

State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

David Martin
Cabinet Secretary-Designate

Brett F. Woods, Ph.D.
Deputy Cabinet Secretary

Jami Bailey, Division Director
Oil Conservation Division



New Mexico Oil Conservation Division approval and conditions listed below are made in accordance with OCD Rule 19.15.7.11 and are in addition to the actions approved by BLM on the following 3160-3 APD form.

Operator Signature Date: 2/11/14

Well information;

Operator ENCANA, Well Name and Number Lybrook I 10-2308 03H

API# 30-045-25512, Section 10, Township 23 NS, Range 8 E/W

Conditions of Approval:

(See the below checked and handwritten conditions)

☒ Notify Aztec OCD 24hrs prior to casing & cement.

☒ Hold C-104 for directional survey & "As Drilled" Plat

☒ Hold C-104 for NSL, NSP, DHC

- ☐ Spacing rule violation. Operator must follow up with change of status notification on other well to be shut in or abandoned
- ☐ Regarding the use of a pit, closed loop system or below grade tank, the operator must comply with the following as applicable:
 - A pit requires a complete C-144 be submitted and approved prior to the construction or use of the pit, pursuant to 19.15.17.8.A
 - A closed loop system requires notification prior to use, pursuant to 19.15.17.9.A
 - A below grade tank requires a registration be filed prior to the construction or use of the below grade tank, pursuant to 19.15.17.8.C
- ☐ Once the well is spud, to prevent ground water contamination through whole or partial conduits from the surface, the operator shall drill without interruption through the fresh water zone or zones and shall immediately set in cement the water protection string
- ☒ Oil base muds are not to be used until fresh water zones are cased and cemented providing isolation from the oil or diesel. This includes synthetic oils. Oil based mud, drilling fluids and solids must be contained in a steel closed loop system.

Charles Horn
NMOCD Approved by Signature

6-11-2014
Date

CONFIDENTIAL **RECEIVED**
FEB 13 2014

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

Farmington Field Office
Bureau of Land Management

FORM APPROVED
OMB No. 1004-0137
Expires July 31, 2010

Field Case Serial No.
NMNM 118132-8 NMNM 76842

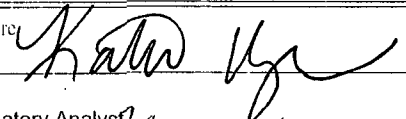
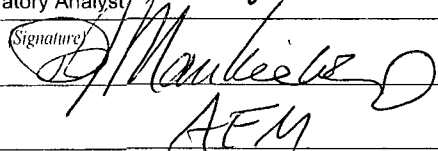
APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of work: ☒ DRILL ☐ REENTER		7. If Unit or CA Agreement, Name and No. PENDING
1b. Type of Well: ☐ Oil Well ☒ Gas Well ☐ Other ☒ Single Zone ☐ Multiple Zone		8. Lease Name and Well No. Lybrook I10-2308 03H
2. Name of Operator Encana Oil & Gas (USA) Inc.		9. API Well No. 30-045-35513
3a. Address 370 17th Street, Suite 1700 Denver, CO 80202	3b. Phone No. (include area code) 720-876-3533	10. Field and Pool, or Exploratory Basin Mancos Gas
4. Location of Well (Report location clearly and in accordance with any State requirements.)* At surface 2438' FSL and 480' FEL Section 10, T23N, R8W At proposed prod. zone 2260' FNL and 330' FEL Section 14, T23N, R8W		11. Sec., T, R, M. or Blk. and Survey or Area Section 10, T23N, R8W NMPM
14. Distance in miles and direction from nearest town or post office* +/- 43.3 miles southwest of the intersection of US Hwy 550 & US Hwy 64 in Bloomfield, NM		12. County or Parish San Juan
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) BHL is 330' from east lease line		13. State NM
16. No. of acres in lease NMNM 118132 - 2,320 ac. NMNM 76842 - 2,560 ac.		17. Spacing Unit dedicated to this well 640.0 acres - S/2 Section 11, T23N, R8W & N/2 Section 14, T23N, R8W
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. Lybrook I10-2308 02H is +/- 30' North of SHL		20. BLM/BIA Bond No. on file COB-000235
19. Proposed Depth 5,323' TVD/12,290' MD		21. Elevations (Show whether DF, KDB, RT, GL, etc.) 6,933' GL, 6,949' KB
22. Approximate date work will start* 11/19/2014		23. Estimated duration 25 days

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, must be attached to this form:

1. Well plat certified by a registered surveyor.
2. A Drilling Plan.
3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office).
4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
5. Operator certification
6. Such other site specific information and/or plans as may be required by the BLM.

25. Signature 	Name (Printed Typed) Katie Wegner	Date 2/11/14
Title Regulatory Analyst		
Approved by 	Name (Printed Typed) AFM	Date 5/30/14
Title Office PFO		

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.
Conditions of approval, if any, are attached.

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212 make it a crime to knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

BLM'S APPROVAL OR ACCEPTANCE OF THIS ACTION DOES NOT RELIEVE THE LESSEE AND

OPERATOR FROM OBTAINING ANY OTHER AUTHORIZATION REQUIRED FOR OPERATIONS ON FEDERAL AND INDIAN LANDS

(Continued on page 2)
DRILLING OPERATIONS AUTHORIZED ARE SUBJECT TO COMPLIANCE WITH ATTACHED "GENERAL REQUIREMENTS"

*(Instructions on page 2)
This action is subject to technical and procedural review pursuant to 43 CFR 3165.3 and appeal pursuant to 43 CFR 3165.4

NMOCDV

DISTRICT IV
1820 E. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3480 Fax: (505) 476-3482

RECEIVED

Submit one copy to appropriate District Office

FFB 13 2014

1220 South St. Francis Dr.
Santa Fe, NM 87505

Farmington Field Office **AMENDED REPORT**
Wildlife and Land Management

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30045-35513	² Pool Code 97232	³ Pool Name BASIN MANCOS
⁴ Property Code 313348	⁵ Property Name LYBROOK 110-2308	⁶ Well Number 03H
⁷ OGRID No. 282327	⁸ Operator Name ENCANA OIL & GAS (USA) INC.	⁹ Elevation 6932.6'

¹⁰ Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
1	10	23N	8W		2438'	SOUTH	480'	EAST	SAN JUAN

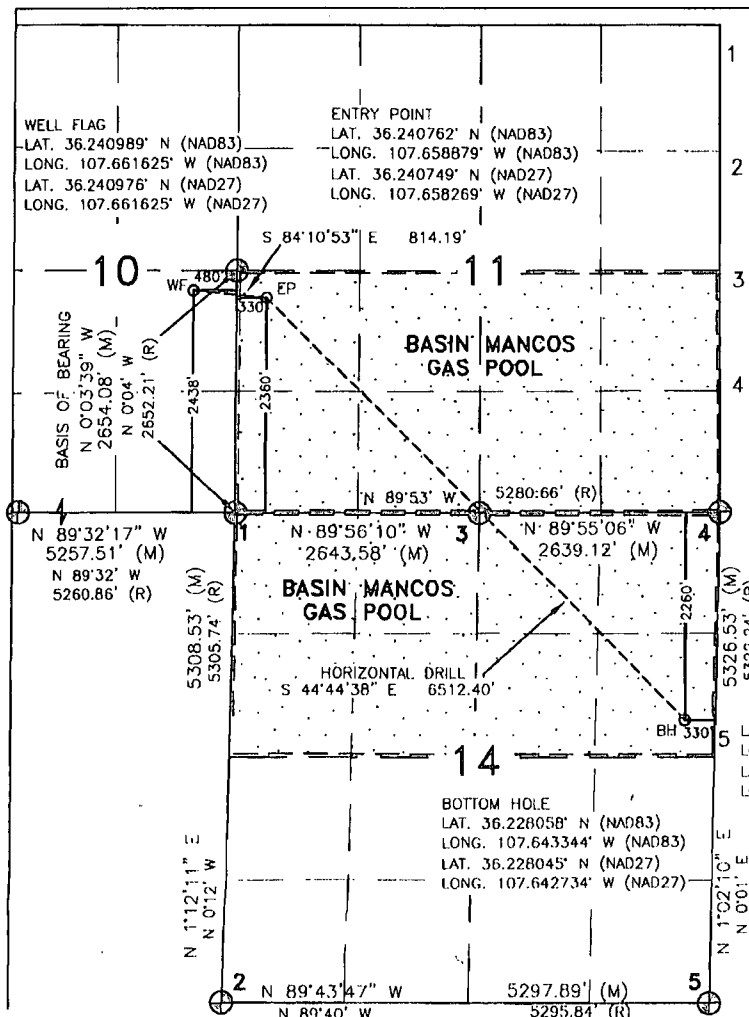
¹¹ Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
H	14	23N	8W		2260'	NORTH	330'	EAST	SAN JUAN

12 Dedicated Acres PROJECT AREA 320.00 ACRES S/2 SEC. 11 320.00 ACRES N/2 SEC. 14	13 Joint or Infill	14 Consolidation Code	15 Order No.
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NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED
OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

18



18	17	OPERATOR CERTIFICATION
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- 1 LAT. 36.234283° N (NAD83)
LONG. 107.659990° W (NAD83)
LAT. 36.234270° N (NAD27)
LONG. 107.659380° W (NAD27)

- 2 LAT. 36.219709' N (NAD83)
LONG. 107.660370' W (NAD83)
LAT. 36.219696' N (NAD27)
LONG. 107.659760' W (NAD27)

- 3 LAT. 36.234273' N (NAD83)
LONG. 107.651030' W (NAD83)
LAT. 36.234260' N (NAD27)
LONG. 107.650420' W (NAD27)

- 4 LAT. 36.234261° N (NAD83)
LONG. 107.642085° W (NAD83)
LAT. 36.234248° N (NAD27)
LONG. 107.641475° W (NAD27)

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location, or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the Division.

