

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: 3-18-14

Well information;

Operator Encana, Well Name and Number LYBROOK W35-2308 # 1H

API# 30-045-35520 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

Approved TD = 10,004.5 ft.
per email 5/12/14
Sunday to connect TD Required

- ☐ 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 Perin
NMOCD Approved by Signature

5-15-2014
Date

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

MAR 21 2014

APPLICATION FOR PERMIT TO DRILL OR REENTER

Examining Field Office

Bureau of Land Management

5. Lease Serial No. **NMNM-048989A**
NM-76842, NMNM-48989A

6. If Indian, Allottee or Tribe Name
N/A

7. If Unit or CA Agreement, Name and No.
Pending

8. Lease Name and Well No.
Lybrook M35-2308 01H

9. API Well No.
30-045-35526

10. Field and Pool, or Exploratory
Alamito-Gallup

11. Sec., T. R. M. or Blk. and Survey or Area
Section 35, T23N, R8W NMPM

12. County or Parish
San Juan

13. State
NM

1a. Type of work: ☒ DRILL

☐ REENTER

1b. Type of Well: ☒ Oil Well ☐ Gas Well ☐ Other

☐ Single Zone ☐ Multiple Zone

2. Name of Operator **Encana Oil & Gas (USA) Inc.**

3a. Address **370 17th Street, Suite 1700 Denver, CO 80202**

3b. Phone No. (include area code)
(720) 876-3448

4. Location of Well (Report location clearly and in accordance with any State requirements.)*

At surface **316' FSL and 1298' FWL in Section 35, T23N, R8W**

At proposed prod. zone **330' FSL and 920' FWL in Section 2, T22N, R8W**

14. Distance in miles and direction from nearest town or post office*
+/- 45.3 miles south of intersection of US Hwy 550 & US Hwy 64 in Bloomfield, NM

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any)
SHL 316' from south lease line

16. No. of acres in lease.
NM76842- 640 acres
NMNM 48989A- 643.2 acres

17. Spacing Unit dedicated to this well
160.5 acres W2W2 Section 2

OIL CONS. DIV DIST. 3

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.
Lybrook M35-2308 03H is +/- 30' E of SHL

19. Proposed Depth
4792' TVD, 10081' MD

20. BLM/BIA Bond No. on file
COB-000235

MAY 02 2014

21. Elevations (Show whether DF, KDB, RT, GL, etc.)
6879', KB 6895'

22. Approximate date work will start*
09/11/2014

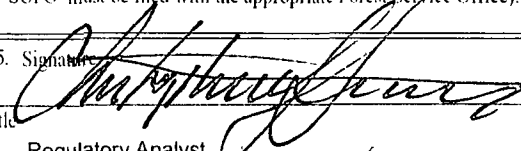
23. Estimated duration
20 days

24. Attachments

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

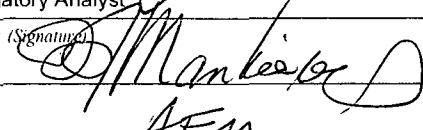
1. Well plat certified by a registered surveyor.
2. A Drilling Plan.
3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office).

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 
Title **Regulatory Analyst**

Name (Printed/Typed)
Christopher Simmons

Date
03-18-14

Approved by (Signature) 
Title **AFN**

Name (Printed/Typed)

Office

FEO

Date
4/29/14

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.

Continued on page 2
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

*(Instructions on page 2)

NMOCDA

This action is subject to technical and procedural review pursuant to 43 CFR 3165.3 and appeal pursuant to 43 CFR 3165.4

DRILLING OPERATIONS AUTHORIZED ARE SUBJECT TO COMPLIANCE WITH ATTACHED "GENERAL REQUIREMENTS".

Lybrook M35-2308 01H
 SHL: SWSW Sec 35 T23N R8W
 316' FSL, 1298' FWL
 BHL: SWSW Sec 2 T22N R8W
 330' FSL, 920' FWL
 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.	600
Kirtland Shale	791
Fruitland Coal	1,131
Pictured Cliffs Ss.	1,271
Lewis Shale	1,367
Cliffhouse Ss.	2,009
Menefee Fn.	2,720
Point Lookout Ss.	3,658
Mancos Shale	3,802
Mancos Silt	4,310
Gallup Fn.	4,566

The referenced surface elevation is 6879', KB 6895'

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

Substance	Formation	Depth (TVD) units = feet
Water/Gas	Fruitland Coal	1,131
Oil/Gas	Pictured Cliffs Ss.	1,271
Oil/Gas	Cliffhouse Ss.	2,009
Gas	Menefee Fn.	2,720
Oil/Gas	Point Lookout Ss.	3,658
Oil/Gas	Mancos Shale	3,802
Oil/Gas	Mancos Silt	4,310
Oil/Gas	Gallup Fn.	4,566

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 M35-2308 01H

SHL: SWSW Sec 35 T23N R8W

316' FSL, 1298' FWL

BHL: SWSW Sec 2 T22N R8W

330' FSL, 920' FWL

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'-5247'	8 3/4"	7"	26#	J55, LTC New
Production Liner	5047'-10081'	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 M35-2308 01H
 SHL: SWSW Sec 35 T23N R8W
 316' FSL, 1298' FWL
 BHL: SWSW Sec 2 T22N R8W
 330' FSL, 920' FWL
 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, 1.38cuf/sk	Surface	1 per joint on bottom 3 joints
Intermediate	0'-5247'	30% open hole excess Stage 1 Lead: 249 sks Stage 1 Tail: 400 sks Stage 2 Lead: 124 sks	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 every 3 joints through water bearing zones
Production Liner	5047'-10081'	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 4215'. Directional plans are attached.

