



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
	WCR 37+14		Shop	
370 17th Street, Suite 1700	SHIPPED VIA		LOCATION 2	CODE
	4023-3104/4017-3211		37+14	
Denver, CO. 80202	TYPE AND PURPOSE OF JOB		LOCATION 3	CODE
	SURFACE		Shop	
WELL TYPE			CODE	
Oil				

ITEM	DESCRIPTION	UNITS		UNIT PRICE	AMOUNT																																										
		QTY.	MEAS.																																												
PUMP CHARGE																																															
SURFACE		1	ea	\$ 1,400.00	\$ 1,400.00																																										
MILLEAGE CHARGE																																															
Pickup	\$1.50 per Mile	60	mile	\$ 1.50	\$ 90.00																																										
Truck/Equipment	\$4.00 per Mile	60	mile	\$ 4.00	\$ 240.00																																										
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CEMENT CHARGE:																																															
BFN III	3% BCCA-1 .25lb/sk BFLA-1	447	sk	\$ 23.00	\$ 10,281.00																																										
ADDITIVES CHARGE:																																															
Dye Blue		16	oz	\$ 15.00	\$ 240.00																																										
KCL		3	qt	\$ 25.00	\$ 75.00																																										
Sugar		100	lb	\$ 2.00	\$ 200.00																																										
FLOAT EQUIPMENT:																																															
<table border="1"> <tr> <td colspan="6">Encana Oil & Gas (USA) Inc.</td> </tr> <tr> <td>DJ Basin</td> <td colspan="5">6-12-2014</td> </tr> <tr> <td>Well:</td> <td colspan="5">Mumby State 4G-36H</td> </tr> <tr> <td>AFE:</td> <td colspan="5">-14180449</td> </tr> <tr> <td>Major/Minor CC:</td> <td colspan="5">8715.618</td> </tr> <tr> <td>Signature:</td> <td colspan="5">Ray H</td> </tr> <tr> <td>Approver:</td> <td colspan="5">RC: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:	Ray H					Approver:	RC:KK 13,992.00				
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OTHER CHARGES:																																															
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																																										

Thanks Calvin

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%.

SUB TOTAL	\$ 13,678.50
TAX 2.90%	\$ 313.08
TOTAL	\$ 13,991.58

SUBJECT TO CORRECTION

Ray H
 Customer or Agent

Calvin J. O.
 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: 5:45 am

WELL DATA		Cement Data	
Casing Size OD (in) :	9.625	Cement Name:	BFN III
Casing Weight (lb) :	40.00	Cement Density (lb/gal) :	15.2
Casing Depth (ft) :	1,095	Cement Yield (cuft) :	1.27
Total Depth (ft) :	1140	Gallons Per Sack:	5.89
Open Hole Diameter (in.) :	12.25	% Excess:	50%
Conductor Length (ft) :	82	Displacement Fluid lb/gal:	8.3
Conductor ID :	16	BBL to Pit:	22
Shoe Joint Length (ft) :	45	Fluid Ahead (bbls):	30.0
Landing Joint (ft) :	38	H2O Wash Up (bbls):	20.0
Max Rate:	7	Spacer Ahead Makeup	
Max Pressure:	2500	30bbls H2O+KCL+Dye in 2nd 10bbls	

Calculated Results		Pressure of cement in annulus	
cuft of Shoe	19.17 cuft	Displacement:	82.44 bbls
(Casing ID Squared) X (.005454) X (Shoe Joint ft)		(Casing ID Squared) X (.0009714) X (Casing Depth + Landing Joint - Shoe Joint)	
cuft of Conductor	73.06 cuft	Hydrostatic Pressure:	864.41 PSI
(Conductor Width Squared) - (Casing Size OD Squared) X (.005454) X (Conductor Length ft)		Pressure of the fluids inside casing	
cuft of Casing	475.75 cuft	Displacement:	452.62 psi
(Open Hole Squared) - (Casing Size Squared) X (.005454) X (Casing Depth - Conductor Length)		Shoe Joint:	35.55 psi
Total Slurry Volume	567.98 cuft	Total	488.17 psi
(cuft of Shoe) + (cuft of Conductor) + (cuft of Casing)		Differential Pressure:	376.24 psi
bbls of Slurry	101.16 bbls	Collapse PSI:	2570.00 psi
(Total Slurry Volume) X (.1781)		Burst PSI:	3950.00 psi
Sacks Needed	447 sk	Total Water Needed:	195.16 bbls
(Total Slurry Volume) ÷ (Cement Yield) X (% Excess Cement)			
Mix Water	62.72 bbls		
(Sacks Needed) X (Gallons Per Sack) ÷ 42			