Signature _____

Date _____

Katie Wegner

Printed Name _____

katie.wegner@encana.com

E-mail Address

SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

AUGUST 16, 2013

Date of Survey _____

Signature and Seal of Professional Surveyor:

DAVID R. RUSSELL
NEW MEXICO
10201
REGISTERED PROFESSIONAL LAND SURVEYOR

DAVID RUSSELL

Certificate Number

10201

Lybrook I10-2308 03H

SHL: NESE Section 10, T23N, R8W
2438 FSL and 480 FEL

BHL: SENE Section 14, T23N, R8W
2260 FNL and 330 FEL

San Juan County, New Mexico

Lease Number: NMNM 118132 & NMNM 76842

**Encana Oil & Gas (USA) Inc.
Drilling Plan**

1. ESTIMATED TOPS OF GEOLOGICAL MARKERS (TVD)

The estimated tops of important geologic markers are as follows:

Formation	Depth (TVD) units = feet
Ojo Alamo Ss.	1047
Kirtland Sh.	1198
Fruitland Coal	1419
Pictured Cliffs Ss.	1703
Lewis Sh.	1824
Cliffhouse Ss.	3216
Menefee Fn.	3277
Point Lookout Ss.	4101
Mancos Sh.	4254
Mancos Silt	4812
Gallup Fn.	5071

The referenced surface elevation is 6,933', KB 6,949'

2. ESTIMATED DEPTH OF POTENTIAL WATER, OIL, GAS, & OTHER MINERAL BEARING FORMATIONS

Substance	Formation	Depth (TVD) units = feet
Water/Gas	Fruitland Coal	1419
Oil/Gas	Pictured Cliffs Ss.	1703
Oil/Gas	Cliffhouse Ss.	3216
Gas	Menefee Fn.	3277
Oil/Gas	Point Lookout Ss.	4101
Oil/Gas	Mancos Sh.	4254
Oil/Gas	Mancos Silt	4812
Oil/Gas	Gallup Fn.	5071

All shows of fresh water and minerals will be reported and protected.

3. PRESSURE CONTROL

- a) Pressure control equipment and configuration will be designed to meet 2M standards.
- b) Working pressure on rams and BOPE will be 3,000 psi.
- c) Function test and visual inspection of the BOP will be conducted daily and noted in the IADC Daily Drilling Report.
- d) The Annular BOP will be pressure tested to a minimum of 50 percent of its rated working pressure.
- e) Blind and Pipe Rams/BOP will be tested against a test plug to 100 percent of rated working pressure.
- f) Pressure tests are required before drilling out from under all casing strings set and cemented in place.

Lybrook I10-2308 03H**SHL: NESE Section 10, T23N, R8W
2438 FSL and 480 FEL****BHL: SENE Section 14, T23N, R8W
2260 FNL and 330 FEL****San Juan County, New Mexico****Lease Number: NMNM 118132 & NMNM 76842**

- g) BOP controls must be installed prior to drilling the surface casing plug and will remain in use until the well is completed or abandoned.
- h) BOP testing procedures and testing frequency will conform to Onshore Order No. 2.
- i) BOP remote controls shall be located on the rig floor at a location readily accessible to the driller. Master controls shall be on the ground at the accumulator and shall have the capability to function all preventers.
- j) The kill line shall be 2-inch minimum and contain two kill line valves, one of which shall be a check valve.
- k) The choke line shall be a 2-inch minimum and contain two choke line valves (2-inch minimum).
- l) The choke and manifold shall contain two adjustable chokes.
- m) Hand wheels shall be installed on all ram preventers.
- n) Safety valves and wrenches (with subs for drill string connections) shall be available on the rig floor at all times.
- o) Inside BOP or float sub shall also be available on the rig floor at all times.

Proposed BOP and choke manifold arrangements are attached.

4. CASING & CEMENTING PROGRAM

The proposed casing and cementing program has been designed to protect and/or isolate all usable water zones, potentially productive zones, lost circulation zones, abnormally pressured zones, and any prospectively valuable deposits of minerals. Any isolating medium other than cement shall receive approval prior to use. The casing setting depth shall be calculated to position the casing seat opposite a competent formation which will contain the maximum pressure to which it will be exposed during normal drilling operations. All indications of useable water shall be reported.

- a) The proposed casing design is as follows:

Casing	Depth	Hole Size	Csg Size	Weight	Grade
Conductor	0-60'	30"	20"	94#	H40, STC New
Surface	0'-500'	12 1/4"	9 5/8"	36#	J55, STC New
Intermediate	0'-5645'MD	8 3/4"	7"	26#	J55, LTC New
Production Liner	5445'-12290'MD	6 1/8"	4 1/2"	11.6#	B80*, LTC New

Casing String				Casing Strength Properties			Minimum Design Factors		
Size	Weight (lb/ft)	Grade	Connection	Collapse (psi)	Burst (psi)	Tensile (1000lb)	Collapse	Burst	Tension
9 5/8"	36	J55	STC	2020	3520	394	1.125	1.1	1.5
7"	26	J55	LTC	4320	4980	367	1.125	1.1	1.5
4 1/2"	11.6	B80	LTC	6350	7780	201	1.125	1.1	1.5

*B80 pipe specifications are attached

Casing design is subject to revision based on geologic conditions encountered.

All casing strings below the conductor shall be pressure tested to 0.22 psi per foot of casing string length or 1,500 psi, whichever is greater, but not to exceed 70 percent of the minimum internal yield. If pressure declines more than 10 percent in 30 minutes, corrective action shall be taken.

Lybrook I10-2308 03H**SHL: NESE Section 10, T23N, R8W
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2260 FNL and 330 FEL****San Juan County, New Mexico****Lease Number: NMNM 118132 & NMNM 76842**

b) The proposed cementing program is as follows:

Top plugs shall be used to reduce contamination of cement by displacement fluid. A bottom plug or other acceptable technique, such as a pre-flush fluid, inner string cement method, etc. shall be utilized to help isolate the cement from contamination by the mud fluid being displaced ahead of the cement slurry.

Casing	Depth	Cement Volume (sacks)	Cement Type&Yield	Designed TOC	Centralizers
Conductor	60'	100sk	Type I Neat 16 ppg	Surface	None
Surface	500'	178sk	Type III Cement + 1% CaCl + 0.25lb/sk Cello Flake + 0.2% FL, 16ppg, 1.38cuf/sk	Surface	1 per joint on bottom 3 joints
Intermediate	5645'MD	30% open hole excess Stage 1 Lead: 250sks Stage 1 Tail: 172sks Stage 2 Lead: 154sks	Lead (Stages 1 and 2): PremLite + 3% CaCl + 0.25lb/sk CelloFlake + 5lb/sk LCM, 12.1ppg 2.13cuf/sk Tail (Stage 1): Type III Cmt + 1% CaCl + 0.25lb/sk Cello Flake 14.5ppg 1.38cuf/sk	Surface	1 per joint for bottom 3 joints, 1 every 3 joints for remaining joints
Production Liner*	5445'-12290'	None – External casing packers	N/A	N/A	N/A

*Production liner clarification: Utilizing external swell casing packer system for zonal isolation will not use cement in the production liner.

Actual volumes will be calculated and determined by conditions onsite. All cement slurries will meet or exceed minimum BLM and New Mexico Oil Conservation Division requirements. Slurries used will be the slurries listed above or equivalent slurries depending on service provider selected. Cement yields may change depending on slurries selected.

All waiting on cement times shall be a minimum of 8 hours or adequate to achieve a minimum of 500 psi compressive strength at the casing shoe prior to drilling out.

5. WELL PLAN & DIRECTIONAL DRILLING PROGRAM

The proposed horizontal well will have a kick off point of 4000'. Directional plans are attached.

Description	Proposed Depth (TVD/MD)	Formation
Horizontal Lateral TD	5323'/12290'	Gallup

Lybrook I10-2308 03H

**SHL: NESE Section 10, T23N, R8W
2438 FSL and 480 FEL**

**BHL: SENE Section 14, T23N, R8W
2260 FNL and 330 FEL**

San Juan County, New Mexico

Lease Number: NMNM 118132 & NMNM 76842

6. DRILLING FLUIDS PROGRAM

a) Surface through Intermediate Casing Point:

Hole Size (in)	Depth (ft)	Mud Type	Density (lb/gal)	Viscosity (sec/qt)	Fluid Loss (cc)
30"	0-60' TVD	Fresh Water	8.3-9.2	38-100	4-28
12 1/4"	0-500' TVD	Fresh Water	8.4-8.6	60-70	NC
8 3/4"	500'TVD- 5332'TVD/5645'MD	Fresh Water LSND	8.5-8.8	40-50	8-10

b) Intermediate Casing Point to TD:

Hole Size (in)	MD (ft)	Mud Type	Density (lb/gal)	Viscosity (sec/qt)	Fluid Loss (cc)
6 1/8"	5645'-12290'	Synthetic Oil Based Mud	8.6-9.0	15-25	<15

- c) There will be sufficient mud on location to control a blowout should one occur. Mud flow and volume will be monitored both visually and with electronic pit volume totalizers. Mud tests shall be performed every 24 hours after mudding up to determine, as applicable: density, viscosity, gel strength, filtration, and pH.
- d) A closed-loop system will be used to recover drilling fluid and dry cuttings in both phases of the well and on all hole intervals, including fresh water and oil-based operations. Above-ground tanks will be utilized to hold cuttings and fluids for rig operations. A frac tank will be on location to store fresh water. Waste will be disposed of properly at an EPA-approved hazardous waste facility. Fresh water cuttings will be disposed of at Basin Disposal, Inc. and/or Industrial Ecosystems, Inc. The location will be lined in accordance with the Surface Use Plan of Operations.