Description	Proposed Depth (TVD/MD)	Formation
Horizontal Lateral TD	4792'/10081'	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'-4854'/5247'	Fresh Water LSND	9.5-8.8	40-50	8-10

Lybrook M35-2308 01H

SHL: SWSW Sec 35 T23N R8W

316' FSL, 1298' FWL

BHL: SWSW Sec 2 T22N R8W

330' FSL, 920' FWL

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"	4854'/5247'- 4792'/10081'	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 +/- 2278 psi based on a 9.0 ppg at 4867' 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.

LOC: NW/4 NW/4 Sec 2 T22N R8W, 330'			Encana Natural Gas				ENG: S Kuykendall RIG: Aztec 950 GLE: 6879 RKBE: 6895		3/18/14	
County: San Juan			WELL SUMMARY							
WELL: Lybrook M35-2308 01H										
MWD LWD	OPEN HOLE LOGGING	FORM	DEPTH TVDMD			HOLE SIZE	CASING SPECS	MW MUD TYPE	DEVIATION INFORMATION	
			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	Nacimiento 9 5/8" Csg	0 500	500.00		12 1/4	9 5/8" 36ppf J55 STC TOC Surface - 201 sks of Type III Cement	Fresh wtr 8.4-8.6	Vertical <1°	
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 Fruitland Coal Pictured Cliffs Ss. Lewis Shale Cliffhouse Ss. Menefee Fn. Point Lookout Ss. Mancos Shale	800 791 1,131 1,271 1,387 2,009 2,720 3,658 3,802		Stage tool @ - 1,417	8 3/4	7" 26ppf J55 LTC TOC @ surface 30% OH excess: 650 sksTotal. Stage 1 Lead: 249 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. Stage 1 Tail: 400 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. 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.	Fresh Wtr 8.5-8.8	Vertical <1°	
Surveys every 30' through the curve	Mud logger onsite	KOP Mancos Silt Gallup Fn. 7" Csg	4,215 4,310 4,566 4,854	4,215.2 5,247'						
Surveys every stand to TD unless directed otherwise by Geologist	No OH Logs	Horizontal Target TD Base Gallup	4,867 4,792 4,900	10,080.7		6 1/8	200' overlap at liner top 4834' Drilled Lateral	Horizontal Inclination Horizontal TVD 8.6-9.0 OBM	Horz Inc/TVD /90.8 deg TD = 10,080.7 MD	
MWD Gamma Directional							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	Switch to OBM 8.6-9.0		

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) NU BOP and surface equipment
- 4) Drill to KOP of 4215', 8 3/4 inch holesize
- 5) PU directional tools and start curve at 10deg/100' build rate
- 6) Drill to csg point of 5247' MD
- 7) R&C 7" csg, circ cmt to surface, switch to OBM
- 8) Land at 90 deg, drill lateral to 10081' run 4 1/2 inch liner with external swellable csg packers

Directions from the Intersection of US Hwy 550 & US Hwy 64

in Bloomfield, NM to Encana Oil & Gas (USA) Inc. Lybrook M35-2308 01H

316' FSL & 1298' FWL, Section 35, T23N, R8W, N.M.P.M., San Juan County, NM

Latitude: 36.17702°N Longitude: 107.65557°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 1.4 miles to fork in road;

Go left (Northerly) for 0.1 miles to new access on left-hand side of existing roadway which continues for 375' to staked Encana Lybrook M35-2308 01H location.

