

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 ENCLANA, Well Name and Number Lybrook H09-2308 1H

API# 30-045-35508, Section 9, Township 23 NS, Range 8 EW

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 L. Perry  
NMOCD Approved by Signature

6-11-2014  
Date

CONFIDENTIAL  
RECEIVED

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

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

FEB 13 2014

Lease Serial No.  
NMNM 118132

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

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)  
720-876-3533

8. Lease Name and Well No.  
Lybrook H09-2308 01H

9. API Well No.  
30-045-35508

10. Field and Pool, or Exploratory  
Basin Mancos Gas/Nageezi Gallup

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

At surface 1354' FNL and 50' FEL Section 9, T23N, R8W

At proposed prod. zone 400' FNL and 330' FEL Section 10, T23N, R8W

11. Sec., T. R. M. or Blk. and Survey or Area  
Section 9, T23N, R8W NMPM

14. Distance in miles and direction from nearest town or post office\*

+/- 40.4 miles southeast of the intersection of US Hwy 550 & US Hwy 64 in Bloomfield, NM

12. County or Parish  
San Juan

13. State  
NM

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 Section 10, T23N, R8W

16. No. of acres in lease  
NMNM 118132 - 2,320 ac

17. Spacing Unit dedicated to this well  
160 acres - N/2 N/2 Section 10, T23N, R8W

18. Distance from proposed location\* to nearest well, drilling, completed, applied for, on this lease, ft.  
Federal-9 31 is +/- 1,750' west of the wellbore

19. Proposed Depth  
5,296' TVD/10,527' MD

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

21. Elevations (Show whether DF, KDB, RT, GL, etc.)  
6,890' GL, 6,906' KB

22. Approximate date work will start\*  
12/25/2014

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 *Katie Wegner*

Name (Printed/Typed)  
Katie Wegner OIL CONS. DIV DIST. 3

Date  
2/11/14

Title  
Regulatory Analyst

JUN 2 2014

Approved by (Signature) *[Signature]*  
Title *AFM*

Name (Printed/Typed)  
Office *FFO*

Date  
5/29/14

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)

\*(Instructions 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

NMOCDA

## DISTRICT I

1825 N. French Dr., Hobbs, N.M. 88240  
Phone: (505) 393-6161 Fax: (505) 393-0720

## DISTRICT II

811 E. First St., Artesia, N.M. 88210  
Phone: (505) 748-1888 Fax: (505) 748-9720

## DISTRICT III

1000 E. Brusco Rd., Aztec, N.M. 87410  
Phone: (505) 334-5178 Fax: (505) 334-6170

## DISTRICT IV

1820 E. St. Francis Dr., Santa Fe, NM 87505  
Phone: (505) 478-3460 Fax: (505) 478-3462

State of New Mexico  
Energy, Minerals & Natural Resources Department

Form C-102

Revised August 1, 2011

RECEIVED

Submit one copy to appropriate  
District Office

## OIL CONSERVATION DIVISION

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

FEB 13 2014

Farmington Field Office

AMENDED REPORT

## WELL LOCATION AND ACREAGE DEDICATION MAP

<sup>1</sup> API Number <b>30-045-35508</b>	<sup>2</sup> Pool Code <b>97232 / 47540</b>	<sup>3</sup> Pool Name <b>BASIN MANCOS / NAGEEZI GALLUP</b>
<sup>4</sup> Property Code <b>313349</b>	<sup>5</sup> Property Name <b>LYBROOK H09-2308</b>	<sup>6</sup> Well Number <b>01H</b>
<sup>7</sup> GRID No. <b>282327</b>	<sup>8</sup> Operator Name <b>ENCANA OIL &amp; GAS (USA) INC.</b>	<sup>9</sup> Elevation <b>6890.1'</b>

<sup>10</sup> Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
H	9	23N	8W		1354'	NORTH	50'	EAST	SAN JUAN

<sup>11</sup> 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
A	10	23N	8W		400'	NORTH	330'	EAST	SAN JUAN

