MST
Water Depth		Wk Ht Above Floor	4. ft		Job Completed	25 - Sep - 2010 00:03	MST
Perforation Depth (MD)	From		To		Departed Loc	25 - Sep - 2010 02:00	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	Used			.				1594.	1594.		
Surface Open Hole				14.75				.	1594.	.	1564.
Surface Open Hole				14.75				1594.	4210.	1564.	4109.
Surface Casing	Unknown		10.75	9.95	45.5	BTC	J-55	.	4210.	.	4109.

Miscellaneous Materials

Gelling Agt		Conc		Surfactant		Conc		Acid Type		Qty		Conc	%
Treatment Fld		Conc		Inhibitor		Conc		Sand Type		Size		Qty	

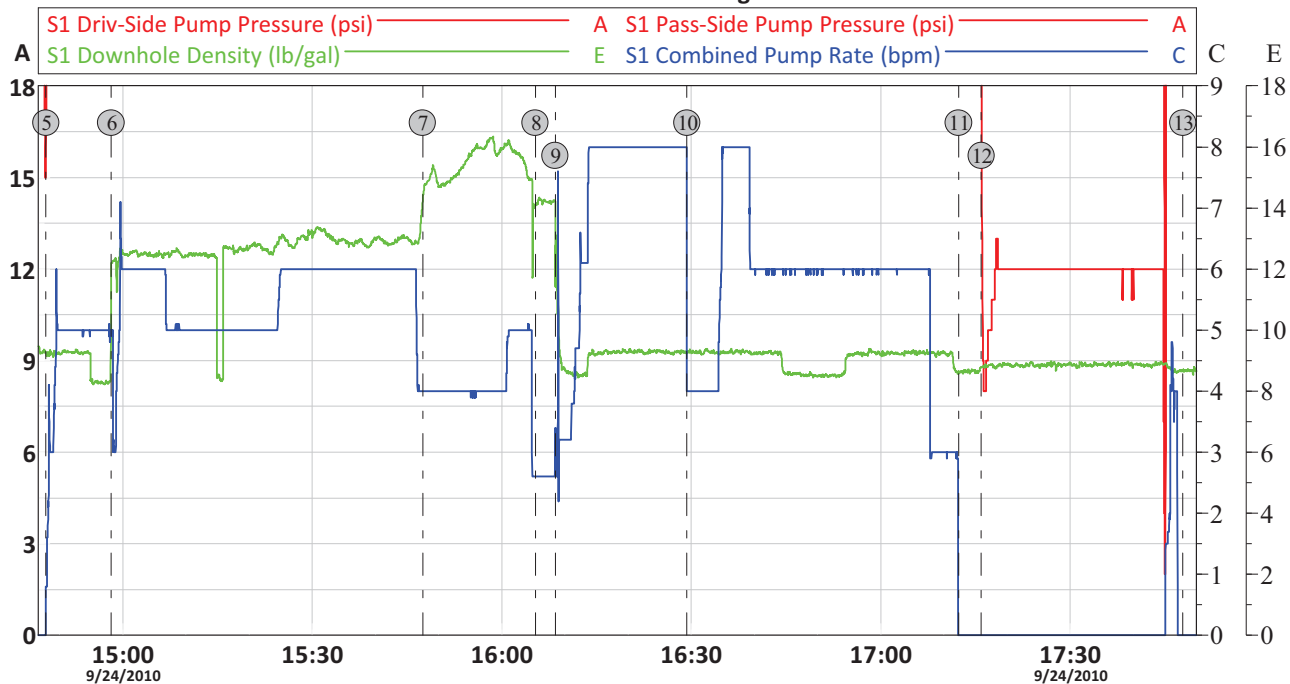
Fluid Data									
Stage/Plug #: 1									
Fluid #	Stage Type	Fluid Name	Qty	Qty uom	Mixing Density lbm/gal	Yield ft ³ /sk	Mix Fluid Gal/sk	Rate bbl/min	Total Mix Fluid Gal/sk
1	FreshWater Ahead		50.00	bbl	8.33	.0	.0	6.0	
2	First Stage Lead Cement	ECONOCEM (TM) SYSTEM (452992)	770.0	sacks	12.7	1.87	9.89	6.0	9.89
0.6 %		HR-7 (100005055)							
0.25 lbm		POLY-E-FLAKE (101216940)							
9.889 Gal		FRESH WATER							
3	First Stage Tail Cement	HALCEM (TM) SYSTEM (452986)	350.0	sacks	15.8	1.15	4.95	6.0	4.95
0.25 %		HR-800, 50 LB SACK (101619742)							
0.25 lbm		POLY-E-FLAKE (101216940)							
4.948 Gal		FRESH WATER							
4	Drilling Fluid / Mud		394.00	bbl	8.9	.0	.0	6.0	
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	Freshwater Ahead		50.00	bbl	8.33	.0	.0	6.0	
2	Second Stage Lead Cement	ECONOCEM (TM) SYSTEM (452992)	800.0	sacks	12.7	1.87	9.92	6.0	9.92
0.25 lbm		POLY-E-FLAKE (101216940)							
9.915 Gal		FRESH WATER							
3	Drilling Fluid / Mud		155.00	bbl	8.9	.0	.0	6.0	
4	Top Out	CMT - PREMIUM - CLASS G, 94 LB SK (100003685)	400.0	sacks	15.8	1.16	5.01	2.0	5.01
94 lbm		CMT - PREMIUM - CLASS G REG OR TYPE V, BULK (100003685)							
2 %		CALCIUM CHLORIDE - HI TEST PELLET (100005053)							
5.019 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	80 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