encana

SAN JUAN COUNTY,
NEW MEXICO

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

THE BEAR 2

Lybrook M35-2308 01H

Lybrook M35-2308 02H
Lybrook M35-2308 03H

Lybrook M35-2308 04H

26

25

23N
8W

LITTLE B 10

36

33

34

35

4

Lybrook H04-2208 01H

FEDERAL 4-22-8 1

SATCHMO COM 2

SATCHMO COM 1

SAGE CREEK 1
SAGE CREEK 1

SOUTH CHACO UNIT 4

MANCINI 8

BECHTEL 1

MANCINI COM 6

GILLESPIE COM 1

MANCINI 7

**ALAMITO
GALLUP
POOL**

ALAMITO ANR

FEDERAL 35-23-8 1

FEDERAL 1



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

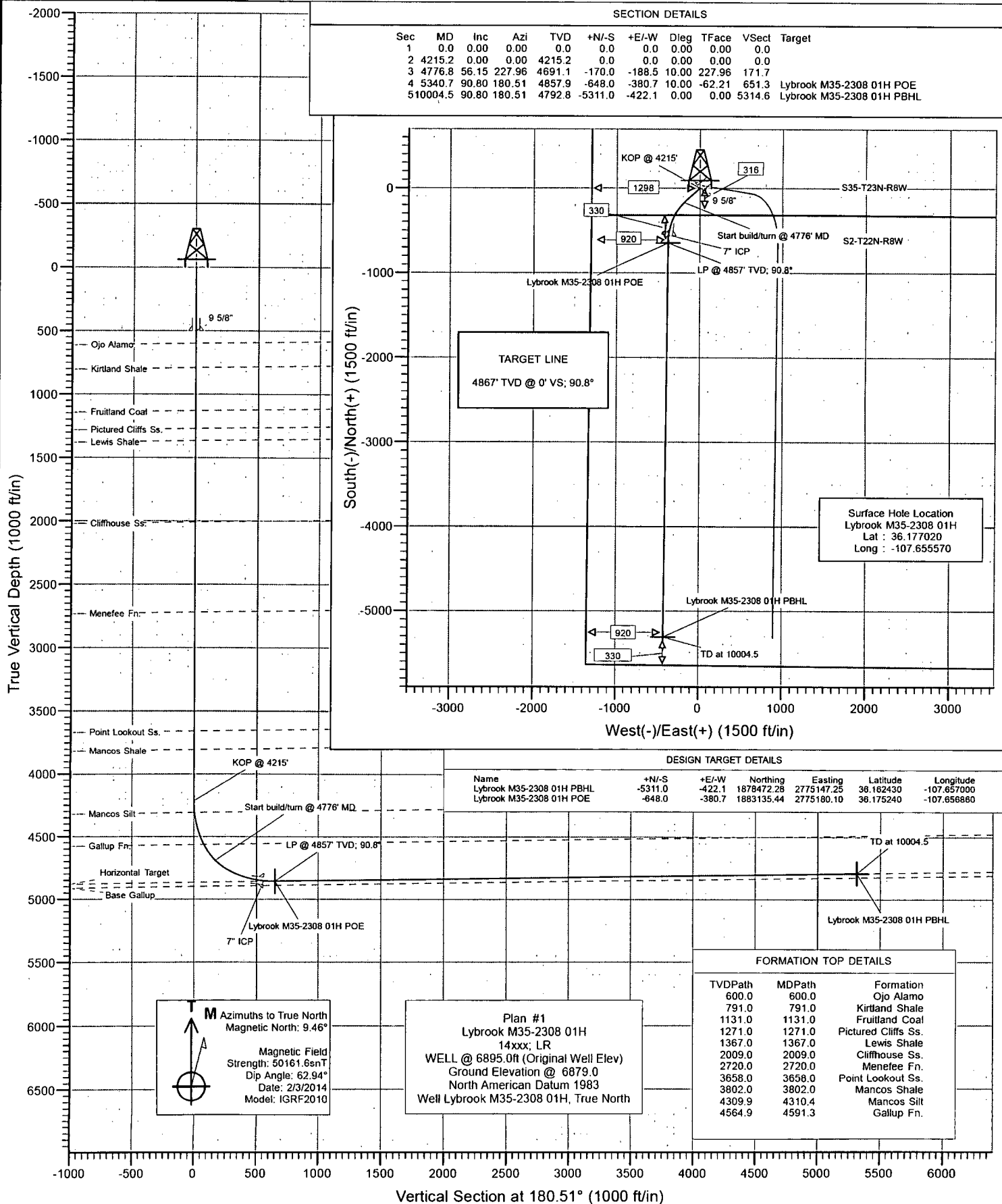
Drilling Mud Weight (ppg)	_____	9.625
Tension Safety Factor	_____	1.80
Maximum Tension Length (ft)	_____	9,630
Internal Yield Safety Factor	_____	1.10
Maximum Depth for Internal Yield (ft)	_____	14,150
Collapse Safety Factor	_____	1.125
Maximum Collapse Depth (ft)	_____	11,290

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



Project: San Juan County, NM
 Site: S35-T23N-R8W
 Well: Lybrook M35-2308 01H
 Wellbore: Hz
 Design: Plan #1



Cathedral Energy Services

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 M35-2308 01H
 Wellbore: Hz
 Design: Plan #1

Local Co-ordinate Reference: Well Lybrook M35-2308 01H
 TVD Reference: WELL @ 6895.0ft (Original Well Elev)
 MD Reference: WELL @ 6895.0ft (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	S35-T23N-R8W		
Site Position:	Lat/Long	Northing: 1,883,784.09 ft	Latitude: 36.177020
From:		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 M35-2308 01H		
Well Position	+N/-S 0.0 ft	Northing: 1,883,784.09 ft	Latitude: 36.177020
	+E/-W 0.0 ft	Easting: 2,775,559.63 ft	Longitude: -107.655570
Position Uncertainty	0.0 ft	Wellhead Elevation: ft	Ground Level: 6,879.0 ft

Wellbore	Hz				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	2/3/2014	9.46	62.94	50,162

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	0.0 180.51

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	
4,215.2	0.00	0.00	4,215.2	0.0	0.0	0.00	0.00	0.00	0.00	
4,776.8	56.15	227.96	4,691.1	-170.0	-188.5	10.00	10.00	0.00	227.96	
5,340.7	90.80	180.51	4,857.9	-648.0	-380.7	10.00	6.14	-8.41	-62.21	Lybrook M35-2308 01
10,004.5	90.80	180.51	4,792.8	-5,311.0	-422.1	0.00	0.00	0.00	0.00	Lybrook M35-2308 01

