

INVOICE

HALLIBURTON

Halliburton Energy Services, Inc.

Remit To: P.O. Box 301341, Dallas, TX 75303-1341

Wire Transfer Information

Account Number: Account 00032969

ABA Routing Number: 021000089

Invoice Date: January 05, 2015

Invoice Number: 9501268980

DIRECT CORRESPONDENCE TO:
13100 WELD COUNTY RD 8
FORT LUPTON, CO 80621
US
Tel: (303) 825 4346
Fax: (303) 857 9408

Rig Name: H & P 322
Well Name: MAHALO STATE AA09-78 HNC, WELD
Ship to: GILL, CO 80624
WELD

Job Date: January 01, 2015
Cust. PO No.: 200288.DRL
Payment Terms: Net 30 days from Invoice date
Quote No.:

Sales Order No.: 901982727

Manual Ticket No.:
Shipping Point: FORT LUPTON Shipping Point
Ultimate Destination Country: US
Customer Account No.: 345242

TO:

NOBLE ENERGY INC - EBUS
DONOTMAIL-1001 NOBLE ENERGY WAY
HOUSTON TX 77070

Contract No.:
Contract from:
Contract to:

Material	Description	QTY	UOM	Base Amount	Unit Amount	Gross Amount	Discount	Net Amount
7525	CMT PRODUCTION LINER BOM JP055	1.00	JOB					
16100	CMTG LINER/SHORT CSG STRING 009-407 / CMTG LINER/SHORT CSG STRING,0-4HRS,ZI DEPTH	1.000 11736	EA FT					
16092	ADDITIONAL HOURS (PUMPING EQUI / / / 001-018 / CSG PUMPING,ADD HR,ZI HOURS	1.000 7	EA H					
2	MILEAGE FOR CEMENTING CREW 000-119 Number of Units	140.000 1	MI					
1	ZI-MILEAGE FROM NEAREST HES BA 000-117 Number of Units	140.000 1	MI					
114	R/A DENSOMETER W/CHART RECORDE 019-500 NUMBER OF UNITS	1.000 1	JOB					
139	ADC (AUTO DENSITY CTRL) SYS, / 046-050 NUMBER OF JOBS NUMBER OF UNITS	1.000 1 1	JOB JOB					
130104	PORT. DATA ACQUIS. W/OPTICEM R PORT. DATA ACQUIS. W/OPTICEM RT W/HES DAYS OR PARTIAL DAY(WHOLE NO.)	1.000 1	EA					

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Continuation

Invoice Date: January 05, 2015

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Material	Description	QTY	UOM	Base Amount	Unit Amount	Gross Amount	Discount	Net Amount
7	ENVIRONMENTAL CHARGE,/JOB,ZI 000-150	1.000	JOB					
8	IRON SAFETY INSPECTION SURCHAR 000-151	1.000	JOB					
86954	ZI FUEL SURCHG-CARS/PICKUPS< 1 FUEL SURCHG-CARS/PICKUPS< 1 1/2TON/PER/MI Number of Units	140.000 1	MI					
86955	ZI FUEL SURCHG-HEAVY TRKS > 1 1 FUEL SURCHG-HEAVY TRKS > 1 1/2 TON/PER MI Number of Units	140.000 1	MI					
*87605	FUEL SURCHG-CMT & CMT ADDITIVE FUEL SURCHG-CMT & CMT ADDITIVES/PER TNM NUMBER OF TONS	70.000 25.545	MI					
372867	Cmt PSL - DOT Vehicle Charge, Cmt PSL - DOT Vehicle Charge, CMT	3.000	EA					
*76400	MILEAGE,CMT MTLs DEL/RET MIN 500-306 / MILEAGE,CMTG MTLs DEL/RET PER/TON MI.MIN NUMBER OF TONS	70.000 25.545	MI					
*3965	HANDLE&DUMP SVC CHRg, CMT&ADDI 500-207 NUMBER OF EACH	638.000 1	CF EA					
*452979	CMT, ExpandaCem (TM) system	100.00	SK					3
*483826	SBM, CMT, Tuned Spacer III SBM, CMT, Tuned Spacer III	60.000	BBL					
*100003681	CHEM, BARITE, BULK Barite	90.000	SK					
*452979	CMT, ExpandaCem (TM) system	277.00	SK					5
*100003781	CHEM, MICRO MATRIX RETARDER, 100003781	10.000	GAL					
*100008028	CHEM, SUGAR,GRANULATED, 50LB B	100.000	LB					