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

		Displace 1			Displace 2			Displace 3			Displace 4			Displace 5		
		BBLS	Time	PSI	BBLS	Time	PSI	BBLS	Time	PSI	BBLS	Time	PSI	BBLS	Time	PSI
Safety Meeting	334am															
MIRU	135am															
CIRCULATE	353am	0	421am	60	0			0			0			0		
Drop Plug		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

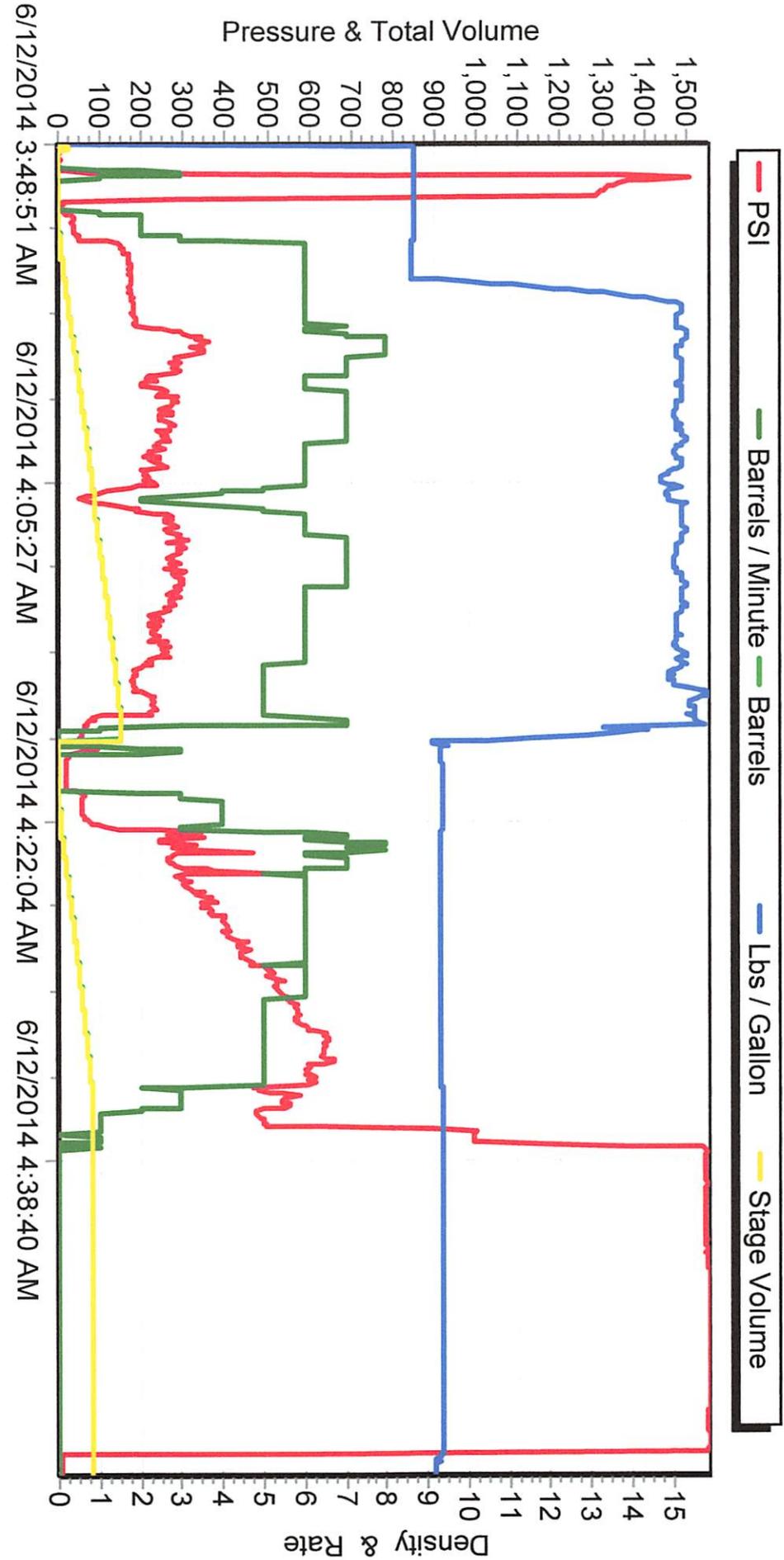
Casing PSI Test 439am 1550psi to 454am 1550psi