Cathedral Energy Services

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 M35-2308 01H
 Wellbore: Hz
 Design: Plan #1

Local Co-ordinate Reference: Well Lybrook M35-2308 01H
 TVD Reference: WELL @ 6895.0ft (Original Well Elev)
 MD Reference: WELL @ 6895.0ft (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	Ojo Alamo
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	
791.0	0.00	0.00	791.0	0.0	0.0	0.0	0.00	0.00	Kirtland Shale
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	
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	
1,131.0	0.00	0.00	1,131.0	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	
1,271.0	0.00	0.00	1,271.0	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	
1,367.0	0.00	0.00	1,367.0	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	
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	
2,009.0	0.00	0.00	2,009.0	0.0	0.0	0.0	0.00	0.00	Cliffhouse Ss.
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	
2,720.0	0.00	0.00	2,720.0	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	
3,658.0	0.00	0.00	3,658.0	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	
3,802.0	0.00	0.00	3,802.0	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	
4,200.0	0.00	0.00	4,200.0	0.0	0.0	0.0	0.00	0.00	
4,215.2	0.00	0.00	4,215.2	0.0	0.0	0.0	0.00	0.00	KOP @ 4215'

Cathedral Energy Services

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 M35-2308 01H
Wellbore: Hz
Design: Plan #1

Local Co-ordinate Reference: Well Lybrook M35-2308 01H
TVD Reference: WELL @ 6895.0ft (Original Well Elev)
MD Reference: WELL @ 6895.0ft (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	8.48	227.96	4,299.7	-4.2	-4.7	4.2	10.00	10.00	
4,310.4	9.52	227.96	4,309.9	-5.3	-5.9	5.3	10.00	10.00	Mancos Silt
4,400.0	18.48	227.96	4,396.8	-19.8	-21.9	20.0	10.00	10.00	
4,500.0	28.48	227.96	4,488.4	-46.4	-51.5	46.9	10.00	10.00	
4,591.3	37.61	227.96	4,564.9	-79.7	-88.4	80.5	10.00	10.00	Gallup Fn.
4,600.0	38.48	227.96	4,571.7	-83.3	-92.4	84.1	10.00	10.00	
4,700.0	48.47	227.96	4,644.2	-129.3	-143.4	130.6	10.00	10.00	
4,776.8	56.15	227.96	4,691.1	-170.0	-188.5	171.7	10.00	10.00	Start build/turn @ 4776' MD
4,800.0	57.26	225.52	4,703.8	-183.3	-202.7	185.1	10.00	4.76	
4,900.0	62.51	215.68	4,754.1	-249.0	-258.7	251.3	10.00	5.25	
5,000.0	68.39	206.78	4,795.7	-326.7	-305.6	329.4	10.00	5.88	
5,100.0	74.70	198.61	4,827.4	-414.1	-342.0	417.1	10.00	6.31	
5,200.0	81.30	190.92	4,848.2	-508.6	-366.9	511.8	10.00	6.59	
5,247.0	84.45	187.41	4,854.0	-554.6	-374.3	557.9	10.00	6.72	7" ICP
5,300.0	88.04	183.50	4,857.5	-607.3	-379.3	610.6	10.00	6.76	
5,340.7	90.80	180.51	4,857.9	-648.0	-380.7	651.3	10.00	6.78	LP @ 4857' TVD; 90.8°
5,400.0	90.80	180.51	4,857.1	-707.2	-381.2	710.6	0.00	0.00	
5,500.0	90.80	180.51	4,855.7	-807.2	-382.1	810.6	0.00	0.00	
5,600.0	90.80	180.51	4,854.3	-907.2	-383.0	910.6	0.00	0.00	
5,700.0	90.80	180.51	4,852.9	-1,007.2	-383.9	1,010.5	0.00	0.00	
5,800.0	90.80	180.51	4,851.5	-1,107.2	-384.8	1,110.5	0.00	0.00	
5,900.0	90.80	180.51	4,850.1	-1,207.1	-385.7	1,210.5	0.00	0.00	
6,000.0	90.80	180.51	4,848.7	-1,307.1	-386.6	1,310.5	0.00	0.00	
6,100.0	90.80	180.51	4,847.3	-1,407.1	-387.5	1,410.5	0.00	0.00	
6,200.0	90.80	180.51	4,845.9	-1,507.1	-388.3	1,510.5	0.00	0.00	
6,300.0	90.80	180.51	4,844.5	-1,607.1	-389.2	1,610.5	0.00	0.00	
6,400.0	90.80	180.51	4,843.1	-1,707.1	-390.1	1,710.5	0.00	0.00	
6,500.0	90.80	180.51	4,841.7	-1,807.1	-391.0	1,810.5	0.00	0.00	
6,600.0	90.80	180.51	4,840.3	-1,907.0	-391.9	1,910.5	0.00	0.00	
6,700.0	90.80	180.51	4,838.9	-2,007.0	-392.8	2,010.4	0.00	0.00	
6,800.0	90.80	180.51	4,837.5	-2,107.0	-393.7	2,110.4	0.00	0.00	
6,900.0	90.80	180.51	4,836.1	-2,207.0	-394.6	2,210.4	0.00	0.00	
7,000.0	90.80	180.51	4,834.7	-2,307.0	-395.4	2,310.4	0.00	0.00	
7,100.0	90.80	180.51	4,833.3	-2,407.0	-396.3	2,410.4	0.00	0.00	
7,200.0	90.80	180.51	4,831.9	-2,507.0	-397.2	2,510.4	0.00	0.00	
7,300.0	90.80	180.51	4,830.5	-2,606.9	-398.1	2,610.4	0.00	0.00	
7,400.0	90.80	180.51	4,829.1	-2,706.9	-399.0	2,710.4	0.00	0.00	
7,500.0	90.80	180.51	4,827.8	-2,806.9	-399.9	2,810.4	0.00	0.00	
7,600.0	90.80	180.51	4,826.4	-2,906.9	-400.8	2,910.4	0.00	0.00	
7,700.0	90.80	180.51	4,825.0	-3,006.9	-401.7	3,010.3	0.00	0.00	
7,800.0	90.80	180.51	4,823.6	-3,106.9	-402.5	3,110.3	0.00	0.00	
7,900.0	90.80	180.51	4,822.2	-3,206.9	-403.4	3,210.3	0.00	0.00	
8,000.0	90.80	180.51	4,820.8	-3,306.9	-404.3	3,310.3	0.00	0.00	
8,100.0	90.80	180.51	4,819.4	-3,406.8	-405.2	3,410.3	0.00	0.00	
8,200.0	90.80	180.51	4,818.0	-3,506.8	-406.1	3,510.3	0.00	0.00	
8,300.0	90.80	180.51	4,816.6	-3,606.8	-407.0	3,610.3	0.00	0.00	
8,400.0	90.80	180.51	4,815.2	-3,706.8	-407.9	3,710.3	0.00	0.00	
8,500.0	90.80	180.51	4,813.8	-3,806.8	-408.8	3,810.3	0.00	0.00	
8,600.0	90.80	180.51	4,812.4	-3,906.8	-409.6	3,910.3	0.00	0.00	
8,700.0	90.80	180.51	4,811.0	-4,006.8	-410.5	4,010.3	0.00	0.00	
8,800.0	90.80	180.51	4,809.6	-4,106.7	-411.4	4,110.2	0.00	0.00	
8,900.0	90.80	180.51	4,808.2	-4,206.7	-412.3	4,210.2	0.00	0.00	