1.2 Cementing Job Summary**HALLIBURTON**

The Road to Excellence Starts with Safety					
Sold To #: 345242		Ship To #: 3367381		Primary Sales Order #: 0901982727	
Customer: NOBLE ENERGY INC E-BUSINESS			Job Purpose: 7525 CMT PRODUCTION LINER BOM		
Well Name: MAHALO STATE			Well #: AA09-78 HNC		API/UWI #: 05-123-39099-00
Field: WATTENBERG		City: GILL		Country/Parish: WELD State/Prov: COLORADO	
Legal Description:					
Rig Name & Number / Phone Number: H & P 322 / 970-373-1274					Location: LAND
myCem id# :		Job Criticality Status: RED		iFacts Request id #:	
Contacts					
Type	Name	Email	Phone		
COMPANY ENGINEER	Kelli	khale@nobleenergyinc.com	303-228-4172		
Account Rep	Nicholas	Nicholas.Wilson@halliburton.com	+13037203334		
COMPANY ENGINEER	Aaron	aduncan@nobleenergyinc.com	303-228-4372		
Company Man 1					
Service Coordinator	Nicholas	Nicholas.Wilson@halliburton.com	+13037203334		
PPE, Safety Huddles, JSA's, HOC & Near Miss Reporting, BBP Observations					
Distance/Mileage(1 way)		60 mile	Distance/Mileage(1 way) Mtls:		60 mile
Srvcs:			Rqstd Job Start Date/Time:		12/31/2014
HSE Information					
H2S Present:		Unknown	CO2 Present:		Unknown
Drive Safely. Lights On for Safety. Wear Seat Belts. Observe all HES / Customer Safety Policies.					
Directions: CR 74 & CR 65, E .8 MILES, S 1.25 MILES, E 1 MILES, SOUTH INTO LOCATION (MOST WESTERN PAD)					
Instruction					
Bring 100# of Sugar, 10 Gal MMCR and the 45.1lbs of SCR 742 to mix on the Fly to the First 100 sks					
General Equipment					
3rd Party / Inventory Items					
SAP Number	Description	Quantity	UoM	Pricing Enabled	
100003780	CHEM, MICRO MATRIX RETARDER, 1 GAL	10	GAL	Yes	
100008028	CHEM, SUGAR, GRANULATED, 50LB BAG	100	LB	Yes	
Job Info / Well Data					
Job Depth (MD) ft	Job Depth (TVD) ft	Well Fluid Type	Well Fluid Weight lbm/gal	Displacement Fluid	Displ Fluid Weight lbm/gal
12000	6500	Water Based Mud	10.5	Water	8.33
BHST degF	BHCT degF	Log Temp degF		Time Since Circ Stopped HH:MM:SS	

240		160									
Job Tubulars/Tools											
Description	Size in	Weight lbm/ft	ID in	Thread	Grade	Top MD ft	Btm MD ft	Top TVD ft	Btm TVD ft	Shoe Jnt ft	% Excess
7" Intermediate Casing	7	26	6.276	BTC	P-110	0	7035	0	6465	42	
4.5" Production Liner	4.5	11.6	4	BTC	P-110	6535	12000	6465	6500	42	
4.0" Drill Pipe	4	14	3.34	BTC	P-110	0	6535	0	6465		
6.125" Open Hole			6.125	BTC		7035	12000	6621	6500		
Mud conditioning plan											
The condition of the drilling fluid is one of the most important variables in achieving a cement barrier. Prior to cementing, circulate the mud at the planned highest displacement rate for the cement job for at least 2 bottoms-up until the well is clean, mud is free of gas and pump pressures have stabilized.											
Materials											
Stage/Plug #: 1											
Fluid #	Fluid Name	Package/SBM/Material Name	Rqstd Del Qty	UOM	Density lbm/gal	Yield ft ³ /sack	Water Req Gal/sack	Rate bbl/min	Total Mix Fluid Gal/sack	Surface Batch Mixing Time	
1	Water Based Mud-10 #/gal		43.1	bbl	10			6			
Fluid Loss											
iFacts Test id #											
Fluid #	Fluid Name	Package/SBM/Material Name	Rqstd Del Qty	UOM	Density lbm/gal	Yield ft ³ /sack	Water Req Gal/sack	Rate bbl/min	Total Mix Fluid Gal/sack	Surface Batch Mixing Time	
2	11.5 lb/gal Tuned Spacer III		60	bbl	11.5	3.76	24.2	6			
149.34 lbm/bbl		Barite									
Fluid Loss											
iFacts Test id #											
Fluid #	Fluid Name	Package/SBM/Material Name	Rqstd Del Qty	UOM	Density lbm/gal	Yield ft ³ /sack	Water Req Gal/sack	Rate bbl/min	Total Mix Fluid Gal/sack	Surface Batch Mixing Time hr	
3	Lead Cement W/	EXPANDACEM (TM) SYSTEM	100	sack	13.8	1.65	7.57	6	7.57		