7. TESTING, CORING and LOGGING

- a) Drill Stem Testing – None anticipated
- b) Coring – None anticipated.
- c) Mud Logging – Mud loggers will be on location from kick off point to TD.
- d) Logging – See Below

Cased Hole:

CBL/CCL/GR/VDL will be run as needed for perforating control

8. ABNORMAL PRESSURES & HYDROGEN SULFIDE

The anticipated bottom hole pressure is +/- 2502 psi based on a 9.0 ppg at 5346' TVD of the landing point of the horizontal lateral. No abnormal pressure or temperatures are anticipated.

No hydrogen sulfide gas is anticipated, however, if H₂S is encountered, the guidelines in Onshore Order No. 6 will be followed.

Lybrook I10-2308 03H

**SHL: NESE Section 10, T23N, R8W
2438 FSL and 480 FEL**

**BHL: SENE Section 14, T23N, R8W
2260 FNL and 330 FEL**

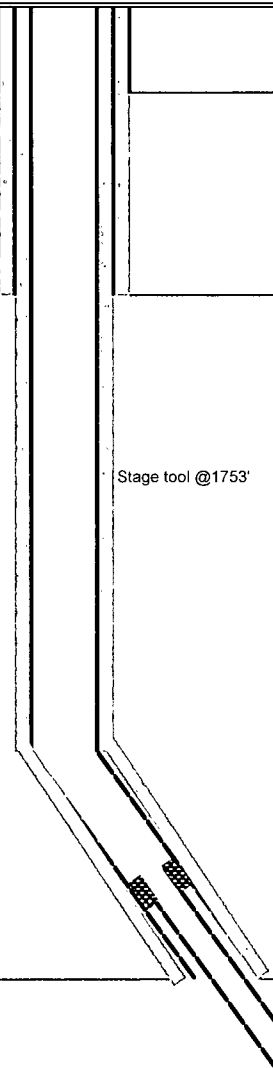
San Juan County, New Mexico

Lease Number: NMNM 118132 & NMNM 76842

9. ANTICIPATED START DATE AND DURATION OF OPERATIONS

Drilling is estimated to commence on November 19, 2014. It is anticipated that completion operations will begin within 30 days after the well has been drilled depending on fracture treatment schedules with various pumping service companies.

It is anticipated that the drilling of this well will take approximately 20 days.

LOC: Sec 10-T23N-R8W County: San Juan WELL: Lybrook I10-2308 03H			Encana Natural Gas WELL SUMMARY					ENG: 2/3/14 RIG: GLE: 6933 RKBE: 6949	
MWD LWD	OPEN HOLE LOGGING	FORM	DEPTH			HOLE SIZE	CASING SPECS	MW MUD TYPE	DEVIATION INFORMATION
			TVD	MD					
			60	60'		30	20" 94# 100sx Type I Neat 16ppg cmt	Fresh wtr 8.3-9.2	
Surveys After csg is run	None		500	500		12 1/4	9 5/8" 36ppf J55 STC TOC @ surface 178 sks Type III Cmt	Fresh wtr 8.4-8.6	Vertical <1°
Surveys every 500'	No OH logs Mud logger onsite	Ojo Alamo Kirtland Fruitland Coal Pictured Cliffs Ss Lewis Shale Cliffhouse Ss Menefee Fn Point Lookout Ss Mancos Sh KICK OFF PT Mancos Silt Gallup Top 7" csg	1047 1,198 1419 1703 1824 3216 3277 4101 4254 4000 4812 5071 5332	5645		8 3/4	7" 26ppf J55 LTC TOC @ surface 30% OH excess: 576 sksTotal. Stage 1 Lead: 250sks Stage 1 Tail: 172sks. Stage 2 Lead: 154sks	Fresh Wtr 8.5-8.8	Vertical <1° KOP 4000 10 deg/100'
Surveys every 500' Gyro at CP MWD Gamma Directional	No OH Logs	horz target Base Gallup	5346 5358	5781		6 1/8	200' overlap at liner top 6509' Lateral	8.6-9.0 OBM Switch to OBM 8.6-9.0	.25deg updip 5323'TVD TD = 12290' MD
							4 1/2" 11.6ppf SB80 LTC Running external swellable csg packers for isolation of prod string Plan on setting top packer within 100' of intermediate casing shoe		

NOTES:

- 1) Drill with 30" bit to 60', set 20" 94# conductor pipe
- 2) Drill surface to 500', R&C 9 5/8" casing
- 3) N/U BOP and surface equipment
- 4) Drill to KOP of 4000' , 8 3/4" hole size,
- 5) PU directional tools and start curve at 10deg/100' build rate
- 6) Drill to casing point of 5332' MD
- 7) R&C 7" casing, circ cmt to surface, switch to OBM
- 8) Land at 90deg, drill 6509' lateral to 12290', run 4 1/2" liner with external swellable csg packers



Boomerang Tube LLC

CASING (OR) TUBING DESCRIPTION AND PERFORMANCE PROPERTIES

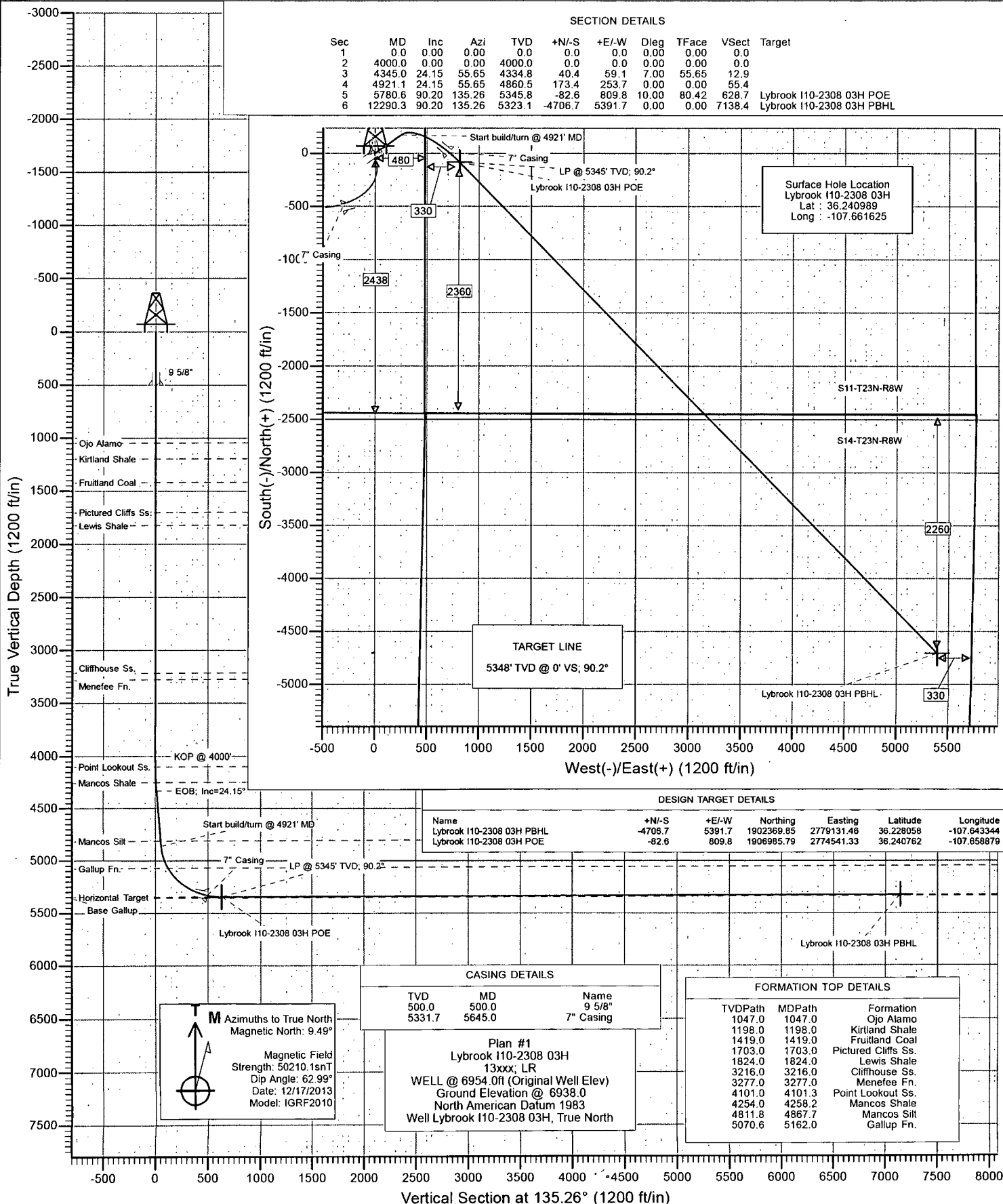
Pipe Outside Diameter (ins)	_____	4.500
Pipe Wall Thickness (ins)	_____	0.250
Nominal Weight Per Foot (lbs)	_____	11.60
Thread Name	_____	Long Thread CSG
Grade Name	_____	SB-80
Pipe Minimum Yield (psi)	_____	80,000
Pipe Minimum Ultimate (psi)	_____	90,000
Coupling Minimum Yield (psi)	_____	80,000
Coupling Minimum Ultimate (psi)	_____	100,000
Coupling or Joint Outside Diameter (ins)	_____	5.000
Drift Diameter (ins)	_____	3.875
Plain End Weight per Foot (lbs)	_____	11.36
Joint Strength (lbs)	_____	201,000
Internal Yield (psi)	_____	7,780
Collapse Rating (psi)	_____	6,350

