



Bison Oil Well Cementing  
1547 Gaylord Street  
Denver, CO 80206

FIELD INVOICE #

25009

FIELD INVOICE

WELL NO. AND FARM		COUNTY	STATE	DATE	Contractor							
Mumby State 4G-36H-P266		Weld	Colorado	6/12/2014	H&P 522							
CHARGE TO		WELL LOCATION										
EnCana Oil & Gas (USA) Inc.		Section	TWP	RANGE								
		36	2N	66W								
EnCana Oil & Gas (USA) Inc.		DELIVERED TO		LOCATION 1	CODE							
370 17th Street, Suite 1700		WCR 37+14		Shop								
Denver, CO. 80202		SHIPPED VIA		LOCATION 2	CODE							
		4023-3104/4017-3211		37+14								
		TYPE AND PURPOSE OF JOB		LOCATION 3	CODE							
		SURFACE		Shop								
				WELL TYPE	CODE							
				Oil								
ITEM	DESCRIPTION	UNITS		UNIT PRICE	AMOUNT							
		QTY.	MEAS.									
<b>PUMP CHARGE</b>												
	SURFACE	1	ea	\$ 1,400.00	\$ 1,400.00							
<b>MILLEAGE CHARGE</b>												
	Pickup	60	mile	\$ 1.50	\$ 90.00							
	Truck/Equipment	60	mile	\$ 4.00	\$ 240.00							
	Truck/Equipment	60	mile	\$ 4.00	\$ 240.00							
<b>CEMENT CHARGE:</b>												
	BFN III	447	sk	\$ 23.00	\$ 10,281.00							
<b>ADDITIVES CHARGE:</b>												
	Dye Blue	16	oz	\$ 15.00	\$ 240.00							
	KCL	3	qt	\$ 25.00	\$ 75.00							
	Sugar	100	lb	\$ 2.00	\$ 200.00							
<b>FLOAT EQUIPMENT:</b>												
		<table border="1"><tr><td>Encana Oil &amp; Gas (USA) Inc.</td></tr><tr><td>DJ Basin: 6-12-2014</td></tr><tr><td>Well: Mumby State 4G-36H</td></tr><tr><td>AFE: -14180449</td></tr><tr><td>Major/Minor CC: 8715.618</td></tr><tr><td>Signature: Ryan H</td></tr><tr><td>Approver: PC:KK 13,992.00</td></tr></table>				Encana Oil & Gas (USA) Inc.	DJ Basin: 6-12-2014	Well: Mumby State 4G-36H	AFE: -14180449	Major/Minor CC: 8715.618	Signature: Ryan H	Approver: PC:KK 13,992.00
Encana Oil & Gas (USA) Inc.												
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Major/Minor CC: 8715.618												
Signature: Ryan H												
Approver: PC:KK 13,992.00												
<b>OTHER CHARGES:</b>												
	DATA ACQUISITION FEE	1	ea	\$ 225.00	\$ 225.00							
	Wait Time	0.75	hour	\$ 250.00	\$ 187.50							
	PSI Test	1	ea	\$ 500.00	\$ 500.00							
				<b>SUB TOTAL</b>	\$ 13,678.50							
				<b>TAX 2.90%</b>	\$ 313.08							
				<b>TOTAL</b>	\$ 13,991.58							

If this account is not paid within 30 days of invoice date a FINANCE CHARGE will be made. Computed at a single monthly rate of 1 1/2% which is equal to an ANNUAL PERCENTAGE RATE OF 18%.

Thanks Calvin

Ryan H  
Customer or Agent

Calvin J. O'D.  
Bison Oil Well Cementing, Inc. Representative

Customers hereby acknowledges and specifically agrees to the terms and conditions on this work order, including, without limitation, the provisions on the reverse hereof which include the release and indemnity.



# Bison Oil Well Cementing Single Cement Surface Pipe

Date: 6/12/2014  
Invoice # 25009  
API# 05-123-39218-00  
Foreman: Calvin Reimers

Customer: EnCana Oil & Gas (USA) Inc.  
Well Name: Mumby State 4G-36H-P266

County: Weld  
State: Colorado  
Sec: 36  
Twp: 2N  
Range: 66W  
Consultant: Roy  
Rig Name & Number: H&P 522  
Distance To Location: 22 Miles  
Units On Location: 4023-3104/4017-3211  
Time Requested: 100am  
Time Arrived On Location: 1130pm  
Time Left Location: 5:45am

## WELL DATA

Casing Size OD (in) : 9.625  
Casing Weight (lb) : 40.00  
Casing Depth (ft) : 1,095  
Total Depth (ft) : 1140  
Open Hole Diameter (in.) : 12.25  
Conductor Length (ft) : 82  
Conductor ID : 16  
Shoe Joint Length (ft) : 45  
Landing Joint (ft) : 38