Out CBL	
7.57 Gal	FRESH WATER Mix-On-Fly to Slurry
Sample Type	PILOT
Rheology	PV(cp),YP(lbf/100_ft2) @80degF: 143.53,23.68; @180degF: 94.3,24.37
Thickening Time	@230degF: 70Bc@06:50:00; 50Bc@06:39:00; 100Bc@07:04:00; 0Bc@initial
Fluid Loss	@30min 70cc
Compressive Strength	199degF: 50psi @04:49:00, 500psi @06:31:00, 1361psi @08:00:00
Free Water	0 %
iFacts Test id #	2204717

Fluid #	Fluid Name	Package/SBM/Material Name	Rqstd Del Qty	UOM	Density lbm/gal	Yield ft3/sack	Water Req Gal/sack	Rate bbl/min	Total Mix Fluid Gal/sack	Surface Batch Mixing Time hr
4	Tail with Super CBL	EXPANDACEM (TM) SYSTEM	277	sack	13.8	1.65	7.57	6	7.57	

7.57 Gal	FRESH WATER Mix-On-Fly to Slurry
Sample Type	PILOT
Rheology	PV(cp),YP(lbf/100_ft2) @80degF: 143.53,23.68; @180degF: 94.3,24.37
Thickening Time	@230degF: 70Bc@06:50:00; 50Bc@06:39:00; 100Bc@07:04:00; 0Bc@initial
Fluid Loss	@30min 70cc
Compressive Strength	199degF: 50psi @04:49:00, 500psi @06:31:00, 1361psi @08:00:00
Free Water	0 %
iFacts Test id #	2204718

Fluid #	Fluid Name	Package/SBM/Material Name	Rqstd Del Qty	UOM	Density lbm/gal	Yield ft3/sack	Water Req Gal/sack	Rate bbl/min	Total Mix Fluid Gal/sack	Surface Batch Mixing Time
5	Water		139	bbl	8.33			6		

Fluid Loss	
iFacts Test id #	

Caution: Displacement quantities and densities are estimates ONLY! Do not use them for the actual job.

Packaged Materials

SAP #	Material	Qty	UOM	Comments
100003681	Barite	8960.4	lbm	
	FRESH WATER	5025.9	Gal	
102027729	SCR-742 Retarder - 50 lb. bag	45.1	lbm	

Casing Equipment

1.4 Job Overview

		Units	Description
1	Surface temperature at time of job	°F	-4
2	Mud type (OBM, WBM, SBM, Water, Brine)	-	WBM
3	Actual mud density	lb/gal	10.5
4	Time circulated before job	HH:MM	2:30
5	Mud volume circulated	Bbls	750
6	Rate at which well was circulated	Bpm	5
7	Pipe movement during hole circulation	Y/N	None
8	Rig pressure while circulating	Psi	780
9	Time from end mud circulation to start of job	HH:MM	00:30
10	Pipe movement during cementing	Y/N	None
11	Calculated displacement	Bbls	140.9
12	Job displaced by	Rig/HES	HES
13	Annular before job)?	Y/N	No
14	Annular flow after job	Y/N	No
15	Length of rat hole	Ft	3
16	Units of gas detected while circulating	Units	
17	Was lost circulation experienced at any time ?	Y/N	no