MAXIMUM DEPTH/LENGTH BASED ON MUD WTS & SAFETY FACTORS

Drilling Mud Weight (ppg)	_____	9.625
Tension Safety Factor	_____	1.80
Maximum Tension Length (ft)	_____	9,630
Internal Yield Safety Factor	_____	1.10
Maximum Depth for Internal Yield (ft)	_____	14,150
Collapse Safety Factor	_____	1.125
Maximum Collapse Depth (ft)	_____	11,290

API RELATED VALUES and INTERMEDIATE CALCULATION RESULTS

Coupling Thread Fracture Strength	_____	464,000
Pipe Thread Fracture Strength (lbs)	_____	201,000
Pipe Body Plain End Yield (lbs)	_____	267,000
Round Thread Pull-Out (lbs)	_____	219,000
Minimum Make-up Torque (ft-lbs)	_____	1,640
Nominal Make-up Torque (ft-lbs)	_____	2,190
Maximum Make-up Torque (ft-lbs)	_____	2,740
Coupling Internal Yield (psi)	_____	10,660
Pipe Body Internal Yield (psi)	_____	7,780
Leak @ E1 or E7 plane (psi)	_____	17,920
Pipe Hydrostatic Test Pressure @ 80 % SMYS	_____	7,100



Planning Report

Database: USA EDM 5000 Multi Users DB
Company: EnCana Oil & Gas (USA) Inc
Project: San Juan County, NM
Site: S10-T23N-R8W (Lybrook)
Well: Lybrook I10-2308 03H
Wellbore: Hz
Design: Plan #1

Local Co-ordinate Reference: Well Lybrook I10-2308 03H
TVD Reference: WELL @ 6954.0ft (Original Well Elev)
MD Reference: WELL @ 6954.0ft (Original Well Elev)
North Reference: True
Survey Calculation Method: Minimum Curvature

Project	San Juan County, NM		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Western Zone		

Site	S10-T23N-R8W (Lybrook)				
Site Position:		Northing:	1,907,119.71 ft	Latitude:	36.241134
From:	Lat/Long	Easting:	2,773,702.72 ft	Longitude:	-107.661722
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	0.10 °

Well	Lybrook I10-2308 03H					
Well Position	+N/-S	0.0 ft	Northing:	1,907,066.97 ft	Latitude:	36.240989
	+E/-W	0.0 ft	Easting:	2,773,731.42 ft	Longitude:	-107.661625
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	6,938.0 ft

Wellbore	Hz				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	12/17/2013	9.49	62.99	50,210

Design	Plan #1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	135.26

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
4,000.0	0.00	0.00	4,000.0	0.0	0.0	0.00	0.00	0.00	0.00	
4,345.0	24.15	55.65	4,334.8	40.4	59.1	7.00	7.00	0.00	55.65	
4,921.1	24.15	55.65	4,860.5	173.4	253.7	0.00	0.00	0.00	0.00	
5,780.6	90.20	135.26	5,345.8	-82.6	809.8	10.00	7.68	9.26	80.42	Lybrook I10-2308 03H
12,290.3	90.20	135.26	5,323.1	-4,706.7	5,391.7	0.00	0.00	0.00	0.00	Lybrook I10-2308 03H

Planning Report

Database: USA EDM 5000 Multi Users DB
Company: EnCana Oil & Gas (USA) Inc
Project: San Juan County, NM
Site: S10-T23N-R8W (Lybrook)
Well: Lybrook I10-2308 03H
Wellbore: Hz
Design: Plan #1

Local Co-ordinate Reference: Well Lybrook I10-2308 03H
TVD Reference: WELL @ 6954.0ft (Original Well Elev)
MD Reference: WELL @ 6954.0ft (Original Well Elev)
North Reference: True
Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	9 5/8"
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	
1,047.0	0.00	0.00	1,047.0	0.0	0.0	0.0	0.00	0.00	Ojo Alamo
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	
1,198.0	0.00	0.00	1,198.0	0.0	0.0	0.0	0.00	0.00	Kirtland Shale
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	
1,419.0	0.00	0.00	1,419.0	0.0	0.0	0.0	0.00	0.00	Fruitland Coal
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	
1,703.0	0.00	0.00	1,703.0	0.0	0.0	0.0	0.00	0.00	Pictured Cliffs Ss.
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	
1,824.0	0.00	0.00	1,824.0	0.0	0.0	0.0	0.00	0.00	Lewis Shale
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	
2,100.0	0.00	0.00	2,100.0	0.0	0.0	0.0	0.00	0.00	
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	0.00	
2,300.0	0.00	0.00	2,300.0	0.0	0.0	0.0	0.00	0.00	
2,400.0	0.00	0.00	2,400.0	0.0	0.0	0.0	0.00	0.00	
2,500.0	0.00	0.00	2,500.0	0.0	0.0	0.0	0.00	0.00	
2,600.0	0.00	0.00	2,600.0	0.0	0.0	0.0	0.00	0.00	
2,700.0	0.00	0.00	2,700.0	0.0	0.0	0.0	0.00	0.00	
2,800.0	0.00	0.00	2,800.0	0.0	0.0	0.0	0.00	0.00	
2,900.0	0.00	0.00	2,900.0	0.0	0.0	0.0	0.00	0.00	
3,000.0	0.00	0.00	3,000.0	0.0	0.0	0.0	0.00	0.00	
3,100.0	0.00	0.00	3,100.0	0.0	0.0	0.0	0.00	0.00	
3,200.0	0.00	0.00	3,200.0	0.0	0.0	0.0	0.00	0.00	
3,216.0	0.00	0.00	3,216.0	0.0	0.0	0.0	0.00	0.00	Cliffhouse Ss.
3,277.0	0.00	0.00	3,277.0	0.0	0.0	0.0	0.00	0.00	Menefee Fn.
3,300.0	0.00	0.00	3,300.0	0.0	0.0	0.0	0.00	0.00	
3,400.0	0.00	0.00	3,400.0	0.0	0.0	0.0	0.00	0.00	
3,500.0	0.00	0.00	3,500.0	0.0	0.0	0.0	0.00	0.00	
3,600.0	0.00	0.00	3,600.0	0.0	0.0	0.0	0.00	0.00	
3,700.0	0.00	0.00	3,700.0	0.0	0.0	0.0	0.00	0.00	
3,800.0	0.00	0.00	3,800.0	0.0	0.0	0.0	0.00	0.00	
3,900.0	0.00	0.00	3,900.0	0.0	0.0	0.0	0.00	0.00	
4,000.0	0.00	0.00	4,000.0	0.0	0.0	0.0	0.00	0.00	KOP @ 4000'
4,100.0	7.00	55.65	4,099.8	3.4	5.0	1.1	7.00	7.00	
4,101.2	7.09	55.65	4,101.0	3.5	5.2	1.1	7.00	7.00	Point Lookout Ss.
4,200.0	14.00	55.65	4,198.0	13.7	20.1	4.4	7.00	7.00	
4,258.2	18.07	55.65	4,253.9	22.8	33.3	7.3	7.00	7.00	Mancos Shale

Planning Report

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 Project: San Juan County, NM
 Site: S10-T23N-R8W (Lybrook)
 Well: Lybrook I10-2308 03H
 Wellbore: Hz
 Design: Plan #1