Max Rate: 7  
Max Pressure: 2500

## Cement Data

Cement Name: BFN III  
Cement Density (lb/gal) : 15.2  
Cement Yield (cuft) : 1.27  
Gallons Per Sack: 5.89  
% Excess: 50%  
Displacement Fluid lb/gal: 8.3  
BBL to Pit: 22  
Fluid Ahead (bbls): 30.0  
H2O Wash Up (bbls): 20.0

Spacer Ahead Makeup  
30bbls H2O+KCL+Dye in 2nd 10bbls

Casing ID

8.835

Casing Grade

J-55 only used

## Calculated Results

cuft of Shoe 19.17 cuft  
(Casing ID Squared) X (.005454) X (Shoe Joint ft)  
cuft of Conductor 73.06 cuft  
(Conductor Width Squared) - (Casing Size OD Squared) X (.005454) X (Conductor Length ft)  
cuft of Casing 475.75 cuft  
(Open Hole Squared) - (Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)  
Total Slurry Volume 567.98 cuft  
(cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)  
bbls of Slurry 101.16 bbls  
(Total Slurry Volume) X (.1781)  
Sacks Needed 447 sk  
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)  
Mix Water 62.72 bbls  
(Sacks Needed) X (Gallons Per Sack) ÷ 42

Displacement: 82.44 bbls  
(Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)

## Pressure of cement in annulus

Hydrostatic Pressure: 864.41 PSI

## Pressure of the fluids inside casing

Displacement: 452.62 psi

Shoe Joint: 35.55 psi

Total 488.17 psi

Differential Pressure: 376.24 psi

Collapse PSI: 2570.00 psi

Burst PSI: 3950.00 psi

Total Water Needed: 195.16 bbls

X   
Authorization To Proceed

Customers hereby acknowledges and specifically agrees to the terms and condition on this work order, including, without limitation, the provisions on this work order.





**Bison Oil Well Cementing  
Single Cement Surface Pipe**

Customer  
Well Name

EnCana Oil & Gas (USA) Inc.  
Mumby State 4G-36H-P266

INVOICE #  
LOCATION  
FOREMAN  
Date

25009  
Weld  
Calvin Reimers  
6/12/2014

Treatment Report Page 2

**DESCRIPTION OF JOB EVENTS**

Safety Meeting		Displace 1			Displace 2			Displace 3			Displace 4			Displace 5		
MIRU	334am	BBLS	Time	PSI	BBLS	Time	PSI	BBLS	Time	PSI	BBLS	Time	PSI	BBLS	Time	PSI
CIRCULATE	135am	0	421am	60	0			0			0			0		
Drop Plug	353am	10	424am	230	10			10			10			10		
420am		20	425am	350	20			20			20			20		
		30	427am	350	30			30			30			30		
		40	428am	430	40			40			40			40		
M & P		50	430am	500	50			50			50			50		
Time	Sacks	60	432am	570	60			60			60			60		
401am	447	70	434am	630	70			70			70			70		
417am		80	436am	540	80			80			80			80		
		90	438am	500	90			90			90			90		
		100	Bump	1000	100			100			100			100		
		110			110			110			110			110		
% Excess	50%	120			120			120			120			120		
Mixed bbls	62.72	130			130			130			130			130		
Total Sacks	447	140			140			140			140			140		
bbl Returns	22	150			150			150			150			150		
Water Temp	64.8															

Notes:

The day

1/2 bbl Back on Bleed off

Casing PSI Test 439am 1550psi to 454am 1550psi

X

Work Preformed

X

Title

X

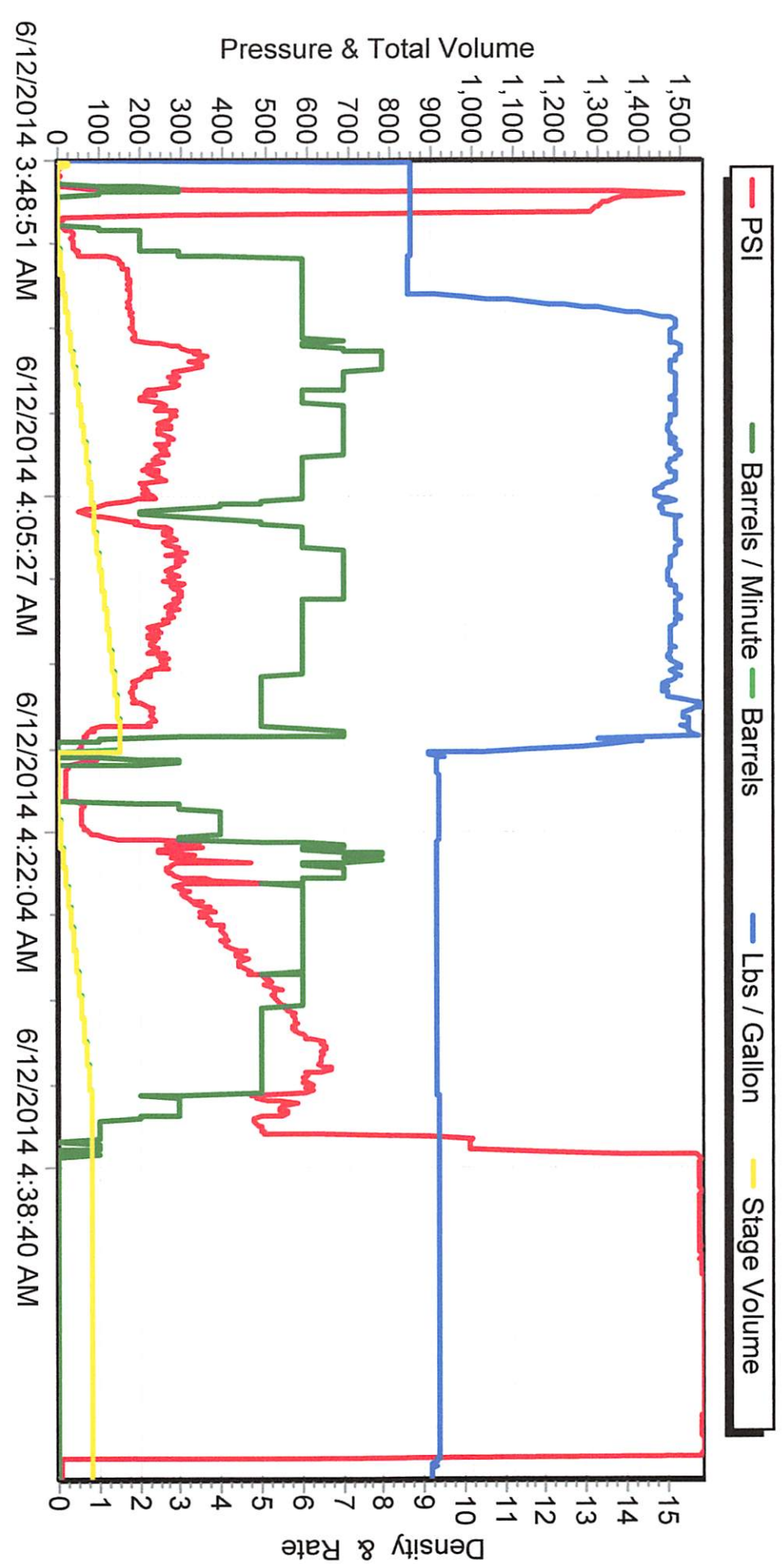
Date





MO212

# M/D TOTCO 2000 SERIES



MO204



# BISON OILWELL CEMENTING JOB SAFETY ANALYSIS WORKSHEET

ASK: SURFACE CASING CEMENTING		CEMENTER/SUPERVISOR: Calvin Reimers		PAGE 1	OF 3
NAME: Mumby State 4G-36H-P266		RIG # H&P 522	LOCATION: WCR 37+14	DATE: 6-11-14	
ATOR: Encana		CONSULTANT: Roy		INVOICE #25009	
EQUIRED: <input checked="" type="checkbox"/> Hard Hat <input checked="" type="checkbox"/> FR Coveralls    ADDITIONAL PPE (based on job specific hazards) <input type="checkbox"/> Goggles <input type="checkbox"/> Air Purifying Respirator <input checked="" type="checkbox"/> Safety Glasses <input type="checkbox"/> Reflective Vest <input type="checkbox"/> Faceshield <input type="checkbox"/> Supplied Air Respirator <input checked="" type="checkbox"/> Steel Toe Boots <input type="checkbox"/> Chemical Resistant Gloves <input type="checkbox"/> Personal H2S Monitor <input checked="" type="checkbox"/> Impact Gloves <input type="checkbox"/> Chemical Resistant Clothing <input type="checkbox"/> Personal Methane Monitor					
JOB STEPS	POTENTIAL HAZARDS	RECOMMENDED ACTION OR PROCEDURE		REVIEWED BY	
iew JSA	Misunderstanding	Clarify job and associated hazards and safety concerns		CR	
iduct pre job safety meeting	Misunderstanding	-Hold safety meeting with all personnel on location, ensure everyone pays attention to ensure they understand their role and responsibility during the job -Review treatment report with consultant and attain signature for authorization to proceed -Identify and address short service employees (SSE) who are on location		CR	
ve trucks in and rig up equipment	Other traffic on location, overhead lines, pinch points, heavy lifting, slips/falls	-Coordinate with well site supervisor for directions on where and when to park the equipment -All Bison crew members walk the location prior to driving in to access specific hazards -Utilize spotters when trucks are in motion -Establish buffer zone around equipment utilizing cones and caution tape -Cementer follows up to ensure connections are secure -Lift with your legs and use teamwork when rigging up -Utilize reflective vests and wands to increase visibility at night -Deploy spill berms and buckets		CR	
e cement head and hoses to rig floor	Overhead work, improper hookup/load not properly secured, poor communication between ground personnel and crane/tugger operator	-Inspect slings, chains and hooks prior to lift -Ensure line of sight with crane/tugger operator is maintained throughout the lift and hand signals are understood -Ensure no personnel are under suspended equipment -Utilize a tag line to control the load		CR	
irect Cement head/swage/pin, chickens and es.	Working in a congested area, pinch points, swinging hammers, slippery rig floor	-Only Bison personnel install the cement head and hoses -Maintain line of sight and communication with crane/tugger operator -Remove non-essential personnel from rig floor, wait until other activity is done -Rig crew does not install chains until head and hoses are installed -Ensure a clear path when swinging a hammer -Ensure all fittings and hoses have proper pressure rating for the job and fall within the parameters of the <i>Bison Oilwell Iron Inspection Program</i>		CR	