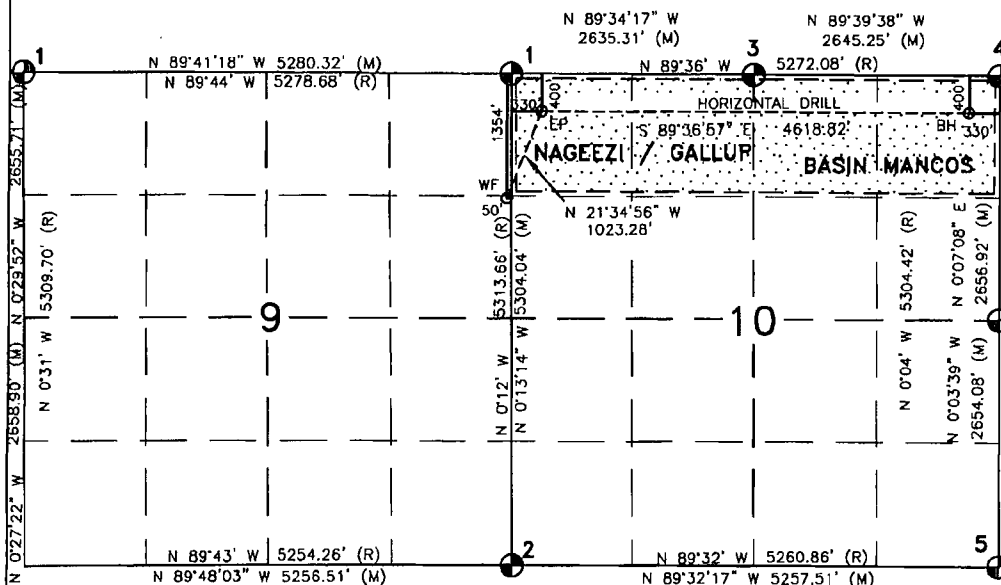
<sup>12</sup> Dedicated Acres <b>80wn 80Gallup</b> <b>160.00 ACRES N/2 N/2 SEC. 10</b>	<sup>13</sup> Joint or Infill	<sup>14</sup> Consolidation Code	<sup>15</sup> Order No.
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NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED  
OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

18

- 1 LAT. 36.248964° N (NAD83)  
LONG. 107.677880° W (NAD83)  
LAT. 36.248951° N (NAD27)  
LONG. 107.677269° W (NAD27)
- 2 LAT. 36.234400° N (NAD83)  
LONG. 107.677810° W (NAD83)  
LAT. 36.234387° N (NAD27)  
LONG. 107.677199° W (NAD27)
- 3 LAT. 36.248910° N (NAD83)  
LONG. 107.668946° W (NAD83)  
LAT. 36.248897° N (NAD27)  
LONG. 107.668335° W (NAD27)
- 4 LAT. 36.248866° N (NAD83)  
LONG. 107.659979° W (NAD83)  
LAT. 36.248853° N (NAD27)  
LONG. 107.659368° W (NAD27)
- 5 LAT. 36.234283° N (NAD83)  
LONG. 107.659990° W (NAD83)  
LAT. 36.234270° N (NAD27)  
LONG. 107.659380° W (NAD27)

ALL CORNERS  
FND 2 1/2" BC  
GLO 1947



WELL FLAG  
LAT. 36.245246° N (NAD83)  
LONG. 107.678032° W (NAD83)  
LAT. 36.245233° N (NAD27)  
LONG. 107.677421° W (NAD27)

ENTRY POINT  
LAT. 36.247859° N (NAD83)  
LONG. 107.676756° W (NAD83)  
LAT. 36.247846° N (NAD27)  
LONG. 107.676145° W (NAD27)

BOTTOM HOLE  
LAT. 36.247773° N (NAD83)  
LONG. 107.661098° W (NAD83)  
LAT. 36.247760° N (NAD27)  
LONG. 107.660487° W (NAD27)

## 18 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 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.

*Katie Wegner* 2/11/14  
Signature Date

Katie Wegner

Printed Name

Kathryn.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.

MAY 9, 2013

Date of Survey

Signature and Seal of Professional Surveyor:

*David Russell*  
DAVID R. RUSSELL  
NEW MEXICO  
REGISTERED PROFESSIONAL LAND SURVEYOR  
10201

DAVID RUSSELL

Certificate Number

10201

Lybrook H09-2308 01H  
 SHL: SENE Section 9, T23N, R8W  
 1354' FNL and 50' FEL  
 BHL: NENE Section 10, T23N, R8W  
 400' FNL and 330' FEL  
 San Juan County, New Mexico  
 Lease Number: NMNM 118132

## 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.	983
Kirtland Sh.	1,146
Fruitland Coal	1,402
Pictured Cliffs Ss.	1,691
Lewis Sh.	1,791
Cliffhouse Ss.	3,097
Menefee Fn.	3,181
Point Lookout Ss.	4,015
Mancos Sh.	4,241
Mancos Silt	4,788
Gallup Fn.	5,047

The referenced surface elevation is 6,890', KB 6,906'

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

Substance	Formation	Depth (TVD) units = feet
Water/Gas	Fruitland Coal	1,402
Oil/Gas	Pictured Cliffs Ss.	1,691
Oil/Gas	Cliffhouse Ss.	3,097
Gas	Menefee Fn.	3,181
Oil/Gas	Point Lookout Ss.	4,015
Oil/Gas	Mancos Sh.	4,241
Oil/Gas	Mancos Silt	4,788
Oil/Gas	Gallup Fn.	5,047

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.