Data Acquisition

Exxon Mobil

PCU 197-36A1 Surface Stage 1



5 Water Spacer	14:47:52	6 770 sks Lead Cement	14:58:13	7 350 sks Tail Cement	15:47:30
8 Drop Bottom Plug	16:05:21	9 Pump Displacement	16:08:29	10 Slowed Rate For DV Tool	16:29:19
11 Bump Plug	17:12:20	12 Check Floats	17:15:55	13 End Job	17:47:50

Customer: ExxonMobil

Job Date: 24-Sep-2010

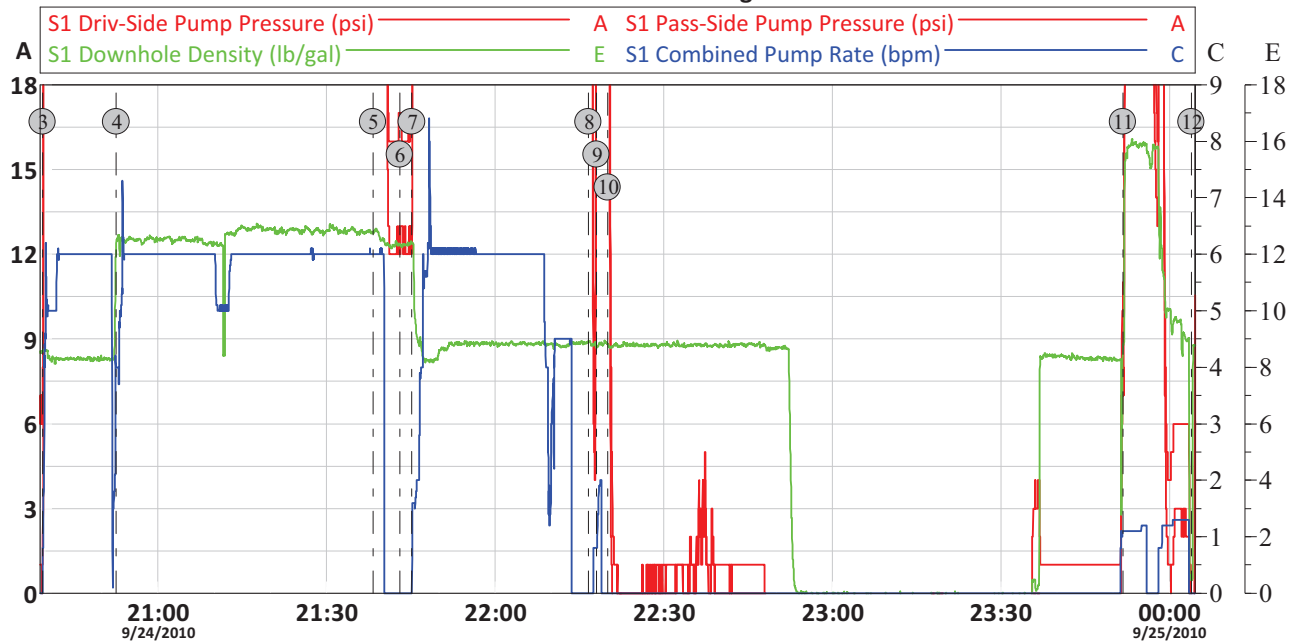
Sales Order #: 7651461

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Exxon Mobil

PCU 197-36A1 Surface Stage 2



③ 70 bbls Water	9/24/2010 20:39:29	④ 800 sks Cement	9/24/2010 20:52:34	⑤ Drop Closing Plug	9/24/2010 21:38:15
⑥ Drop Top Plug	9/24/2010 21:43:01	⑦ Pump Displacement	9/24/2010 21:45:09	⑧ Check Stage Tool	9/24/2010 22:16:35
⑨ Pressure Up	9/24/2010 22:18:02	⑩ Check Stage Tool	9/24/2010 22:20:02	⑪ 25 sks Topout	9/24/2010 23:51:42
⑫ End Job	9/25/2010 00:03:55				

Customer: Exxon Mobil

Job Date: 24-Sep-2010

Sales Order #: 7651461

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