

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: 10.18.14

Well information;

Operator Encana, Well Name and Number Lybrook 035-2308 #2H

API# 30-045-35524 Section 35, Township 23 N, 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.

Charlie Lerner
NMOCD Approved by Signature

5-29-2014
Date

22

CONFIDENTIAL

Form 3160-3
(March 2012)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

RECEIVED

FORM APPROVED
OMB No. 1004-0137
Expires October 31, 2014

Lease Serial No. NMNM048989A
NM 76842, NMNM48989A

APPLICATION FOR PERMIT TO DRILL OR REENTER

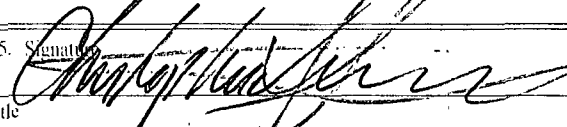
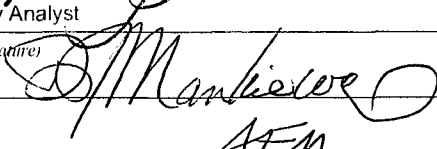
MAR 21 2014

1a. Type of work: ☒ DRILL ☐ REENTER		Farmington Field Office Bureau of Land Management		6. If Indian, Allottee or Tribe Name N/A	
1b. Type of Well: ☒ Oil Well ☐ Gas Well ☐ Other ☒ Single Zone ☐ Multiple Zone				7. If Unit or CA Agreement, Name and No. Pending	
2. Name of Operator Encana Oil & Gas (USA) Inc.				8. Lease Name and Well No. Lybrook O35-2308 02H	
3a. Address 370 17th Street, Suite 1700 Denver, CO 80202		3b. Phone No. (include area code) (720) 876-3448		9. API Well No. 30-045-35524	
4. Location of Well (Report location clearly and in accordance with any State requirements.)* At surface 255' FSL and 1367' FEL in Section 35, T23N, R8W At proposed prod. zone 330' FSL and 400' FEL in Section 2, T22N, R8W		SHL BHL		10. Field and Pool, or Exploratory Alamito-Gallup	
14. Distance in miles and direction from nearest town or post office* +/- 45.5 miles south of intersection of US Hwy 550 and US Hwy 64 in Bloomfield, NM				11. Sec., T. R. M. or Blk. and Survey or Area Section 35, T23N, R8W NMPM Sec 2, T22N, R8W	
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) SHL is 225' From south lease line		16. No. of acres in lease NM 76842- 640 acres NMNM 48989A- 643.2 acre 1123.20		17. Spacing Unit dedicated to this well 161.10 acres E2E2 of Section 2 OIL CONS. DIV DIST. 3	
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. Lybrook O35-2308 01H is +/- 20' NW		19. Proposed Depth		20. BLM/BIA Bond No. on file COB-000235 MAY 02 2014	
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 6860', KB 6876'		22. Approximate date work will start* 09/11/2014		23. Estimated duration 20 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:

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

25. Signature 	Name (Printed/Typed) Christopher Simmons	Date 10/8-14
Title Regulatory Analyst		
Approved by (Signature) 	Name (Printed/Typed) AFM	Date 4/29/14
Title AFM	Office FFO	

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 for any person 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.

THIS APPROVAL FOR AN OIL AND GAS LEASE IS NOT A GUARANTEE OF TITLE.
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)
This action is subject to technical
and procedural review pursuant to
43 CFR 3165.3 and appeal
pursuant to 43 CFR 3165.4

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

NMOCD W

District I
1625 N. French Drive, Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720

District II
511 S. First Street, Artesia, NM 88210
Phone: (575) 748-1293 Fax: (575) 748-9720

District III
1005 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6179 Fax: (505) 334-6170

District IV
1220 S. St. Francis Drive, Santa Fe, NM 87505
Phone: (505) 475-3460 Fax: (505) 475-3462

State of New Mexico
Energy, Minerals & Natural Resources Department

Form O-102
Revised August 1, 2011

Submit one copy to
Appropriate District Office

OIL CONSERVATION DIVISION
1220 South St. Francis Drive
Santa Fe, NM 87505

☐ AMENDED REPORT

RECEIVED

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number 30-045-35524	Pool Code 1039	Pool Name ALAMITO - GALLUP
Property Code 313255	Property Name LYBROOK 035-2308	
OGUID No. 282327	Operator Name ENCANA OIL & GAS (USA) INC.	Elevation 6860'

Farmington Field Office
Bureau of Land Management

10 Surface Location

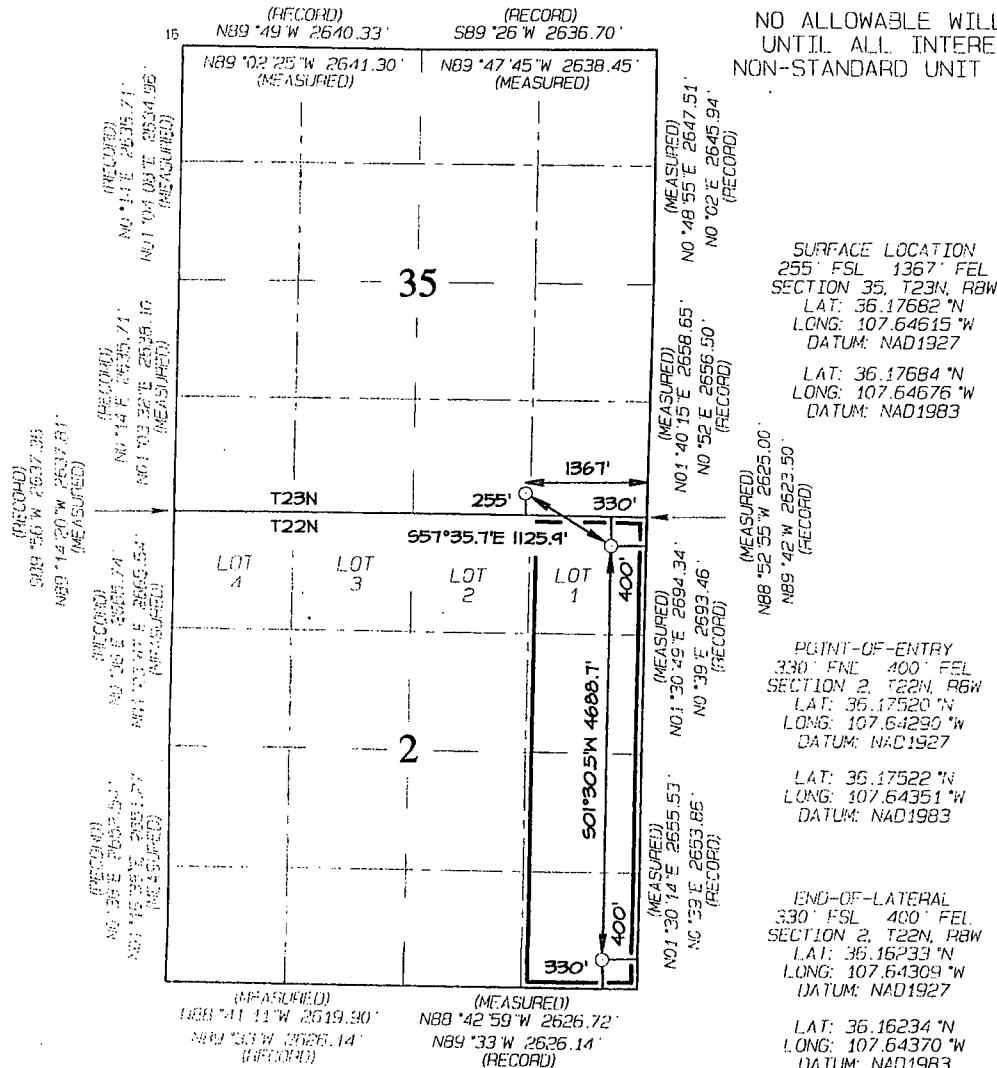
Sec. or Loc. No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
0	35	23N	8W		255	SOUTH	1367	EAST	SAN JUAN