X Ray
Work Performed

X WSL
Title

X 6-12-2014
Date

M/D TOTCO 2000 SERIES





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"/> Safety Glasses <input checked="" type="checkbox"/> Steel Toe Boots <input checked="" type="checkbox"/> Impact Gloves	<input checked="" type="checkbox"/> FR Coveralls <input type="checkbox"/> Reflective Vest	ADDITIONAL PPE (based on job specific hazards)	<input type="checkbox"/> Goggles <input type="checkbox"/> Faceshield <input type="checkbox"/> Chemical Resistant Gloves <input type="checkbox"/> Chemical Resistant Clothing	<input type="checkbox"/> Air Purifying Respirator <input type="checkbox"/> Supplied Air Respirator <input type="checkbox"/> Personal H2S Monitor <input type="checkbox"/> Personal Methane Monitor
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JOB STEPS	POTENTIAL HAZARDS	RECOMMENDED ACTION OR PROCEDURE	REVIEWED BY										
Review JSA	Misunderstanding	Clarify job and associated hazards and safety concerns	CR										
Induct pre job safety meeting	Misunderstanding	<ul style="list-style-type: none"> -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										
Drive trucks in and rig up equipment	Other traffic on location, overhead lines, pinch points, heavy lifting, slips/falls	<ul style="list-style-type: none"> -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										
Move cement head and hoses to rig floor	Overhead work, improper hookup/load not properly secured, poor communication between ground personnel and crane/tugger operator	<ul style="list-style-type: none"> -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										
Inspect Cement head/swage/pin, chickens and es.	Working in a congested area, pinch points, swinging hammers, slippery rig floor	<ul style="list-style-type: none"> -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										
Pressure test lines	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:10%;">Test to:</td> <td style="width:10%;">PSI- 1000</td> <td rowspan="2" style="width:70%;">Equipment failing under high pressures</td> </tr> <tr> <td>Maximum pressure allowed for job:</td> <td>PSI- 2500</td> </tr> </table>	Test to:	PSI- 1000	Equipment failing under high pressures	Maximum pressure allowed for job:	PSI- 2500	<ul style="list-style-type: none"> -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 	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:10%;">Pressure relief valve set to:</td> <td style="width:10%;">PSI- 2500</td> <td rowspan="2" style="width:80%;">CR</td> </tr> <tr> <td>Max. pump pressure:</td> <td>PSI- 10,000</td> </tr> </table>	Pressure relief valve set to:	PSI- 2500	CR	Max. pump pressure:	PSI- 10,000
Test to:	PSI- 1000	Equipment failing under high pressures											
Maximum pressure allowed for job:	PSI- 2500												
Pressure relief valve set to:	PSI- 2500	CR											
Max. pump pressure:	PSI- 10,000												
Run Spacer (dye marker)/Mix and Pump cement	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	<ul style="list-style-type: none"> -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 EQUIPMENT NOT ADDRESSED ABOVE:				
NEAREST EMERGENCY MUSTER AREA: Lease Road to Rig COUNT-- 12			NEAREST EMERGENCY MEDICAL FACILITY (OTHER THAN 911): Greeley	