ssure test lines	Test to: PSI- 1000 Maximum pressure allowed for job: PSI- 2500	Equipment failing under high pressures	-Ensure rig floor is clear and personnel are away from hoses prior to test -Establish buffer area around high pressure hoses -Lines are checked from a distance and using pressure gauges -Cementer ensures pressure gauges are functioning properly	Pressure relief valve set to: PSI- 2500 Max. pump pressure: PSI- 10,000	CR
np Spacer (dye marker)/Mix and Pump ent	Serious injury from high pressure line failure or catastrophic equipment failure. Casing hydraulicing from hole, causing injury. Burns or skin irritation from splashing cement, uncontrolled spills	-Pressure test prior to job, utilize heavy duty hose hobbles and pressure relief valve -Keep rig floor and buffer area clear while pumping -Utilize proper PPE -Have access to water to rinse affected skin -Deploy spill berms and buckets		CR	



## BISON OILWELL CEMENTING JOB SAFETY ANALYSIS WORKSHEET

p plug		Slips, trips, falls. Miscommunication between pump operator and cementer, pressure against a closed stop	-Utilize 3 points of contact while descending/climbing ladder and stairs -Have visual contact between cementer and pump operator before pump is engaged	CR
placement		Unexpected pressure associated with resuming of pumping, casing hydraulicing from hole, serious injury from high pressure line failure or catastrophic equipment failure.	-Ensure rig floor remains clear and non-essential personnel stay clear from buffer area -Pump operator monitors pump pressure constantly -Utilize proper PPE	CR
pump plug-Test float and release pressure		Pressure jumps before expected (calculated) displacement. Pressure jumps rapidly and higher than expected.	-Pump operator slows rate to 2 BPM when 5 bbls from calculated displacement and down to 1 bpm within 2 bbls of calculated displacement -Pump operator monitors pressure constantly -Pressure relief valve installed on pump	CR
pressure test casing required)	Test to: PSI- 1500  FOR: MIN- 15	Serious injury from high pressure line or catastrophic equipment failure	-Ensure rig floor remains clear and non-essential personnel stay clear from the buffer area	CR
lash up / rig down		Splashing cement slurry, heavy lifting, pinch points, unsecured hoses	-Utilize stakes or portable tank manifold to secure hoses -Use proper lifting technique (2 man lift, lift with legs, plan your route)	CR
part location		Other traffic and personnel and location, overhead lines	-All Bison crew member walk the planned exit route to access possible obstacles and hazards -Utilize spotters while backing	CR
General Precautions/Stop Work - If you see a leaking connection, notify the cementer. Do not attempt to hammer up a leaking connection as there may be pressure on the lines. -Any person on location, regardless of their position or experience level has the authority and responsibility to stop the job if they witness an unsafe act or condition.				CR
OTHER HAZARDS SPECIFIC TO LOCATION OR COMMENT NOT ADDRESSED ABOVE:				
NATED EMERGENCY MUSTER AREA: Lease Road to Rig  COUNT-- 12			NEAREST EMERGENCY MEDICAL FACILITY (OTHER THAN 911): Greeley	



Signature and Company	
Calc. J. D.	Bison
Joe Sharp	"
Jeff Kell	Bison
Wayne King	Bison
Eric D. Lewis	Bison
D. Call	Bison
Stacy D. Smith	Bison
Jeff Kell	H&P
Wayne King	H&P
Eric D. Lewis	H&P
Stacy D. Smith	H&P
Jeff Kell	H&P
Wayne King	Encana