Cathedral Energy Services

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 M35-2308 01H
Wellbore: Hz
Design: Plan #1

Local Co-ordinate Reference: Well Lybrook M35-2308 01H
TVD Reference: WELL @ 6895.0ft (Original Well Elev)
MD Reference: WELL @ 6895.0ft (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
9,000.0	90.80	180.51	4,806.8	-4,306.7	-413.2	4,310.2	0.00	0.00	
9,100.0	90.80	180.51	4,805.4	-4,406.7	-414.1	4,410.2	0.00	0.00	
9,200.0	90.80	180.51	4,804.0	-4,506.7	-415.0	4,510.2	0.00	0.00	
9,300.0	90.80	180.51	4,802.6	-4,606.7	-415.9	4,610.2	0.00	0.00	
9,400.0	90.80	180.51	4,801.2	-4,706.7	-416.7	4,710.2	0.00	0.00	
9,500.0	90.80	180.51	4,799.8	-4,806.6	-417.6	4,810.2	0.00	0.00	
9,600.0	90.80	180.51	4,798.4	-4,906.6	-418.5	4,910.2	0.00	0.00	
9,700.0	90.80	180.51	4,797.0	-5,006.6	-419.4	5,010.2	0.00	0.00	
9,800.0	90.80	180.51	4,795.6	-5,106.6	-420.3	5,110.1	0.00	0.00	
9,900.0	90.80	180.51	4,794.2	-5,206.6	-421.2	5,210.1	0.00	0.00	
10,000.0	90.80	180.51	4,792.8	-5,306.6	-422.1	5,310.1	0.00	0.00	
10,004.5	90.80	180.51	4,792.8	-5,311.0	-422.1	5,314.6	0.00	0.00	TD at 10004.5

Targets

Target Name

- hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- Shape									
Lybrook M35-2308 01H i	0.00	0.00	4,857.9	-648.0	-380.7	1,883,135.44	2,775,180.10	36.175240	-107.656860
- plan hits target center									
- Point									
Lybrook M35-2308 01H i	0.00	0.00	4,792.8	-5,311.0	-422.1	1,878,472.28	2,775,147.25	36.162430	-107.657000
- 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
5,247.0	4,854.0	7" ICP	0.000	0.000

Cathedral Energy Services

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 M35-2308 01H
Wellbore: Hz
Design: Plan #1

Local Co-ordinate Reference: Well Lybrook M35-2308 01H
TVD Reference: WELL @ 6895.0ft (Original Well Elev)
MD Reference: WELL @ 6895.0ft (Original Well Elev)
North Reference: True
Survey Calculation Method: Minimum Curvature