11 Bottom Hole Location If Different From Surface

Sec. or Loc. No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
P	2	22N	8W		330	SOUTH	400	EAST	SAN JUAN

12 Dedicated Acres 161.10 Acres E/2 E/2 - Section 2	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



17 OPERATOR CERTIFICATION

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, unless 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: Holly Hill Date: 3/18/14
Holly Hill

Printed Name: Holly.Hilly@encana.com

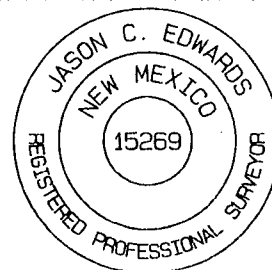
E-mail Address:

18 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.

Date of Survey: JUNE 4, 2013

Signature and Seal of Professional Surveyor



JASON C. EDWARDS
Certificate Number 15269

Lybrook O35-2308 02H
 SHL: SWSE Sec 35 T23N R8W
 255' FSL, 1367' FEL
 BHL: SESE Sec 2 T22N R8W
 330' FSL, 400' FEL
 Sandoval, New Mexico

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.	597
Kirtland Shale	806
Fruitland Coal	1,116
Pictured Cliffs Ss.	1,278
Lewis Shale	1,374
Cliffhouse Ss.	1,993
Menefee Fn.	2,723
Point Lookout Ss.	3,656
Mancos Shale	3,803
Mancos Silt	4,315
Gallup Fn.	4,584

The referenced surface elevation is 6860', KB 6876'

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

Substance	Formation	Depth (TVD) units = feet
Water/Gas	Fruitland Coal	1,116
Oil/Gas	Pictured Cliffs Ss.	1,278
Oil/Gas	Cliffhouse Ss.	1,993
Gas	Menefee Fn.	2,723
Oil/Gas	Point Lookout Ss.	3,656
Oil/Gas	Mancos Shale	3,803
Oil/Gas	Mancos Silt	4,315
Oil/Gas	Gallup Fn.	4,584

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 O35-2308 02H
SHL: SWSE Sec 35 T23N R8W
255' FSL, 1367' FEL
BHL: SESE Sec 2 T22N R8W
330' FSL, 400' FEL
Sandoval, New Mexico

- 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
- 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 (MD)	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'-5728'	8 3/4"	7"	26#	J55, LTC New
Production Liner	5528'-10510'	6 1/8"	4 1/2"	11.6#	B80*, LTC New

Casing String				Casing Strength Properties			Minimum Design Factors		
Size	Weight (ppf)	Grade	Connection	Collapse (psi)	Burst (psi)	Tensile (1000lbs)	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
4.5"	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 O35-2308 02H
SHL: SWSE Sec 35 T23N R8W
255' FSL, 1367' FEL
BHL: SESE Sec 2 T22N R8W
330' FSL, 400' FEL
Sandoval, New Mexico

b) The proposed cementing program is as follows

Casing	Depth (MD)	Cement Volume (sacks)	Cement Type & Yield	Designed TOC	Centralizers
Conductor	0'-60'	100 sks	Type I Neat 16 ppg	Surface	None
Surface	0'-500'	201 sks	Type III Cement + 1% CaCl + 0.25lb/sk Cello Flake + 0.2% FL, 16ppg, 1.38cuft/sk	Surface	1 per joint on bottom 3 joints
Intermediate	0'-5728'	30% open hole excess Stage 1 Lead: 251 sks Stage 1 Tail: 467 sks Stage 2 Lead: 124 sks	Lead (Stages 1 and 2): PremLite + 3% CaCl + 0.25lb/sk Cello Flake + 5lb/sk LCM, 12.1ppg 2.13cuft/sk Tail (Stage 1): Type III Cmt + 1% CaCl + 0.25lb/sk Cello Flake 14.5ppg 1.38cuft/sk	Surface	1 every 3 joints through water bearing zones
Production Liner	5528'-10510'	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 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 4181'. Directional plans are attached.

Description	Proposed Depth (TVD/MD)	Formation
Horizontal Lateral TD	4814'/10510'	Gallup

6. DRILLING FLUIDS PROGRAM

a) Surface through Intermediate Casing Point:

Hole Size (in)	Depth (TVD/MD)	Mud Type	Density (ppg)	Viscosity (sec/qt)	Fluid Loss (cc)
30"	0-60'/60'	Fresh Water	8.3-9.2	38-100	4-28
12 1/4"	0'-500'/500'	Fresh Water	8.4-8.6	60-70	NC
8 3/4"	500'/500'-4879'/5728'	Fresh Water LSND	9.5-8.8	40-50	8-10

Lybrook O35-2308 02H

SHL: SWSE Sec 35 T23N R8W

255' FSL, 1367' FEL

BHL: SESE Sec 2 T22N R8W

330' FSL, 400' FEL

Sandoval, New Mexico

b) Intermediate Casing Point to TD:

Hole Size (in)	Depth (TVD/MD)	Mud Type	Density (ppg)	Viscosity (sec/qt)	Fluid Loss (cc)
6 1/8"	4879'/5728'- 4814'/10510'	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, & LOGGING

- a) Drill Stem Testing - None anticipated.
- b) Coring - None anticipated.
- c) Mudd 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 +/- 2288 psi based on a 9.0 ppg at 4888' TVD of the horizontal lateral target. 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.