1.5 Water Field Test

Item	Recorded Test Value	Units	Max. Acceptable Limit	Potential Problems in Exceeding Limit
pH	7	----	6.0 - 8.0	Chemicals in the water can cause severe retardation
Chlorides	500	ppm	3000 ppm	Can shorten thickening time of cement
Sulfates	200	ppm	1500 ppm	Will greatly decrease the strength of cement
Iron	Pass	ppm	300 ppm	High concentrations will accelerate the set of the cement
Temperature	68	°F	50-80 °F	High temps will accelerate; Low temps may risk freezing in cold weather

Submitted Respectfully by: Nathan McBride

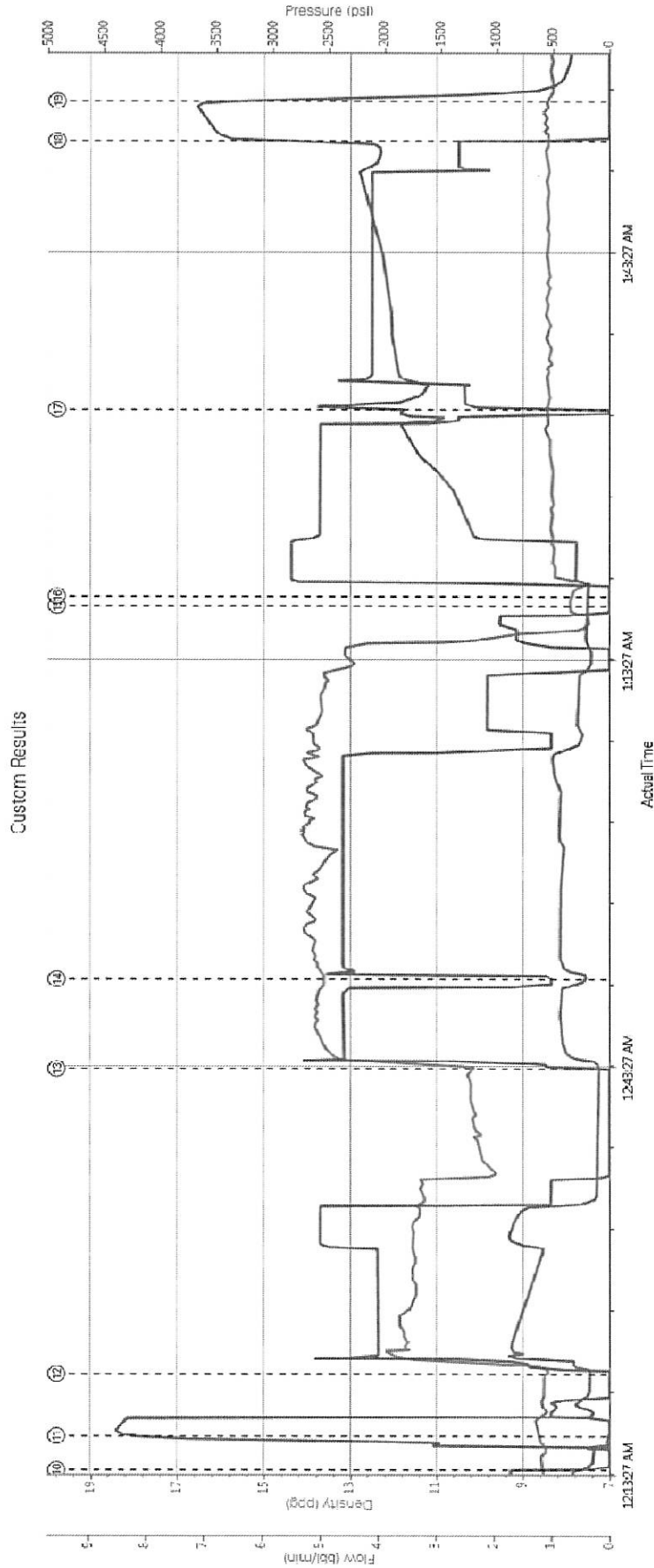
1.6 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	Comb Pump Rate (bbl/min)	DH Density (ppg)	PS Pump Press (psi)	Comment
Event	1	Arrive at Location from Service Center	Arrive at Location from Service Center	12/31/2014	12:00:00	USER				All equipment and personell on location Requested on location 0830. Rig starting to run drill pipe
Event	2	Assessment Of Location Safety Meeting	Assessment Of Location Safety Meeting	12/31/2014	12:05:00	USER				Discuss hazard hunt and rig layout
Event	3	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	12/31/2014	12:10:00	USER				Discuss fluid sources and rig up layout/ fluid sources
Event	4	Rig-Up Equipment	Rig-Up Equipment	12/31/2014	12:30:00	USER				
Event	5	Rig-Up Completed	Rig-Up Completed	12/31/2014	13:30:00	USER				
Event	6	Casing on Bottom	Casing on Bottom	12/31/2014	19:00:00	USER				
Event	7	Circulate Well	Circulate Well	12/31/2014	19:30:00	USER				Pump Sweep then balls
Event	8	Comment	Comment	12/31/2014	21:21:48	USER	0.00	1.22	105.00	Rig setting liner hanger and circulating prior to HES pumping
Event	9	Pre-Job Safety Meeting	Pre-Job Safety Meeting	12/31/2014	21:22:00	USER	0.00	1.21	105.00	With Customer and Rig Crew
Event	10	Start Job	Start Job	1/1/2015	00:13:58	COM7	0.00	8.52	212.00	
Event	11	Test Lines	Test Lines	1/1/2015	00:16:27	USER	0.00	8.59	4362.00	4526
Event	12	Pump Spacer 1	Tuned Spacer	1/1/2015	00:21:01	COM7	0.00	8.47	169.00	60bbis @ 11.5ppg
Event	13	Pump Lead Cement	Pump Lead Cement	1/1/2015	00:43:27	COM7	1.10	10.72	100.00	29.4bbis @ 13.8ppg
Event	14	Pump Tail Cement	Pump Tail Cement	1/1/2015	00:50:04	COM7	1.00	13.62	198.00	81.4bbis @ 13.8ppg
Event	15	Drop Top Plug	Drop Top Plug	1/1/2015	01:17:37	COM7	0.00	7.91	193.00	
Event	16	Pump Displacement	Pump Displacement	1/1/2015	01:18:20	COM7	0.00	7.84	188.00	10bbis FW w/MMCR 46 bbis FW 10bbis Fresh w/MMCR 75 Fresh
Event	17	Other	Pick Up Wiper Plug	1/1/2015	01:32:05	USER	2.30	8.46	2534.00	2605psi