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
600.0	600.0	Ojo Alamo		-0.80	180.51
791.0	791.0	Kirtland Shale		-0.80	180.51
1,131.0	1,131.0	Fruitland Coal		-0.80	180.51
1,271.0	1,271.0	Pictured Cliffs Ss.		-0.80	180.51
1,367.0	1,367.0	Lewis Shale		-0.80	180.51
2,009.0	2,009.0	Cliffhouse Ss.		-0.80	180.51
2,720.0	2,720.0	Menefee Fn.		-0.80	180.51
3,658.0	3,658.0	Point Lookout Ss.		-0.80	180.51
3,802.0	3,802.0	Mancos Shale		-0.80	180.51
4,310.4	4,310.0	Mancos Silt		-0.80	180.51
4,591.3	4,566.0	Gallup Fn.		-0.80	180.51

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
4,215.2	4,215.2	0.0	0.0	KOP @ 4215'
4,776.8	4,691.1	-170.0	-188.5	Start build/turn @ 4776' MD
5,340.7	4,857.9	-648.0	-380.7	LP @ 4857' TVD; 90.8°
10,004.5	4,792.8	-5,311.0	-422.1	TD at 10004.5

EnCana Oil & Gas (USA) Inc

San Juan County, NM

S35-T23N-R8W

Lybrook M35-2308 01H

Hz

Plan #1

Anticollision Report

03 February, 2014

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Lybrook M35-2308 01H
Project:	San Juan County, NM	TVD Reference:	WELL @ 6895.0ft (Original Well Elev)
Reference Site:	S35-T23N-R8W	MD Reference:	WELL @ 6895.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Lybrook M35-2308 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
Depth Range:	Unlimited
Results Limited by:	Maximum center-center distance of 1,200.4ft
Warning Levels Evaluated at:	2.00 Sigma
Error Model:	Systematic Ellipse
Scan Method:	Closest Approach 3D
Error Surface:	Elliptical Conic

Survey Tool Program	Date	2/3/2014
From (ft)	To (ft)	Survey (Wellbore)
0.0	10,004.4	Plan #1 (Hz)
		Tool Name
		Geolink MWD
		Description
		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 M35-2308 02H - Hz - Plan #1	3,800.0	3,800.0	43.6	30.4	3.302	CC, ES, 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 M35-2308 01H
 Well Error: 0.0ft
 Reference Wellbore: Hz
 Reference Design: Plan #1