9. ANTICIPATED START DATE AND DURATION OF OPERATIONS

Drilling is estimated to commence on January 1, 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.

Directions from the Intersection of US Hwy 550 & US Hwy 64
in Bloomfield, NM to Encana Oil & Gas (USA) Inc. Lybrook O35-2308 02H
255' FSL & 1367' FEL, Section 35, T23N, R8W, N.M.P.M., San Juan County, NM

Latitude: 36.17684°N Longitude: 107.64676°W Datum: NAD1983

From the intersection of US Hwy 550 & US Hwy 64 in Bloomfield, NM, travel Southerly on US Hwy 550 for 38.7 miles to Mile Marker 112.7;

Go right (Southerly) on County Road #7900 for 4.9 miles to fork in road;

Go straight (South-easterly) remaining on County Road #7900 for 0.2 miles to fork in road;

Go left (North-easterly) exiting County Road #7900 for 1.7 miles to new access on left-hand side of existing roadway which continues for 449' to staked Encana Lybrook O35-2308 02H location.

encana

SAN JUAN COUNTY,
NEW MEXICO

- ⊗ Abandoned
 - ⊗ Abandoned Gas
 - ⊗ Abandoned Oil
 - ⊗ Dry Hole
 - ⊗ GAS
 - ⊗ Injection
 - OIL
- 1 inch = 2,000 feet

Basin Mancos
Gas Pool

26

25

23N
8W

35

36

THE BEAR 2

34

LITTLE B 2

LITTLE B 1

ALAMITO ANR
FEDERAL 1

FEDERAL 35-23-8 1

Lybrook M35-2308 01H
Lybrook M35-2308 02H
Lybrook M35-2308 03H
Lybrook M35-2308 04H

Lybrook O35-2308 01H

Lybrook O35-2308 02H

STATE K 1

FEDERAL G 2

FEDERAL G 1

SOUTH CHACO 5

ALAMITO
GALLUP
POOL

2

GALLO WASH 5

1

SAGE CREEK 1
SAGE CREEK 1

SATCHMO COM 1

SOUTH CHACO UNIT 4

MANCINI 8

BECHTEL 1

MANCINI COM 6

10

11

12

22N
8W

MANCINI 7

0 0.125 0.25 0.5 Miles



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

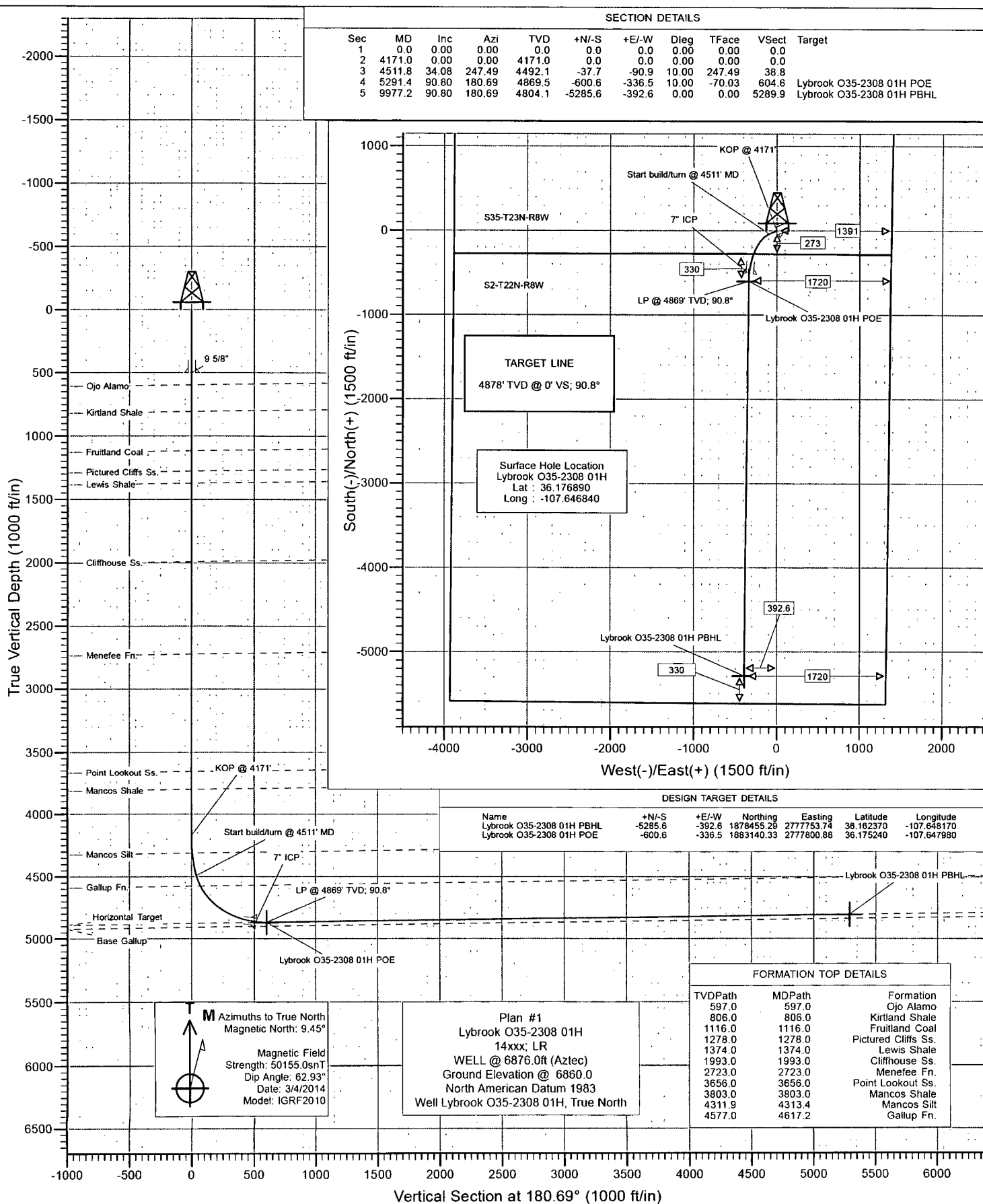
API RELATED VALUES and INTERMEDIATE CALCULATION RESULTS