Local Co-ordinate Reference: Well Lybrook I10-2308 03H
 TVD Reference: WELL @ 6954.0ft (Original Well Elev)
 MD Reference: WELL @ 6954.0ft (Original Well Elev)
 North Reference: True
 Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
4,300.0	21.00	55.65	4,293.3	30.7	44.9	9.8	7.00	7.00	
4,345.0	24.15	55.65	4,334.8	40.4	59.1	12.9	7.00	7.00	EOB; Inc=24.15°
4,400.0	24.15	55.65	4,385.1	53.1	77.7	17.0	0.00	0.00	
4,500.0	24.15	55.65	4,476.3	76.2	111.5	24.4	0.00	0.00	
4,600.0	24.15	55.65	4,567.6	99.3	145.3	31.7	0.00	0.00	
4,700.0	24.15	55.65	4,658.8	122.4	179.0	39.1	0.00	0.00	
4,800.0	24.15	55.65	4,750.1	145.4	212.8	46.5	0.00	0.00	
4,867.3	24.15	55.65	4,811.4	161.0	235.5	51.5	0.00	0.00	Mancos Silt
4,900.0	24.15	55.65	4,841.3	168.5	246.6	53.9	0.00	0.00	
4,921.1	24.15	55.65	4,860.5	173.4	253.7	55.4	0.00	0.00	Start build/turn @ 4921' MD
5,000.0	26.55	73.29	4,932.0	187.6	284.0	66.7	10.00	3.05	
5,100.0	32.07	90.45	5,019.3	193.8	332.1	96.1	10.00	5.51	
5,161.7	36.35	98.37	5,070.3	191.0	366.6	122.3	10.00	6.94	Gallup Fn.
5,200.0	39.23	102.49	5,100.6	186.7	389.6	141.6	10.00	7.52	
5,300.0	47.29	111.16	5,173.4	166.6	454.9	201.9	10.00	8.06	
5,400.0	55.85	117.78	5,235.6	134.0	526.0	275.1	10.00	8.56	
5,500.0	64.70	123.15	5,285.1	89.8	600.6	359.0	10.00	8.85	
5,600.0	73.72	127.78	5,320.6	35.6	676.6	451.0	10.00	9.02	
5,645.0	77.81	129.71	5,331.7	8.3	710.6	494.3	10.00	9.09	7" Casing
5,700.0	82.83	132.00	5,340.9	-27.2	751.6	548.3	10.00	9.12	
5,780.6	90.20	135.26	5,345.8	-82.6	809.8	628.7	10.00	9.15	LP @ 5345' TVD; 90.2° - Lybrook I10-2308 03H
5,800.0	90.20	135.26	5,345.7	-96.4	823.4	648.1	0.00	0.00	
5,900.0	90.20	135.26	5,345.4	-167.5	893.8	748.1	0.00	0.00	
6,000.0	90.20	135.26	5,345.0	-238.5	964.2	848.1	0.00	0.00	
6,100.0	90.20	135.26	5,344.7	-309.5	1,034.6	948.1	0.00	0.00	
6,200.0	90.20	135.26	5,344.3	-380.5	1,105.0	1,048.1	0.00	0.00	
6,300.0	90.20	135.26	5,344.0	-451.6	1,175.4	1,148.1	0.00	0.00	
6,400.0	90.20	135.26	5,343.6	-522.6	1,245.7	1,248.1	0.00	0.00	
6,500.0	90.20	135.26	5,343.3	-593.6	1,316.1	1,348.1	0.00	0.00	
6,600.0	90.20	135.26	5,342.9	-664.7	1,386.5	1,448.1	0.00	0.00	
6,700.0	90.20	135.26	5,342.6	-735.7	1,456.9	1,548.1	0.00	0.00	
6,800.0	90.20	135.26	5,342.2	-806.7	1,527.3	1,648.1	0.00	0.00	
6,900.0	90.20	135.26	5,341.9	-877.8	1,597.7	1,748.1	0.00	0.00	
7,000.0	90.20	135.26	5,341.5	-948.8	1,668.1	1,848.1	0.00	0.00	
7,100.0	90.20	135.26	5,341.2	-1,019.8	1,738.4	1,948.1	0.00	0.00	
7,200.0	90.20	135.26	5,340.8	-1,090.9	1,808.8	2,048.1	0.00	0.00	
7,300.0	90.20	135.26	5,340.5	-1,161.9	1,879.2	2,148.1	0.00	0.00	
7,400.0	90.20	135.26	5,340.1	-1,232.9	1,949.6	2,248.1	0.00	0.00	
7,500.0	90.20	135.26	5,339.8	-1,304.0	2,020.0	2,348.1	0.00	0.00	
7,600.0	90.20	135.26	5,339.4	-1,375.0	2,090.4	2,448.1	0.00	0.00	
7,700.0	90.20	135.26	5,339.1	-1,446.0	2,160.8	2,548.1	0.00	0.00	
7,800.0	90.20	135.26	5,338.8	-1,517.1	2,231.1	2,648.1	0.00	0.00	
7,900.0	90.20	135.26	5,338.4	-1,588.1	2,301.5	2,748.1	0.00	0.00	
8,000.0	90.20	135.26	5,338.1	-1,659.1	2,371.9	2,848.1	0.00	0.00	
8,100.0	90.20	135.26	5,337.7	-1,730.2	2,442.3	2,948.1	0.00	0.00	
8,200.0	90.20	135.26	5,337.4	-1,801.2	2,512.7	3,048.1	0.00	0.00	
8,300.0	90.20	135.26	5,337.0	-1,872.2	2,583.1	3,148.1	0.00	0.00	
8,400.0	90.20	135.26	5,336.7	-1,943.3	2,653.5	3,248.1	0.00	0.00	
8,500.0	90.20	135.26	5,336.3	-2,014.3	2,723.9	3,348.1	0.00	0.00	
8,600.0	90.20	135.26	5,336.0	-2,085.3	2,794.2	3,448.1	0.00	0.00	
8,700.0	90.20	135.26	5,335.6	-2,156.4	2,864.6	3,548.1	0.00	0.00	
8,800.0	90.20	135.26	5,335.3	-2,227.4	2,935.0	3,648.1	0.00	0.00	

Planning Report

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 Project: San Juan County, NM
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 Well: Lybrook I10-2308 03H
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Local Co-ordinate Reference: Well Lybrook I10-2308 03H
 TVD Reference: WELL @ 6954.0ft (Original Well Elev)
 MD Reference: WELL @ 6954.0ft (Original Well Elev)
 North Reference: True
 Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
8,900.0	90.20	135.26	5,334.9	-2,298.4	3,005.4	3,748.1	0.00	0.00	
9,000.0	90.20	135.26	5,334.6	-2,369.5	3,075.8	3,848.1	0.00	0.00	
9,100.0	90.20	135.26	5,334.2	-2,440.5	3,146.2	3,948.1	0.00	0.00	
9,200.0	90.20	135.26	5,333.9	-2,511.5	3,216.6	4,048.1	0.00	0.00	
9,300.0	90.20	135.26	5,333.5	-2,582.6	3,286.9	4,148.1	0.00	0.00	
9,400.0	90.20	135.26	5,333.2	-2,653.6	3,357.3	4,248.1	0.00	0.00	
9,500.0	90.20	135.26	5,332.8	-2,724.6	3,427.7	4,348.1	0.00	0.00	
9,600.0	90.20	135.26	5,332.5	-2,795.7	3,498.1	4,448.1	0.00	0.00	
9,700.0	90.20	135.26	5,332.1	-2,866.7	3,568.5	4,548.1	0.00	0.00	
9,800.0	90.20	135.26	5,331.8	-2,937.7	3,638.9	4,648.1	0.00	0.00	
9,900.0	90.20	135.26	5,331.4	-3,008.8	3,709.3	4,748.1	0.00	0.00	
10,000.0	90.20	135.26	5,331.1	-3,079.8	3,779.6	4,848.1	0.00	0.00	
10,100.0	90.20	135.26	5,330.7	-3,150.8	3,850.0	4,948.1	0.00	0.00	
10,200.0	90.20	135.26	5,330.4	-3,221.9	3,920.4	5,048.1	0.00	0.00	
10,300.0	90.20	135.26	5,330.0	-3,292.9	3,990.8	5,148.1	0.00	0.00	
10,400.0	90.20	135.26	5,329.7	-3,363.9	4,061.2	5,248.1	0.00	0.00	
10,500.0	90.20	135.26	5,329.3	-3,435.0	4,131.6	5,348.1	0.00	0.00	
10,600.0	90.20	135.26	5,329.0	-3,506.0	4,202.0	5,448.1	0.00	0.00	
10,700.0	90.20	135.26	5,328.6	-3,577.0	4,272.3	5,548.1	0.00	0.00	
10,800.0	90.20	135.26	5,328.3	-3,648.1	4,342.7	5,648.1	0.00	0.00	
10,900.0	90.20	135.26	5,327.9	-3,719.1	4,413.1	5,748.1	0.00	0.00	
11,000.0	90.20	135.26	5,327.6	-3,790.1	4,483.5	5,848.1	0.00	0.00	
11,100.0	90.20	135.26	5,327.2	-3,861.2	4,553.9	5,948.1	0.00	0.00	
11,200.0	90.20	135.26	5,326.9	-3,932.2	4,624.3	6,048.1	0.00	0.00	
11,300.0	90.20	135.26	5,326.5	-4,003.2	4,694.7	6,148.1	0.00	0.00	
11,400.0	90.20	135.26	5,326.2	-4,074.3	4,765.0	6,248.1	0.00	0.00	
11,500.0	90.20	135.26	5,325.8	-4,145.3	4,835.4	6,348.1	0.00	0.00	
11,600.0	90.20	135.26	5,325.5	-4,216.3	4,905.8	6,448.1	0.00	0.00	
11,700.0	90.20	135.26	5,325.1	-4,287.4	4,976.2	6,548.1	0.00	0.00	
11,800.0	90.20	135.26	5,324.8	-4,358.4	5,046.6	6,648.1	0.00	0.00	
11,900.0	90.20	135.26	5,324.4	-4,429.4	5,117.0	6,748.1	0.00	0.00	
12,000.0	90.20	135.26	5,324.1	-4,500.5	5,187.4	6,848.1	0.00	0.00	
12,100.0	90.20	135.26	5,323.7	-4,571.5	5,257.7	6,948.1	0.00	0.00	
12,200.0	90.20	135.26	5,323.4	-4,642.5	5,328.1	7,048.1	0.00	0.00	
12,290.3	90.20	135.26	5,323.1	-4,706.7	5,391.7	7,138.4	0.00	0.00	TD at 12290.3 - Lybrook I10-2308 03H PBHL

Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
Lybrook I10-2308 03H P - plan hits target center - Point	0.00	0.00	5,345.8	-82.6	809.8	1,906,985.79	2,774,541.33	36.240762	-107.658879
Lybrook I10-2308 03H P - plan hits target center - Point	0.00	0.00	5,323.1	-4,706.7	5,391.7	1,902,369.85	2,779,131.46	36.228058	-107.643344

Planning Report

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Wellbore: Hz
Design: Plan #1

Local Co-ordinate Reference: Well Lybrook I10-2308 03H
TVD Reference: WELL @ 6954.0ft (Original Well Elev)
MD Reference: WELL @ 6954.0ft (Original Well Elev)
North Reference: True
Survey Calculation Method: Minimum Curvature