Local Co-ordinate Reference: Well Lybrook M35-2308 01H
 TVD Reference: WELL @ 6895.0ft (Original Well Elev)
 MD Reference: WELL @ 6895.0ft (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 S35-T23N-R8W - Lybrook M35-2308 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		Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	
							+N/-S (ft)	+E/-W (ft)					
0.0	0.0	0.0	0.0	0.0	0.0	48.11	29.1	32.5	43.6				
100.0	100.0	100.0	100.0	0.1	0.1	48.11	29.1	32.5	43.6	43.3	0.29	148.736	
200.0	200.0	200.0	200.0	0.3	0.3	48.11	29.1	32.5	43.6	43.0	0.64	67.901	
300.0	300.0	300.0	300.0	0.5	0.5	48.11	29.1	32.5	43.6	42.6	0.99	43.992	
400.0	400.0	400.0	400.0	0.7	0.7	48.11	29.1	32.5	43.6	42.3	1.34	32.536	
500.0	500.0	500.0	500.0	0.8	0.8	48.11	29.1	32.5	43.6	41.9	1.69	25.814	
600.0	600.0	600.0	600.0	1.0	1.0	48.11	29.1	32.5	43.6	41.6	2.04	21.394	
700.0	700.0	700.0	700.0	1.2	1.2	48.11	29.1	32.5	43.6	41.2	2.39	18.266	
800.0	800.0	800.0	800.0	1.4	1.4	48.11	29.1	32.5	43.6	40.9	2.74	15.936	
900.0	900.0	900.0	900.0	1.5	1.5	48.11	29.1	32.5	43.6	40.5	3.09	14.133	
1,000.0	1,000.0	1,000.0	1,000.0	1.7	1.7	48.11	29.1	32.5	43.6	40.2	3.43	12.697	
1,100.0	1,100.0	1,100.0	1,100.0	1.9	1.9	48.11	29.1	32.5	43.6	39.8	3.78	11.526	
1,200.0	1,200.0	1,200.0	1,200.0	2.1	2.1	48.11	29.1	32.5	43.6	39.5	4.13	10.552	
1,300.0	1,300.0	1,300.0	1,300.0	2.2	2.2	48.11	29.1	32.5	43.6	39.1	4.48	9.730	
1,400.0	1,400.0	1,400.0	1,400.0	2.4	2.4	48.11	29.1	32.5	43.6	38.8	4.83	9.027	
1,500.0	1,500.0	1,500.0	1,500.0	2.6	2.6	48.11	29.1	32.5	43.6	38.4	5.18	8.419	
1,600.0	1,600.0	1,600.0	1,600.0	2.8	2.8	48.11	29.1	32.5	43.6	38.1	5.53	7.888	
1,700.0	1,700.0	1,700.0	1,700.0	2.9	2.9	48.11	29.1	32.5	43.6	37.7	5.88	7.419	
1,800.0	1,800.0	1,800.0	1,800.0	3.1	3.1	48.11	29.1	32.5	43.6	37.4	6.23	7.003	
1,900.0	1,900.0	1,900.0	1,900.0	3.3	3.3	48.11	29.1	32.5	43.6	37.0	6.58	6.632	
2,000.0	2,000.0	2,000.0	2,000.0	3.5	3.5	48.11	29.1	32.5	43.6	36.7	6.93	6.297	
2,100.0	2,100.0	2,100.0	2,100.0	3.6	3.6	48.11	29.1	32.5	43.6	36.3	7.27	5.995	
2,200.0	2,200.0	2,200.0	2,200.0	3.8	3.8	48.11	29.1	32.5	43.6	36.0	7.62	5.721	
2,300.0	2,300.0	2,300.0	2,300.0	4.0	4.0	48.11	29.1	32.5	43.6	35.6	7.97	5.470	
2,400.0	2,400.0	2,400.0	2,400.0	4.2	4.2	48.11	29.1	32.5	43.6	35.3	8.32	5.241	
2,500.0	2,500.0	2,500.0	2,500.0	4.3	4.3	48.11	29.1	32.5	43.6	34.9	8.67	5.030	
2,600.0	2,600.0	2,600.0	2,600.0	4.5	4.5	48.11	29.1	32.5	43.6	34.6	9.02	4.835	
2,700.0	2,700.0	2,700.0	2,700.0	4.7	4.7	48.11	29.1	32.5	43.6	34.2	9.37	4.655	
2,800.0	2,800.0	2,800.0	2,800.0	4.9	4.9	48.11	29.1	32.5	43.6	33.9	9.72	4.488	
2,900.0	2,900.0	2,900.0	2,900.0	5.0	5.0	48.11	29.1	32.5	43.6	33.5	10.07	4.332	
3,000.0	3,000.0	3,000.0	3,000.0	5.2	5.2	48.11	29.1	32.5	43.6	33.2	10.42	4.187	
3,100.0	3,100.0	3,100.0	3,100.0	5.4	5.4	48.11	29.1	32.5	43.6	32.8	10.77	4.051	
3,200.0	3,200.0	3,200.0	3,200.0	5.6	5.6	48.11	29.1	32.5	43.6	32.5	11.11	3.924	
3,300.0	3,300.0	3,300.0	3,300.0	5.7	5.7	48.11	29.1	32.5	43.6	32.1	11.46	3.804	
3,400.0	3,400.0	3,400.0	3,400.0	5.9	5.9	48.11	29.1	32.5	43.6	31.8	11.81	3.692	
3,500.0	3,500.0	3,500.0	3,500.0	6.1	6.1	48.11	29.1	32.5	43.6	31.5	12.16	3.586	
3,600.0	3,600.0	3,600.0	3,600.0	6.3	6.3	48.11	29.1	32.5	43.6	31.1	12.51	3.486	
3,700.0	3,700.0	3,700.0	3,700.0	6.4	6.4	48.11	29.1	32.5	43.6	30.8	12.86	3.391	
3,800.0	3,800.0	3,800.0	3,800.0	6.6	6.6	48.11	29.1	32.5	43.6	30.4	13.21	3.302 CC, ES, SF	
3,900.0	3,900.0	3,897.0	3,896.9	6.8	6.8	52.97	28.1	37.3	46.8	33.3	13.55	3.454	
4,000.0	4,000.0	3,992.1	3,990.8	7.0	7.0	63.81	25.2	51.3	57.9	44.0	13.91	4.166	
4,100.0	4,100.0	4,083.4	4,079.3	7.1	7.2	74.24	20.7	73.4	79.0	64.7	14.28	5.532	
4,200.0	4,200.0	4,169.8	4,160.6	7.3	7.4	81.69	14.9	101.7	110.1	95.4	14.68	7.500	
4,300.0	4,299.7	4,250.0	4,233.5	7.5	7.7	-140.14	8.1	134.4	154.5	139.7	14.81	10.433	
4,400.0	4,396.8	4,314.5	4,290.0	7.7	8.0	-135.63	1.8	165.0	216.4	201.5	14.88	14.537	
4,500.0	4,488.4	4,366.1	4,333.5	8.0	8.3	-130.00	-3.7	192.1	291.8	276.8	14.97	19.495	
4,600.0	4,571.7	4,400.0	4,361.3	8.4	8.5	-120.09	-7.7	211.1	377.0	361.5	15.44	24.416	
4,700.0	4,644.2	4,427.1	4,383.0	9.1	8.7	-103.81	-10.9	227.0	468.5	451.7	16.76	27.946	
4,800.0	4,703.8	4,439.2	4,392.5	10.1	8.8	-81.20	-12.4	234.3	563.1	544.9	18.14	31.046	
4,900.0	4,754.1	4,450.0	4,401.0	11.3	8.9	-71.36	-13.8	240.9	655.4	636.6	18.80	34.862	
5,000.0	4,795.7	4,450.0	4,401.0	12.5	8.9	-63.44	-13.8	240.9	743.2	724.1	19.15	38.809	
5,100.0	4,827.4	4,463.6	4,411.5	13.9	9.0	-59.85	-15.5	249.4	825.6	806.0	19.59	42.141	

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 M35-2308 01H
Well Error: 0.0ft
Reference Wellbore: Hz
Reference Design: Plan #1