Event	18	Bump Plug	Bump Plug	1/1/2015	01:51:52	USER	0.00	8.44	3405.00	
Event	19	Check Floats	Check Floats	1/1/2015	01:54:49	USER	0.00	8.42	2539.00	Floats Good
Event	20	End Job	End Job	1/1/2015	02:22:28	COM7	0.00	8.45	219.00	Thanks McBride and Crew

2.0 Custom Graphs

2.1 Custom Graph



DH Density (ppg) PS Pump Press (psi) Comb Pump Rate (bbl/min)

- ① Arrive at Location From Service Center (bbl/min)
- ② Rig-Up Equipment (bbl/min)
- ③ Assessment Of Location Safety Meeting (bbl/min)
- ④ Pre-Rig Up Safety Meeting (bbl/min)
- ⑤ Rig-Up Completed (bbl/min)
- ⑥ Casing on Bottom (bbl/min)
- ⑦ Circulate Well (bbl/min)
- ⑧ Comment 1.22:105.0
- ⑨ Start Job E 52.212.0
- ⑩ Test Line 3.52:436.0
- ⑪ Tuneac Speed 8.47:160.0
- ⑫ Pump Lead Cement 10.72:100.11
- ⑬ Pump Tail Cement 3.62:198.1
- ⑭ Drop Top Plug 7.31:192.0
- ⑮ Pump Disp cement 284.138.0
- ⑯ Pick Up Wiper Plug 8.46:2534.2.3
- ⑰ Bump Plug 8.45:3408.0
- ⑱ Check Floas 8.42:2538.0
- ⑲ Enc Job 8.42:19.0

Custom Results



CH Density (ppg) PS Pump Press (ps) Comb Pump Rate (cyl/min)