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)
5,645.0	5,331.7	7" Casing	0.000	0.000
500.0	500.0	9 5/8"	0.000	0.000

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,047.0	1,047.0	Ojo Alamo		-0.20	
1,198.0	1,198.0	Kirtland Shale		-0.20	
1,419.0	1,419.0	Fruitland Coal		-0.20	
1,703.0	1,703.0	Pictured Cliffs Ss.		-0.20	
1,824.0	1,824.0	Lewis Shale		-0.20	
3,216.0	3,216.0	Cliffhouse Ss.		-0.20	
3,277.0	3,277.0	Menefee Fn.		-0.20	
4,101.2	4,101.0	Point Lookout Ss.		-0.20	
4,258.2	4,254.0	Mancos Shale		-0.20	
4,867.3	4,812.0	Mancos Silt		-0.20	
5,161.7	5,071.0	Gallup Fn.		-0.20	

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
4,000.0	4,000.0	0.0	0.0	KOP @ 4000'
4,345.0	4,334.8	40.4	59.1	EOB; Inc=24.15°
4,921.1	4,860.5	173.4	253.7	Start build/turn @ 4921' MD
5,780.6	5,345.8	-82.6	809.8	LP @ 5345' TVD; 90.2°
12,290.3	5,323.1	-4,706.7	5,391.7	TD at 12290.3

EnCana Oil & Gas (USA) Inc

San Juan County, NM

S10-T23N-R8W (Lybrook)

Lybrook I10-2308 03H

Hz

Plan #1

Anticollision Report

17 December, 2013

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Lybrook I10-2308 03H
Project:	San Juan County, NM	TVD Reference:	WELL @ 6954.0ft (Original Well Elev)
Reference Site:	S10-T23N-R8W (Lybrook)	MD Reference:	WELL @ 6954.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Lybrook I10-2308 03H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Hz	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Reference	Plan #1
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria
Interpolation Method:	MD Interval 100.0ft
Depth Range:	Unlimited
Results Limited by:	Maximum center-center distance of 500.0ft
Warning Levels Evaluated at:	2.00 Sigma
Error Model:	Systematic Ellipse
Scan Method:	Closest Approach 3D
Error Surface:	Elliptical Conic

Survey Tool Program	Date	12/17/2013
From (ft)	To (ft)	Survey (Wellbore)
0.0	12,289.5	Plan #1 (Hz)
Tool Name	Description	
Geolink MWD	Geolink MWD	

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
S10-T23N-R8W (Lybrook)						
Lybrook I10-2308 01H - Hz - Plan #1	4,000.0	4,000.0	60.0	46.1	4.317	CC, ES, SF
Lybrook I10-2308 02H - Hz - Plan #1	4,071.3	4,071.2	29.6	15.5	2.093	CC, ES
Lybrook I10-2308 02H - Hz - Plan #1	4,100.0	4,099.8	29.8	15.5	2.089	SF

Anticollision Report

Company: EnCana Oil & Gas (USA) Inc
Project: San Juan County, NM
Reference Site: S10-T23N-R8W (Lybrook)
Site Error: 0.0ft
Reference Well: Lybrook I10-2308 03H
Well Error: 0.0ft
Reference Wellbore: Hz
Reference Design: Plan #1

Local Co-ordinate Reference: Well Lybrook I10-2308 03H
TVD Reference: WELL @ 6954.0ft (Original Well Elev)
MD Reference: WELL @ 6954.0ft (Original Well Elev)
North Reference: True
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: USA EDM 5000 Multi Users DB
Offset TVD Reference: Offset Datum

Offset Design S10-T23N-R8W (Lybrook) - Lybrook I10-2308 01H - Hz - Plan #1													Offset Site Error:	0.0 ft
Survey Program: 0-Geolink MWD													Offset Well Error:	0.0 ft
Reference	Offset	Semi Major Axis		Distance		Warning								
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	-28.45	52.8	-28.6	60.0					
100.0	100.0	100.0	100.0	0.1	0.1	-28.45	52.8	-28.6	60.0	59.7	0.29	204.749		
200.0	200.0	200.0	200.0	0.3	0.3	-28.45	52.8	-28.6	60.0	59.4	0.64	93.473		
300.0	300.0	300.0	300.0	0.5	0.5	-28.45	52.8	-28.6	60.0	59.0	0.99	60.560		
400.0	400.0	400.0	400.0	0.7	0.7	-28.45	52.8	-28.6	60.0	58.7	1.34	44.789		
500.0	500.0	500.0	500.0	0.8	0.8	-28.45	52.8	-28.6	60.0	58.3	1.69	35.535		
600.0	600.0	600.0	600.0	1.0	1.0	-28.45	52.8	-28.6	60.0	58.0	2.04	29.450		
700.0	700.0	700.0	700.0	1.2	1.2	-28.45	52.8	-28.6	60.0	57.6	2.39	25.145		
800.0	800.0	800.0	800.0	1.4	1.4	-28.45	52.8	-28.6	60.0	57.3	2.74	21.937		
900.0	900.0	900.0	900.0	1.5	1.5	-28.45	52.8	-28.6	60.0	56.9	3.09	19.456		
1,000.0	1,000.0	1,000.0	1,000.0	1.7	1.7	-28.45	52.8	-28.6	60.0	56.6	3.43	17.479		
1,100.0	1,100.0	1,100.0	1,100.0	1.9	1.9	-28.45	52.8	-28.6	60.0	56.3	3.78	15.866		
1,200.0	1,200.0	1,200.0	1,200.0	2.1	2.1	-28.45	52.8	-28.6	60.0	55.9	4.13	14.526		
1,300.0	1,300.0	1,300.0	1,300.0	2.2	2.2	-28.45	52.8	-28.6	60.0	55.6	4.48	13.395		
1,400.0	1,400.0	1,400.0	1,400.0	2.4	2.4	-28.45	52.8	-28.6	60.0	55.2	4.83	12.427		
1,500.0	1,500.0	1,500.0	1,500.0	2.6	2.6	-28.45	52.8	-28.6	60.0	54.9	5.18	11.590		
1,600.0	1,600.0	1,600.0	1,600.0	2.8	2.8	-28.45	52.8	-28.6	60.0	54.5	5.53	10.858		
1,700.0	1,700.0	1,700.0	1,700.0	2.9	2.9	-28.45	52.8	-28.6	60.0	54.2	5.88	10.213		
1,800.0	1,800.0	1,800.0	1,800.0	3.1	3.1	-28.45	52.8	-28.6	60.0	53.8	6.23	9.641		
1,900.0	1,900.0	1,900.0	1,900.0	3.3	3.3	-28.45	52.8	-28.6	60.0	53.5	6.58	9.129		
2,000.0	2,000.0	2,000.0	2,000.0	3.5	3.5	-28.45	52.8	-28.6	60.0	53.1	6.93	8.669		
2,100.0	2,100.0	2,100.0	2,100.0	3.6	3.6	-28.45	52.8	-28.6	60.0	52.8	7.27	8.253		
2,200.0	2,200.0	2,200.0	2,200.0	3.8	3.8	-28.45	52.8	-28.6	60.0	52.4	7.62	7.875		
2,300.0	2,300.0	2,300.0	2,300.0	4.0	4.0	-28.45	52.8	-28.6	60.0	52.1	7.97	7.530		
2,400.0	2,400.0	2,400.0	2,400.0	4.2	4.2	-28.45	52.8	-28.6	60.0	51.7	8.32	7.214		
2,500.0	2,500.0	2,500.0	2,500.0	4.3	4.3	-28.45	52.8	-28.6	60.0	51.4	8.67	6.924		
2,600.0	2,600.0	2,600.0	2,600.0	4.5	4.5	-28.45	52.8	-28.6	60.0	51.0	9.02	6.656		
2,700.0	2,700.0	2,700.0	2,700.0	4.7	4.7	-28.45	52.8	-28.6	60.0	50.7	9.37	6.408		
2,800.0	2,800.0	2,800.0	2,800.0	4.9	4.9	-28.45	52.8	-28.6	60.0	50.3	9.72	6.178		
2,900.0	2,900.0	2,900.0	2,900.0	5.0	5.0	-28.45	52.8	-28.6	60.0	50.0	10.07	5.964		
3,000.0	3,000.0	3,000.0	3,000.0	5.2	5.2	-28.45	52.8	-28.6	60.0	49.6	10.42	5.764		
3,100.0	3,100.0	3,100.0	3,100.0	5.4	5.4	-28.45	52.8	-28.6	60.0	49.3	10.77	5.577		
3,200.0	3,200.0	3,200.0	3,200.0	5.6	5.6	-28.45	52.8	-28.6	60.0	48.9	11.11	5.402		
3,300.0	3,300.0	3,300.0	3,300.0	5.7	5.7	-28.45	52.8	-28.6	60.0	48.6	11.46	5.237		
3,400.0	3,400.0	3,400.0	3,400.0	5.9	5.9	-28.45	52.8	-28.6	60.0	48.2	11.81	5.082		
3,500.0	3,500.0	3,500.0	3,500.0	6.1	6.1	-28.45	52.8	-28.6	60.0	47.9	12.16	4.937		
3,600.0	3,600.0	3,600.0	3,600.0	6.3	6.3	-28.45	52.8	-28.6	60.0	47.5	12.51	4.799		
3,700.0	3,700.0	3,700.0	3,700.0	6.4	6.4	-28.45	52.8	-28.6	60.0	47.2	12.86	4.669		
3,800.0	3,800.0	3,800.0	3,800.0	6.6	6.6	-28.45	52.8	-28.6	60.0	46.8	13.21	4.545		
3,900.0	3,900.0	3,900.0	3,900.0	6.8	6.8	-28.45	52.8	-28.6	60.0	46.5	13.56	4.428		
4,000.0	4,000.0	4,000.0	4,000.0	7.0	7.0	-28.45	52.8	-28.6	60.0	46.1	13.91	4.317 CC, ES, SF		
4,100.0	4,099.8	4,091.0	4,090.6	7.1	7.1	-85.52	60.0	-28.7	66.5	52.2	14.24	4.667		
4,200.0	4,198.0	4,179.1	4,176.2	7.3	7.3	-88.18	80.6	-28.9	85.7	71.1	14.60	5.870		
4,300.0	4,293.3	4,262.1	4,253.1	7.6	7.5	-90.01	111.7	-29.2	116.9	101.9	15.00	7.794		
4,400.0	4,385.1	4,338.7	4,319.3	7.9	7.8	-91.67	150.0	-29.6	158.8	143.3	15.51	10.245		
4,500.0	4,476.3	4,408.4	4,374.7	8.3	8.1	-91.73	192.3	-30.1	209.4	193.3	16.08	13.022		
4,600.0	4,567.6	4,490.8	4,436.6	8.7	8.6	-90.80	246.6	-30.6	264.2	247.4	16.77	15.757		
4,700.0	4,658.8	4,574.4	4,499.4	9.2	9.2	-90.18	301.7	-31.2	319.0	301.5	17.53	18.203		
4,800.0	4,750.1	4,657.9	4,562.2	9.7	9.9	-89.74	356.9	-31.8	373.9	355.6	18.35	20.383		
4,900.0	4,841.3	4,741.5	4,625.0	10.2	10.5	-89.41	412.0	-32.3	428.8	409.6	19.22	22.316		
5,000.0	4,932.0	4,821.9	4,685.5	10.8	11.2	-104.14	465.1	-32.9	488.0	468.2	19.80	24.648		