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

LOC: NE/4 NE/4 Sec 2 T22N R8W, 330' F			Encana Natural Gas				ENG: S Kuykendall		3/19/14	
County: San Juan			WELL SUMMARY				RIG: Aztec 950			
WELL: Lybrook O35-2308 02H							GLE: 6860			
							RKBE: 6876			
MWD	OPEN HOLE	FORM	DEPTH			HOLE	CASING	MW	DEVIATION	
LWD	LOGGING		TVD	MD						SIZE
			60	60'		30	20" 94# 100sx Type I Neat 16.0ppg cmt	Fresh wtr 8.3-9.2		
Multi-Well pad - take survey every stand and run anti- collision report prior to spud	None					12 1/4	9 5/8" 36ppf J55 STC	Fresh wtr	Vertical <1°	
		Nacimiento 9 5/8" Csg	0 500	500.00			TOC Surface - 201 sks of Type III Cement	8.4-8.6		
Survey Every 60"-120', updating anticollision report after surveys. Stop operations and contact drilling engineer if separation factor approaches 1.5	No OH logs	Ojo Alamo Ss. Kirtland Shale	597 806		Stage tool @ ~ 1,424	8 3/4	7" 26ppf J55 LTC	Fresh Wtr	Vertical <1°	
		Fruitland Coal	1,116							
		Pictured Cliffs Ss. Lewis Shale	1,278 1,374							
		Cliffhouse Ss. Menefee Fn.	1,993 2,723							
Surveys every 30' through the curve	Mud logger onsite	Point Lookout Ss. Mancos Shale	3,656 3,803				TOC @ surface 30% OH excess: 717 sksTotal.	8.5-8.8		
							Stage 1 Lead: 251 sks Premium Lite FM + 3% CaCl2 + 0.25/sk Cello Flake + 5#/sk LCM-1 + 8% Bentonite + 0.4% FL- 52A + 0.4% Sodium Metasilicate. Mixed at 12.1 ppg. Yield 2.13 cuft/sk.			
		KOP	4,181				4,181.0			Stage 1 Tail: 467 sks Type III Cement + 1% CaCl2 + 0.25#/sk Cello Flake + 0.2% FL-52A. Mixed at 14.6 ppg. Yield 1.38 cuft/sk.
		Mancos Silt	4,315							124 Stage 2: 168 sks Premium Lite FM + 3% CaCl2 + 0.25/sk Cello Flake + 5#/sk LCM-1 + 8% Bentonite + 0.4% FL-52A + 0.4% Sodium Metasilicate. Mixed at 12.1 ppg. Yield 2.13 cuft/sk.
Surveys every stand to TD unless directed otherwise by Geologist	No OH Logs								Horz Inc/TVD /90.8 deg TD = 10,510.2 MD	
		Horizontal Target TD	4,888 4,814				10,510.2	200' overlap at liner top 4782' Drilled Lateral		Horizontal Inclination Horizontal TVD 8.6-9.0 OBM
		Base Gallup	4,920					4 1/2" 11.6ppf SB80 LTC		Switch to OBM 8.6-9.0
MWD Gamma Directional							Running external swellable csg packers for isolation of prod string Plan on setting top packer with/n 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 4181', 8 3/4 inch holedsize
- 5) PU directional tools and start curve at 10deg/100' build rate
- 6) Drill to csg point of 5728' MD
- 7) R&C 7" csg, circ cmt to surface, switch to OBM
- 8) Land at 90 deg, drill lateral to 10510' run 4 1/2 inch liner with external swellable csg packers



Planning Report

Database: USA EDM 5000 Multi Users DB
Company: EnCana Oil & Gas (USA) Inc
Project: San Juan County, NM
Site: S35-T23N-R8W
Well: Lybrook O35-2308 01H
Wellbore: Hz
Design: Plan #1

Local Co-ordinate Reference: Well Lybrook O35-2308 01H
TVD Reference: WELL @ 6876.0ft (Aztec)
MD Reference: WELL @ 6876.0ft (Aztec)
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	S35-T23N-R8W			
Site Position:		Northing:	1,883,784.09 ft	Latitude: 36.177020
From:	Lat/Long	Easting:	2,775,559.63 ft	Longitude: -107.655570
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence: 0.10 °

Well	Lybrook O35-2308 01H			
Well Position	+N/-S	0.0 ft	Northing:	1,883,741.60 ft
	+E/-W	0.0 ft	Easting:	2,778,136.17 ft
Position Uncertainty	0.0 ft	Wellhead Elevation:	ft	Ground Level: 6,860.0 ft

Wellbore	Hz				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	3/4/2014	9.45	62.93	50,155

Design	Plan #1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	180.69

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	
4,171.0	0.00	0.00	4,171.0	0.0	0.0	0.00	0.00	0.00	0.00	
4,511.8	34.08	247.49	4,492.1	-37.7	-90.9	10.00	10.00	0.00	247.49	
5,291.4	90.80	180.69	4,869.5	-600.6	-336.5	10.00	7.28	-8.57	-70.03	Lybrook O35-2308 01
9,977.2	90.80	180.69	4,804.1	-5,285.6	-392.6	0.00	0.00	0.00	0.00	Lybrook O35-2308 01

Planning Report

Database: USA EDM 5000 Multi Users DB
 Company: EnCana Oil & Gas (USA) Inc
 Project: San Juan County, NM
 Site: S35-T23N-R8W
 Well: Lybrook O35-2308 01H
 Wellbore: Hz
 Design: Plan #1

Local Co-ordinate Reference: Well Lybrook O35-2308 01H
 TVD Reference: WELL @ 6876.0ft (Aztec)
 MD Reference: WELL @ 6876.0ft (Aztec)
 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"
597.0	0.00	0.00	597.0	0.0	0.0	0.0	0.00	0.00	Ojo Alamo
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	
806.0	0.00	0.00	806.0	0.0	0.0	0.0	0.00	0.00	Kirtland Shale
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	
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	
1,116.0	0.00	0.00	1,116.0	0.0	0.0	0.0	0.00	0.00	Fruitland Coal
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	
1,278.0	0.00	0.00	1,278.0	0.0	0.0	0.0	0.00	0.00	Pictured Cliffs Ss.
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	
1,374.0	0.00	0.00	1,374.0	0.0	0.0	0.0	0.00	0.00	Lewis Shale
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	
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	
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	
1,993.0	0.00	0.00	1,993.0	0.0	0.0	0.0	0.00	0.00	Cliffhouse Ss.
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	
2,723.0	0.00	0.00	2,723.0	0.0	0.0	0.0	0.00	0.00	Menefee Fn.
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	
3,300.0	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	
3,656.0	0.00	0.00	3,656.0	0.0	0.0	0.0	0.00	0.00	Point Lookout Ss.
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	
3,803.0	0.00	0.00	3,803.0	0.0	0.0	0.0	0.00	0.00	Mancos Shale
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	
4,100.0	0.00	0.00	4,100.0	0.0	0.0	0.0	0.00	0.00	
4,171.0	0.00	0.00	4,171.0	0.0	0.0	0.0	0.00	0.00	KOP @ 4171'