Local Co-ordinate Reference: Well Lybrook M35-2308 01H
TVD Reference: WELL @ 6895.0ft (Original Well Elev)
MD Reference: WELL @ 6895.0ft (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 S35-T23N-R8W - Lybrook M35-2308 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	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre	Between Centres	Between Ellipses	Total Uncertainty Axis	Separation Factor			
Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)				
5,200.0	4,848.2	4,471.0	4,417.2	15.2	9.1	-57.02	-16.5	254.1	901.9	882.1	19.85	45.445		
5,300.0	4,857.5	4,478.2	4,422.6	16.5	9.1	-55.48	-17.4	258.6	971.6	951.5	20.04	48.477		
5,400.0	4,857.1	4,485.0	4,427.8	17.8	9.2	-55.48	-18.3	263.0	1,036.3	1,015.4	20.89	49.611		
5,500.0	4,855.7	4,500.0	4,439.0	19.2	9.3	-56.57	-20.3	272.7	1,105.3	1,082.9	22.37	49.402		
5,600.0	4,854.3	4,500.0	4,439.0	20.6	9.3	-56.57	-20.3	272.7	1,178.5	1,154.9	23.66	49.805		

Anticollision Report

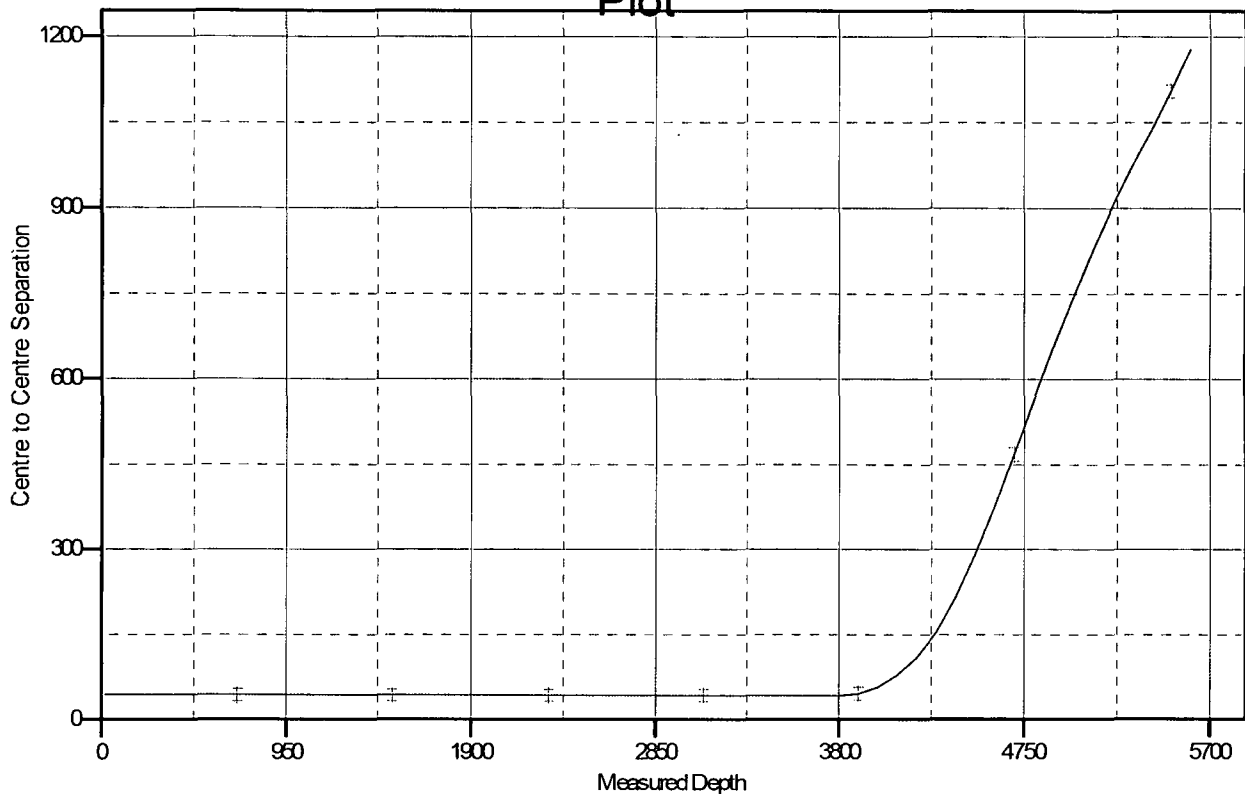
Company: EnCana Oil & Gas (USA) Inc
Project: San Juan County, NM
Reference Site: S35-T23N-R8W
Site Error: 0.0ft
Reference Well: Lybrook M35-2308 01H
Well Error: 0.0ft
Reference Wellbore: Hz
Reference Design: Plan #1

Local Co-ordinate Reference: Well Lybrook M35-2308 01H
TVD Reference: WELL @ 6895.0ft (Original Well Elev)
MD Reference: WELL @ 6895.0ft (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

Reference Depths are relative to WELL @ 6895.0ft (Original Well Elev)
Offset Depths are relative to Offset Datum
Central Meridian is -107.833333 °

Coordinates are relative to: Lybrook M35-2308 01H
Coordinate System is US State Plane 1983, New Mexico Western Zone
Grid Convergence at Surface is: 0.10°

Ladder Plot



LEGEND

— Lybrook M35-2308 02H, Hz, Plan #1 V0

encana

Well Name and Number:
Lybrook M35-2308 01H