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company: EnCana Oil & Gas (USA) Inc
Project: San Juan County, NM
Reference Site: S10-T23N-R8W (Lybrook)
Site Error: 0.0ft
Reference Well: Lybrook I10-2308 03H
Well Error: 0.0ft
Reference Wellbore: Hz
Reference Design: Plan #1

Local Co-ordinate Reference: Well Lybrook I10-2308 03H
TVD Reference: WELL @ 6954.0ft (Original Well Elev)
MD Reference: WELL @ 6954.0ft (Original Well Elev)
North Reference: True
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: USA EDM 5000 Multi Users DB
Offset TVD Reference: Offset Datum

Offset Design S10-T23N-R8W (Lybrook) - Lybrook I10-2308 02H - Hz - Plan #1													Offset Site Error: 0.0 ft	
Survey Program: 0-Geolink MWD													Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	-28.37	26.2	-14.2	29.8					
100.0	100.0	100.0	100.0	0.1	0.1	-28.37	26.2	-14.2	29.8	29.5	0.29	101.589		
200.0	200.0	200.0	200.0	0.3	0.3	-28.37	26.2	-14.2	29.8	29.1	0.64	46.378		
300.0	300.0	300.0	300.0	0.5	0.5	-28.37	26.2	-14.2	29.8	28.8	0.99	30.048		
400.0	400.0	400.0	400.0	0.7	0.7	-28.37	26.2	-14.2	29.8	28.4	1.34	22.223		
500.0	500.0	500.0	500.0	0.8	0.8	-28.37	26.2	-14.2	29.8	28.1	1.69	17.631		
600.0	600.0	600.0	600.0	1.0	1.0	-28.37	26.2	-14.2	29.8	27.7	2.04	14.612		
700.0	700.0	700.0	700.0	1.2	1.2	-28.37	26.2	-14.2	29.8	27.4	2.39	12.476		
800.0	800.0	800.0	800.0	1.4	1.4	-28.37	26.2	-14.2	29.8	27.1	2.74	10.885		
900.0	900.0	900.0	900.0	1.5	1.5	-28.37	26.2	-14.2	29.8	26.7	3.09	9.653		
1,000.0	1,000.0	1,000.0	1,000.0	1.7	1.7	-28.37	26.2	-14.2	29.8	26.4	3.43	8.672		
1,100.0	1,100.0	1,100.0	1,100.0	1.9	1.9	-28.37	26.2	-14.2	29.8	26.0	3.78	7.872		
1,200.0	1,200.0	1,200.0	1,200.0	2.1	2.1	-28.37	26.2	-14.2	29.8	25.7	4.13	7.207		
1,300.0	1,300.0	1,300.0	1,300.0	2.2	2.2	-28.37	26.2	-14.2	29.8	25.3	4.48	6.646		
1,400.0	1,400.0	1,400.0	1,400.0	2.4	2.4	-28.37	26.2	-14.2	29.8	25.0	4.83	6.166		
1,500.0	1,500.0	1,500.0	1,500.0	2.6	2.6	-28.37	26.2	-14.2	29.8	24.6	5.18	5.750		
1,600.0	1,600.0	1,600.0	1,600.0	2.8	2.8	-28.37	26.2	-14.2	29.8	24.3	5.53	5.387		
1,700.0	1,700.0	1,700.0	1,700.0	2.9	2.9	-28.37	26.2	-14.2	29.8	23.9	5.88	5.067		
1,800.0	1,800.0	1,800.0	1,800.0	3.1	3.1	-28.37	26.2	-14.2	29.8	23.6	6.23	4.783		
1,900.0	1,900.0	1,900.0	1,900.0	3.3	3.3	-28.37	26.2	-14.2	29.8	23.2	6.58	4.529		
2,000.0	2,000.0	2,000.0	2,000.0	3.5	3.5	-28.37	26.2	-14.2	29.8	22.9	6.93	4.301		
2,100.0	2,100.0	2,100.0	2,100.0	3.6	3.6	-28.37	26.2	-14.2	29.8	22.5	7.27	4.095		
2,200.0	2,200.0	2,200.0	2,200.0	3.8	3.8	-28.37	26.2	-14.2	29.8	22.2	7.62	3.907		
2,300.0	2,300.0	2,300.0	2,300.0	4.0	4.0	-28.37	26.2	-14.2	29.8	21.8	7.97	3.736		
2,400.0	2,400.0	2,400.0	2,400.0	4.2	4.2	-28.37	26.2	-14.2	29.8	21.5	8.32	3.579		
2,500.0	2,500.0	2,500.0	2,500.0	4.3	4.3	-28.37	26.2	-14.2	29.8	21.1	8.67	3.435		
2,600.0	2,600.0	2,600.0	2,600.0	4.5	4.5	-28.37	26.2	-14.2	29.8	20.8	9.02	3.302		
2,700.0	2,700.0	2,700.0	2,700.0	4.7	4.7	-28.37	26.2	-14.2	29.8	20.4	9.37	3.179		
2,800.0	2,800.0	2,800.0	2,800.0	4.9	4.9	-28.37	26.2	-14.2	29.8	20.1	9.72	3.065		
2,900.0	2,900.0	2,900.0	2,900.0	5.0	5.0	-28.37	26.2	-14.2	29.8	19.7	10.07	2.959		
3,000.0	3,000.0	3,000.0	3,000.0	5.2	5.2	-28.37	26.2	-14.2	29.8	19.4	10.42	2.860		
3,100.0	3,100.0	3,100.0	3,100.0	5.4	5.4	-28.37	26.2	-14.2	29.8	19.0	10.77	2.767		
3,200.0	3,200.0	3,200.0	3,200.0	5.6	5.6	-28.37	26.2	-14.2	29.8	18.7	11.11	2.680		
3,300.0	3,300.0	3,300.0	3,300.0	5.7	5.7	-28.37	26.2	-14.2	29.8	18.3	11.46	2.599		
3,400.0	3,400.0	3,400.0	3,400.0	5.9	5.9	-28.37	26.2	-14.2	29.8	18.0	11.81	2.522		
3,500.0	3,500.0	3,500.0	3,500.0	6.1	6.1	-28.37	26.2	-14.2	29.8	17.6	12.16	2.449		
3,600.0	3,600.0	3,600.0	3,600.0	6.3	6.3	-28.37	26.2	-14.2	29.8	17.3	12.51	2.381		
3,700.0	3,700.0	3,700.0	3,700.0	6.4	6.4	-28.37	26.2	-14.2	29.8	16.9	12.86	2.316		
3,800.0	3,800.0	3,800.0	3,800.0	6.6	6.6	-28.37	26.2	-14.2	29.8	16.6	13.21	2.255		
3,900.0	3,900.0	3,900.0	3,900.0	6.8	6.8	-28.37	26.2	-14.2	29.8	16.2	13.56	2.197		
4,000.0	4,000.0	4,000.0	4,000.0	7.0	7.0	-28.37	26.2	-14.2	29.8	15.9	13.91	2.142		
4,071.3	4,071.2	4,071.2	4,071.2	7.1	7.1	-90.00	26.2	-14.2	29.6	15.5	14.16	2.093 CC, ES		
4,100.0	4,099.8	4,099.8	4,099.8	7.1	7.1	-95.74	26.2	-14.2	29.8	15.5	14.26	2.089 SF		
4,200.0	4,198.0	4,198.0	4,198.0	7.3	7.3	-124.79	26.2	-14.2	36.4	21.9	14.52	2.509		
4,300.0	4,293.3	4,293.3	4,293.3	7.6	7.5	-148.24	26.2	-14.2	59.2	44.7	14.51	4.081		
4,400.0	4,385.1	4,385.1	4,385.1	7.9	7.6	-160.37	26.2	-14.2	95.7	81.2	14.56	6.575		
4,500.0	4,476.3	4,473.8	4,473.7	8.3	7.8	-167.21	23.7	-13.7	135.7	120.9	14.83	9.152		
4,600.0	4,567.6	4,555.1	4,553.9	8.7	7.9	-174.55	10.6	-11.1	180.3	165.2	15.10	11.935		
4,700.0	4,658.8	4,627.5	4,623.0	9.2	8.1	178.67	-10.3	-7.0	231.3	215.9	15.41	15.007		
4,800.0	4,750.1	4,690.4	4,680.5	9.7	8.3	172.98	-35.3	-2.2	289.3	273.6	15.76	18.354		
4,900.0	4,841.3	4,750.0	4,732.1	10.2	8.5	167.93	-64.5	3.5	354.0	337.8	16.18	21.886		
5,000.0	4,932.0	4,800.0	4,772.7	10.8	8.7	141.27	-93.0	9.1	423.9	406.9	16.96	24.985		