Planning Report

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 Company: EnCana Oil & Gas (USA) Inc
 Project: San Juan County, NM
 Site: S35-T23N-R8W
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 Wellbore: Hz
 Design: Plan #1

Local Co-ordinate Reference: Well Lybrook O35-2308 01H
 TVD Reference: WELL @ 6876.0ft (Aztec)
 MD Reference: WELL @ 6876.0ft (Aztec)
 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
4,200.0	2.90	247.49	4,200.0	-0.3	-0.7	0.3	10.00	10.00	
4,300.0	12.90	247.49	4,298.9	-5.5	-13.4	5.7	10.00	10.00	
4,313.4	14.24	247.49	4,311.9	-6.7	-16.3	6.9	10.00	10.00	Mancos Silt
4,400.0	22.90	247.49	4,394.0	-17.3	-41.7	17.8	10.00	10.00	
4,500.0	32.90	247.49	4,482.2	-35.2	-84.9	36.2	10.00	10.00	
4,511.8	34.08	247.49	4,492.1	-37.7	-90.9	38.8	10.00	10.00	Start build/turn @ 4511' MD
4,600.0	37.90	233.93	4,563.5	-63.1	-135.7	64.8	10.00	4.33	
4,617.2	38.80	231.58	4,577.0	-69.6	-144.2	71.3	10.00	5.28	Gallup Fn.
4,700.0	43.76	221.50	4,639.3	-107.2	-183.6	109.4	10.00	5.98	
4,800.0	50.69	211.67	4,707.2	-166.2	-226.9	168.9	10.00	6.93	
4,900.0	58.30	203.68	4,765.3	-238.3	-264.4	241.4	10.00	7.61	
5,000.0	66.32	196.95	4,811.8	-321.2	-294.9	324.8	10.00	8.03	
5,100.0	74.61	191.00	4,845.3	-412.6	-317.5	416.4	10.00	8.28	
5,200.0	83.04	185.52	4,864.6	-509.6	-331.5	513.5	10.00	8.43	7" ICP
5,291.4	90.80	180.69	4,869.5	-600.6	-336.5	604.6	10.00	8.49	LP @ 4869' TVD; 90.8°
5,300.0	90.80	180.69	4,869.4	-609.2	-336.6	613.2	0.00	0.00	
5,400.0	90.80	180.69	4,868.0	-709.2	-337.8	713.2	0.00	0.00	
5,500.0	90.80	180.69	4,866.6	-809.2	-339.0	813.2	0.00	0.00	
5,600.0	90.80	180.69	4,865.2	-909.1	-340.1	913.2	0.00	0.00	
5,700.0	90.80	180.69	4,863.8	-1,009.1	-341.3	1,013.2	0.00	0.00	
5,800.0	90.80	180.69	4,862.4	-1,109.1	-342.5	1,113.2	0.00	0.00	
5,900.0	90.80	180.69	4,861.1	-1,209.1	-343.7	1,213.1	0.00	0.00	
6,000.0	90.80	180.69	4,859.7	-1,309.1	-344.9	1,313.1	0.00	0.00	
6,100.0	90.80	180.69	4,858.3	-1,409.1	-346.1	1,413.1	0.00	0.00	
6,200.0	90.80	180.69	4,856.9	-1,509.0	-347.3	1,513.1	0.00	0.00	
6,300.0	90.80	180.69	4,855.5	-1,609.0	-348.5	1,613.1	0.00	0.00	
6,400.0	90.80	180.69	4,854.1	-1,709.0	-349.7	1,713.1	0.00	0.00	
6,500.0	90.80	180.69	4,852.7	-1,809.0	-350.9	1,813.1	0.00	0.00	
6,600.0	90.80	180.69	4,851.3	-1,909.0	-352.1	1,913.1	0.00	0.00	
6,700.0	90.80	180.69	4,849.9	-2,009.0	-353.3	2,013.1	0.00	0.00	
6,800.0	90.80	180.69	4,848.5	-2,108.9	-354.5	2,113.1	0.00	0.00	
6,900.0	90.80	180.69	4,847.1	-2,208.9	-355.7	2,213.0	0.00	0.00	
7,000.0	90.80	180.69	4,845.7	-2,308.9	-356.9	2,313.0	0.00	0.00	
7,100.0	90.80	180.69	4,844.3	-2,408.9	-358.1	2,413.0	0.00	0.00	
7,200.0	90.80	180.69	4,842.9	-2,508.9	-359.3	2,513.0	0.00	0.00	
7,300.0	90.80	180.69	4,841.5	-2,608.9	-360.5	2,613.0	0.00	0.00	
7,400.0	90.80	180.69	4,840.1	-2,708.8	-361.7	2,713.0	0.00	0.00	
7,500.0	90.80	180.69	4,838.7	-2,808.8	-362.9	2,813.0	0.00	0.00	
7,600.0	90.80	180.69	4,837.3	-2,908.8	-364.1	2,913.0	0.00	0.00	
7,700.0	90.80	180.69	4,835.9	-3,008.8	-365.3	3,013.0	0.00	0.00	
7,800.0	90.80	180.69	4,834.5	-3,108.8	-366.5	3,113.0	0.00	0.00	
7,900.0	90.80	180.69	4,833.1	-3,208.8	-367.7	3,213.0	0.00	0.00	
8,000.0	90.80	180.69	4,831.7	-3,308.7	-368.9	3,312.9	0.00	0.00	
8,100.0	90.80	180.69	4,830.3	-3,408.7	-370.1	3,412.9	0.00	0.00	
8,200.0	90.80	180.69	4,828.9	-3,508.7	-371.3	3,512.9	0.00	0.00	
8,300.0	90.80	180.69	4,827.5	-3,608.7	-372.5	3,612.9	0.00	0.00	
8,400.0	90.80	180.69	4,826.1	-3,708.7	-373.7	3,712.9	0.00	0.00	
8,500.0	90.80	180.69	4,824.8	-3,808.7	-374.9	3,812.9	0.00	0.00	
8,600.0	90.80	180.69	4,823.4	-3,908.6	-376.1	3,912.9	0.00	0.00	
8,700.0	90.80	180.69	4,822.0	-4,008.6	-377.3	4,012.9	0.00	0.00	
8,800.0	90.80	180.69	4,820.6	-4,108.6	-378.5	4,112.9	0.00	0.00	
8,900.0	90.80	180.69	4,819.2	-4,208.6	-379.7	4,212.9	0.00	0.00	

Planning Report

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 Wellbore: Hz
 Design: Plan #1

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 MD Reference: WELL @ 6876.0ft (Aztec)
 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
9,000.0	90.80	180.69	4,817.8	-4,308.6	-380.9	4,312.8	0.00	0.00	
9,100.0	90.80	180.69	4,816.4	-4,408.6	-382.1	4,412.8	0.00	0.00	
9,200.0	90.80	180.69	4,815.0	-4,508.5	-383.3	4,512.8	0.00	0.00	
9,300.0	90.80	180.69	4,813.6	-4,608.5	-384.5	4,612.8	0.00	0.00	
9,400.0	90.80	180.69	4,812.2	-4,708.5	-385.7	4,712.8	0.00	0.00	
9,500.0	90.80	180.69	4,810.8	-4,808.5	-386.9	4,812.8	0.00	0.00	
9,600.0	90.80	180.69	4,809.4	-4,908.5	-388.1	4,912.8	0.00	0.00	
9,700.0	90.80	180.69	4,808.0	-5,008.5	-389.3	5,012.8	0.00	0.00	
9,800.0	90.80	180.69	4,806.6	-5,108.4	-390.5	5,112.8	0.00	0.00	
9,900.0	90.80	180.69	4,805.2	-5,208.4	-391.7	5,212.8	0.00	0.00	
9,977.2	90.80	180.69	4,804.1	-5,285.6	-392.6	5,289.9	0.00	0.00	TD at 9977.2

Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- hit/miss target									
- Shape									
Lybrook O35-2308 01H I	0.00	0.00	4,804.1	-5,285.6	-392.6	1,878,455.29	2,777,753.74	36.162370	-107.648170
- plan hits target center									
- Point									
Lybrook O35-2308 01H I	0.00	0.00	4,869.5	-600.6	-336.5	1,883,140.33	2,777,800.88	36.175240	-107.647980
- plan hits target center									
- Point									

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)
500.0	500.0	9 5/8"	0.000	0.000
5,200.0	4,864.6	7" ICP	0.000	0.000

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
597.0	597.0	Ojo Alamo		-0.80	180.69
806.0	806.0	Kirtland Shale		-0.80	180.69
1,116.0	1,116.0	Fruitland Coal		-0.80	180.69
1,278.0	1,278.0	Pictured Cliffs Ss.		-0.80	180.69
1,374.0	1,374.0	Lewis Shale		-0.80	180.69
1,993.0	1,993.0	Cliffhouse Ss.		-0.80	180.69
2,723.0	2,723.0	Menefee Fn.		-0.80	180.69
3,656.0	3,656.0	Point Lookout Ss.		-0.80	180.69
3,803.0	3,803.0	Mancos Shale		-0.80	180.69
4,313.4	4,312.0	Mancos Silt		-0.80	180.69
4,617.2	4,578.0	Gallup Fn.		-0.80	180.69

Planning Report

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Company: EnCana Oil & Gas (USA) Inc
Project: San Juan County, NM
Site: S35-T23N-R8W
Well: Lybrook O35-2308 01H
Wellbore: Hz
Design: Plan #1

Local Co-ordinate Reference: Well Lybrook O35-2308 01H
TVD Reference: WELL @ 6876.0ft (Aztec)
MD Reference: WELL @ 6876.0ft (Aztec)
North Reference: True
Survey Calculation Method: Minimum Curvature

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
4,171.0	4,171.0	0.0	0.0	KOP @ 4171'
4,511.8	4,492.1	-37.7	-90.9	Start build/turn @ 4511' MD
5,291.4	4,869.5	-600.6	-336.5	LP @ 4869' TVD; 90.8°
9,977.2	4,804.1	-5,285.6	-392.6	TD at 9977.2

EnCana Oil & Gas (USA) Inc

San Juan County, NM

S35-T23N-R8W

Lybrook O35-2308 01H

Hz

Plan #1

Anticollision Report

04 March, 2014

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Lybrook O35-2308 01H
Project:	San Juan County, NM	TVD Reference:	WELL @ 6876.0ft (Aztec)
Reference Site:	S35-T23N-R8W	MD Reference:	WELL @ 6876.0ft (Aztec)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Lybrook O35-2308 01H	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:	GLOBAL FILTER APPLIED: All wellpaths within 200'+ 100/1000 of reference		
Interpolation Method:	MD Interval 100.0ft	Error Model:	Systematic Ellipse
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 1,197.7ft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma		

Survey Tool Program	Date	3/4/2014		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	9,976.3	Plan #1 (Hz)	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						
S35-T23N-R8W						
Lybrook O35-2308 02H - Hz - Plan #1	4,100.0	4,100.0	29.8	15.6	2.091	CC, ES
Lybrook O35-2308 02H - Hz - Plan #1	4,200.0	4,199.2	30.4	15.8	2.084	SF

Anticollision Report

Company: EnCana Oil & Gas (USA) Inc
Project: San Juan County, NM
Reference Site: S35-T23N-R8W
Site Error: 0.0ft
Reference Well: Lybrook O35-2308 01H
Well Error: 0.0ft
Reference Wellbore: Hz
Reference Design: Plan #1