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company: EnCana Oil & Gas (USA) Inc
Project: San Juan County, NM
Reference Site: S10-T23N-R8W (Lybrook)
Site Error: 0.0ft
Reference Well: Lybrook I10-2308 03H
Well Error: 0.0ft
Reference Wellbore: Hz
Reference Design: Plan #1

Local Co-ordinate Reference: Well Lybrook I10-2308 03H
TVD Reference: WELL @ 6954.0ft (Original Well Elev)
MD Reference: WELL @ 6954.0ft (Original Well Elev)
North Reference: True
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: USA EDM 5000 Multi Users DB
Offset TVD Reference: Offset Datum

Offset Design													S10-T23N-R8W (Lybrook) - Lybrook I10-2308 02H - Hz - Plan #1		Offset Site Error:		0.0 ft	
Survey Program:													0-Geolink MWD		Offset Well Error:		0.0 ft	
Reference		Offset		Semi Major Axis			Distance											
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Total Uncertainty	Separation	Warning					
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	Axis	Factor						
5,100.0	5,019.3	4,837.7	4,801.9	11.5	8.9	115.99	-116.6	13.4	495.1	476.9	18.19	27.226						

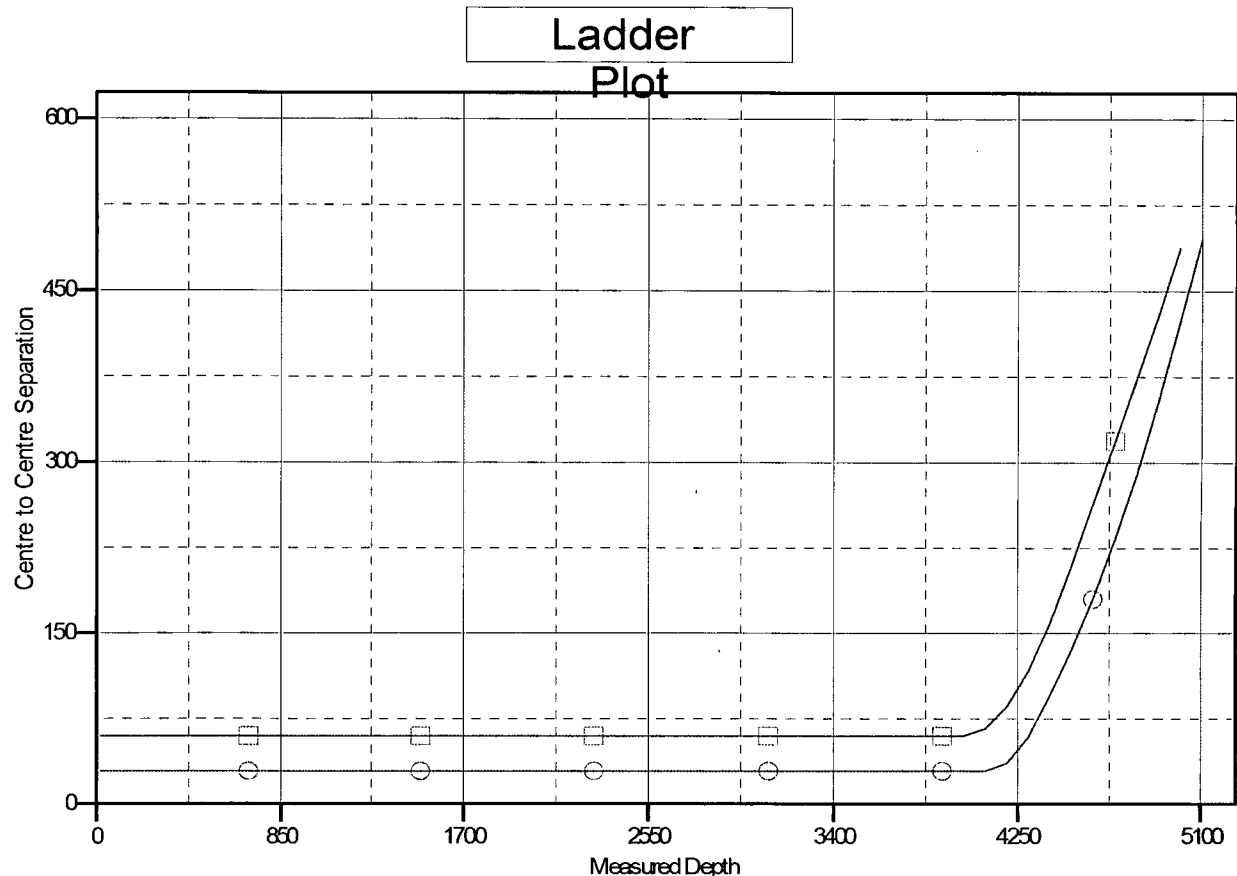
Anticollision Report

Company: EnCana Oil & Gas (USA) Inc
Project: San Juan County, NM
Reference Site: S10-T23N-R8W (Lybrook)
Site Error: 0.0ft
Reference Well: Lybrook I10-2308 03H
Well Error: 0.0ft
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North Reference: True
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: USA EDM 5000 Multi Users DB
Offset TVD Reference: Offset Datum

Reference Depths are relative to WELL @ 6954.0ft (Original Well Elev)
 Offset Depths are relative to Offset Datum
 Central Meridian is -107.83333 °

Coordinates are relative to: Lybrook I10-2308 03H
 Coordinate System is US State Plane 1983, New Mexico Western Zone
 Grid Convergence at Surface is: 0.10°



LEGEND

Lybrook I10-2308 02H, Hz, Plan #1 V0
 Lybrook I10-2308 01H, Hz, Plan #1 V0

ENCANA OIL & GAS (USA) INC.

LYBROOK I10-2308 #03H

2438' FSL & 480' FEL

LOCATED IN THE NE/4 SE/4 OF SECTION 10,

T23N, R8W, N.M.P.M.,

SAN JUAN COUNTY, NEW MEXICO

DIRECTIONS

- 1) FROM THE INTERSECTION OF HWY 64 & HWY 550 IN BLOOMFIELD, GO SOUTH ON HWY 550, 39.0 MILES TO INDIAN ROUTE 7061 (M.P. 112.6).
- 2) TURN RIGHT AND GO 1.7 MILES TO A DIRT ROAD WITH CATTLE GUARD.
- 3) TURN LEFT AND GO 0.6 MILES TO "Y" INTERSECTION.
- 4) TURN LEFT AND GO 0.9 MILES TO "T" INTERSECTION.
- 5) TURN LEFT AND GO 1.1 MILES TO ABANDONED 2-TRACK TO BE UPGRADED.

WELL FLAG LOCATED AT LAT. 36.240989° N, LONG.107.661625° W (NAD 83).



encana

SAN JUAN COUNTY,
NEW MEXICO

- ⊗ Abandoned
 - ⊗ Abandoned Gas
 - ⊗ Abandoned Oil
 - ⊗ Dry Hole
 - ⊗ GAS
 - ⊗ Injection
 - OIL
- 1 inch = 2,167 feet

Basin Mancos
Gas Pool

**LYBROOK
GALLUP
POOL**

TURTLE MOUNTAIN 35-2

FEDERAL-34 43

35

36

BLANCO
SOUTH COAL

FEDERAL-35 43R

STATE 36 8

STATE 36 6
SOUTH
BLANCO
STATE 4

STATE OF
NEW MEXICO
36 43

BETTY C
31

STATE OF
NEW MEXICO
36 14

GREAT WESTERN FED 1

1

Lybrook 102-2308 02H
Lybrook 102-2308 01H

JEFFERS FEDERAL-2 23

33 33

JEFFERS FEDERAL-2 23

FEDERAL-3 23

FEDERAL-3 43

GOS 5

RIDDLE FEDERAL 1

FEDERAL-12 22

11

Lybrook M10-2308 03H

10

Lybrook 116-2308 01H
Lybrook 116-2308 02H

12

FEDERAL-12 33

Lybrook M12-2308 01H

Lybrook N12-2308 01H

Lybrook A13-2308 01H
DOME FEDERAL-13 41

13

14

Lybrook H14-2308 01H

23N

8W

**NAGEEZI
GALLUP
POOL**

15

Lybrook L14-2308 01H

STATE OF
NEW MEXICO 43

CHACO 2308-161 147H

GOSE F H 1

DOME-FEDERAL-24-21

24

0 0.125 0.25 0.5 Miles

WELLHEAD BLOWOUT CONTROL SYSTEM

encana

Well name and number:

Lybrook I10-2308 03H