Local Co-ordinate Reference: Well Lybrook O35-2308 01H
TVD Reference: WELL @ 6876.0ft (Aztec)
MD Reference: WELL @ 6876.0ft (Aztec)
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 S35-T23N-R8W - Lybrook O35-2308 02H - Hz - Plan #1														Offset Site Error:	0.0 ft
Survey Program: O-Geolink MWD														Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Total Uncertainty Axis	Separation Factor	Warning				
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)				Between Centres (ft)	Between Ellipses (ft)		
0.0	0.0	0.0	0.0	0.0	0.0	127.63	-18.2	23.6	29.8						
100.0	100.0	100.0	100.0	0.1	0.1	127.63	-18.2	23.6	29.8	29.5	0.29	101.670			
200.0	200.0	200.0	200.0	0.3	0.3	127.63	-18.2	23.6	29.8	29.2	0.64	46.415			
300.0	300.0	300.0	300.0	0.5	0.5	127.63	-18.2	23.6	29.8	28.8	0.99	30.072			
400.0	400.0	400.0	400.0	0.7	0.7	127.63	-18.2	23.6	29.8	28.5	1.34	22.240			
500.0	500.0	500.0	500.0	0.8	0.8	127.63	-18.2	23.6	29.8	28.1	1.69	17.645			
600.0	600.0	600.0	600.0	1.0	1.0	127.63	-18.2	23.6	29.8	27.8	2.04	14.624			
700.0	700.0	700.0	700.0	1.2	1.2	127.63	-18.2	23.6	29.8	27.4	2.39	12.486			
800.0	800.0	800.0	800.0	1.4	1.4	127.63	-18.2	23.6	29.8	27.1	2.74	10.893			
900.0	900.0	900.0	900.0	1.5	1.5	127.63	-18.2	23.6	29.8	26.7	3.09	9.661			
1,000.0	1,000.0	1,000.0	1,000.0	1.7	1.7	127.63	-18.2	23.6	29.8	26.4	3.43	8.679			
1,100.0	1,100.0	1,100.0	1,100.0	1.9	1.9	127.63	-18.2	23.6	29.8	26.0	3.78	7.879			
1,200.0	1,200.0	1,200.0	1,200.0	2.1	2.1	127.63	-18.2	23.6	29.8	25.7	4.13	7.213			
1,300.0	1,300.0	1,300.0	1,300.0	2.2	2.2	127.63	-18.2	23.6	29.8	25.3	4.48	6.651			
1,400.0	1,400.0	1,400.0	1,400.0	2.4	2.4	127.63	-18.2	23.6	29.8	25.0	4.83	6.171			
1,500.0	1,500.0	1,500.0	1,500.0	2.6	2.6	127.63	-18.2	23.6	29.8	24.6	5.18	5.755			
1,600.0	1,600.0	1,600.0	1,600.0	2.8	2.8	127.63	-18.2	23.6	29.8	24.3	5.53	5.392			
1,700.0	1,700.0	1,700.0	1,700.0	2.9	2.9	127.63	-18.2	23.6	29.8	23.9	5.88	5.071			
1,800.0	1,800.0	1,800.0	1,800.0	3.1	3.1	127.63	-18.2	23.6	29.8	23.6	6.23	4.787			
1,900.0	1,900.0	1,900.0	1,900.0	3.3	3.3	127.63	-18.2	23.6	29.8	23.2	6.58	4.533			
2,000.0	2,000.0	2,000.0	2,000.0	3.5	3.5	127.63	-18.2	23.6	29.8	22.9	6.93	4.305			
2,100.0	2,100.0	2,100.0	2,100.0	3.6	3.6	127.63	-18.2	23.6	29.8	22.5	7.27	4.098			
2,200.0	2,200.0	2,200.0	2,200.0	3.8	3.8	127.63	-18.2	23.6	29.8	22.2	7.62	3.910			
2,300.0	2,300.0	2,300.0	2,300.0	4.0	4.0	127.63	-18.2	23.6	29.8	21.8	7.97	3.739			
2,400.0	2,400.0	2,400.0	2,400.0	4.2	4.2	127.63	-18.2	23.6	29.8	21.5	8.32	3.582			
2,500.0	2,500.0	2,500.0	2,500.0	4.3	4.3	127.63	-18.2	23.6	29.8	21.1	8.67	3.438			
2,600.0	2,600.0	2,600.0	2,600.0	4.5	4.5	127.63	-18.2	23.6	29.8	20.8	9.02	3.305			
2,700.0	2,700.0	2,700.0	2,700.0	4.7	4.7	127.63	-18.2	23.6	29.8	20.4	9.37	3.182			
2,800.0	2,800.0	2,800.0	2,800.0	4.9	4.9	127.63	-18.2	23.6	29.8	20.1	9.72	3.068			
2,900.0	2,900.0	2,900.0	2,900.0	5.0	5.0	127.63	-18.2	23.6	29.8	19.7	10.07	2.961			
3,000.0	3,000.0	3,000.0	3,000.0	5.2	5.2	127.63	-18.2	23.6	29.8	19.4	10.42	2.862			
3,100.0	3,100.0	3,100.0	3,100.0	5.4	5.4	127.63	-18.2	23.6	29.8	19.0	10.77	2.769			
3,200.0	3,200.0	3,200.0	3,200.0	5.6	5.6	127.63	-18.2	23.6	29.8	18.7	11.11	2.682			
3,300.0	3,300.0	3,300.0	3,300.0	5.7	5.7	127.63	-18.2	23.6	29.8	18.3	11.46	2.601			
3,400.0	3,400.0	3,400.0	3,400.0	5.9	5.9	127.63	-18.2	23.6	29.8	18.0	11.81	2.524			
3,500.0	3,500.0	3,500.0	3,500.0	6.1	6.1	127.63	-18.2	23.6	29.8	17.6	12.16	2.451			
3,600.0	3,600.0	3,600.0	3,600.0	6.3	6.3	127.63	-18.2	23.6	29.8	17.3	12.51	2.383			
3,700.0	3,700.0	3,700.0	3,700.0	6.4	6.4	127.63	-18.2	23.6	29.8	17.0	12.86	2.318			
3,800.0	3,800.0	3,800.0	3,800.0	6.6	6.6	127.63	-18.2	23.6	29.8	16.6	13.21	2.257			
3,900.0	3,900.0	3,900.0	3,900.0	6.8	6.8	127.63	-18.2	23.6	29.8	16.3	13.56	2.199			
4,000.0	4,000.0	4,000.0	4,000.0	7.0	7.0	127.63	-18.2	23.6	29.8	15.9	13.91	2.144			
4,100.0	4,100.0	4,100.0	4,100.0	7.1	7.1	127.63	-18.2	23.6	29.8	15.6	14.26	2.091 CC, ES			
4,150.8	4,150.8	4,150.8	4,150.8	7.2	7.2	-120.93	-18.2	23.6	30.1	15.7	14.43	2.088			
4,200.0	4,200.0	4,199.2	4,199.2	7.3	7.3	-121.29	-18.2	23.9	30.4	15.8	14.60	2.084 SF			
4,300.0	4,298.9	4,290.4	4,289.7	7.5	7.5	-140.01	-18.4	34.0	49.9	35.1	14.79	3.376			
4,400.0	4,394.0	4,365.5	4,362.3	7.7	7.6	-150.95	-18.8	53.0	99.9	85.2	14.66	6.815			
4,500.0	4,482.2	4,419.6	4,412.8	8.1	7.8	-153.07	-19.2	72.5	172.8	158.5	14.31	12.073			
4,600.0	4,563.5	4,450.0	4,440.2	8.6	7.9	-132.07	-19.4	85.6	257.1	241.9	15.11	17.012			
4,700.0	4,639.3	4,485.9	4,471.8	9.3	8.0	-113.64	-19.8	102.8	343.1	326.8	16.32	21.031			
4,800.0	4,707.2	4,500.0	4,483.8	10.1	8.0	-94.91	-19.9	110.1	430.0	412.3	17.67	24.333			
4,900.0	4,765.3	4,524.1	4,504.0	11.1	8.2	-82.42	-20.2	123.2	515.9	497.2	18.67	27.633			
5,000.0	4,811.8	4,535.8	4,513.5	12.2	8.2	-71.30	-20.3	129.9	600.0	580.8	19.22	31.217			

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

Anticollision Report

Company: EnCana Oil & Gas (USA) Inc
 Project: San Juan County, NM
 Reference Site: S35-T23N-R8W
 Site Error: 0.0ft
 Reference Well: Lybrook O35-2308 01H
 Well Error: 0.0ft
 Reference Wellbore: Hz
 Reference Design: Plan #1

Local Co-ordinate Reference: Well Lybrook O35-2308 01H
 TVD Reference: WELL @ 6876.0ft (Aztec)
 MD Reference: WELL @ 6876.0ft (Aztec)
 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 S35-T23N-R8W - Lybrook O35-2308 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		
5,100.0	4,845.3	4,550.0	4,525.0	13.4	8.3	-63.78	-20.5	138.3	681.2	661.8	19.45	35.019		
5,200.0	4,864.6	4,550.0	4,525.0	14.7	8.3	-57.05	-20.5	138.3	758.5	739.2	19.26	39.391		
5,300.0	4,869.4	4,550.0	4,525.0	15.9	8.3	-52.99	-20.5	138.3	831.1	812.0	19.10	43.505		
5,400.0	4,868.0	4,550.0	4,525.0	17.3	8.3	-52.99	-20.5	138.3	904.8	884.5	20.28	44.619		
5,500.0	4,866.6	4,550.0	4,525.0	18.7	8.3	-52.99	-20.5	138.3	983.1	961.6	21.49	45.740		
5,600.0	4,865.2	4,550.0	4,525.0	20.2	8.3	-52.99	-20.5	138.3	1,065.1	1,042.3	22.74	46.836		
5,700.0	4,863.8	4,550.0	4,525.0	21.7	8.3	-52.99	-20.5	138.3	1,149.9	1,125.9	24.01	47.888		

Anticollision Report

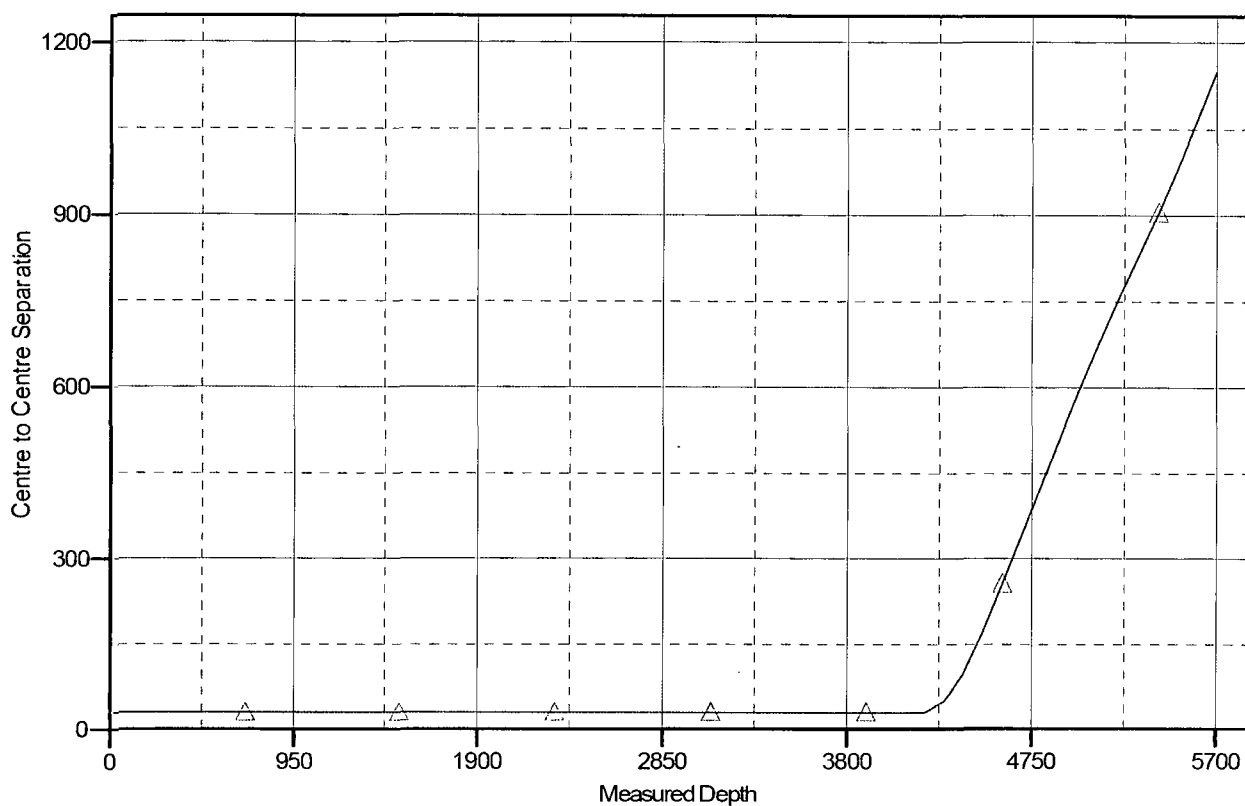
Company: EnCana Oil & Gas (USA) Inc
Project: San Juan County, NM
Reference Site: S35-T23N-R8W
Site Error: 0.0ft
Reference Well: Lybrook O35-2308 01H
Well Error: 0.0ft
Reference Wellbore: Hz
Reference Design: Plan #1

Local Co-ordinate Reference: Well Lybrook O35-2308 01H
TVD Reference: WELL @ 6876.0ft (Aztec)
MD Reference: WELL @ 6876.0ft (Aztec)
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 @ 6876.0ft (Aztec)
 Offset Depths are relative to Offset Datum
 Central Meridian is -107.833333 °

Coordinates are relative to: Lybrook O35-2308 01H
 Coordinate System is US State Plane 1983, New Mexico Western Zone
 Grid Convergence at Surface is: 0.11°

Ladder Plot



LEGEND

Lybrook O35-2308 02H, Hz, Plan #1 V0