**Lybrook H09-2308 01H****SHL: SENE Section 9, T23N, R8W  
1354' FNL and 50' FEL****BHL: NENE Section 10, T23N, R8W  
400' FNL and 330' FEL****San Juan County, New Mexico****Lease Number: NMNM 118132**

- 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.
- 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'-5790'MD	8 3/4"	7"	26#	J55, LTC New
Production Liner	5590'-10527'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

**Lybrook H09-2308 01H****SHL: SENE Section 9, T23N, R8W****1354' FNL and 50' FEL****BHL: NENE Section 10, T23N, R8W****400' FNL and 330' FEL****San Juan County, New Mexico****Lease Number: NMNM 118132**

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.

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.

<b>Casing</b>	<b>Depth</b>	<b>Cement Volume (sacks)</b>	<b>Cement Type&amp;Yield</b>	<b>Designed TOC</b>	<b>Centralizers</b>
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	5790'MD	30% open hole excess Stage 1 Lead: 260sks Stage 1 Tail: 178sks Stage 2 Lead: 153sks	<b>Lead</b> (Stages 1 and 2): PremLite + 3% CaCl + 0.25lb/sk CelloFlake + 5lb/sk LCM, 12.1ppg 2.13cuf/sk <b>Tail</b> (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*	5590'-10527'	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.

Lybrook H09-2308 01H

SHL: SENE Section 9, T23N, R8W  
1354' FNL and 50' FEL

BHL: NENE Section 10, T23N, R8W  
400' FNL and 330' FEL

San Juan County, New Mexico

Lease Number: NMNM 118132

## 5. WELL PLAN & DIRECTIONAL DRILLING PROGRAM

The proposed horizontal well will have a kick off point of 4300'. Directional plans are attached.

Description	Proposed Depth (TVD/MD)	Formation
Horizontal Lateral TD	5296'/10527'	Gallup

## 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- 5277'TVD/5790'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"	5790'-10527'	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

**Lybrook H09-2308 01H**

**SHL: SENE Section 9, T23N, R8W  
1354' FNL and 50' FEL**

**BHL: NENE Section 10, T23N, R8W  
400' FNL and 330' FEL**

**San Juan County, New Mexico**

**Lease Number: NMNM 118132**

#### **8. ABNORMAL PRESSURES & HYDROGEN SULFIDE**

The anticipated bottom hole pressure is +/- 2489 psi based on a 9.0 ppg at 5319' TVD of the landing point of the horizontal lateral. No abnormal pressure or temperatures are anticipated.


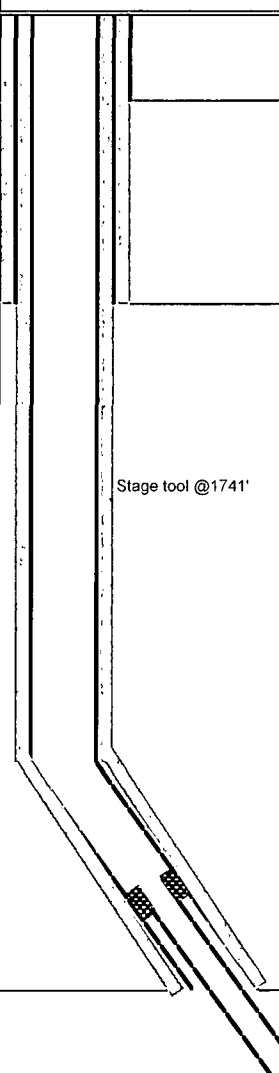
No hydrogen sulfide gas is anticipated, however, if H<sub>2</sub>S is encountered, the guidelines in Onshore Order No. 6 will be followed.

#### **9. ANTICIPATED START DATE AND DURATION OF OPERATIONS**

Drilling is estimated to commence on December 25, 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 25 days.



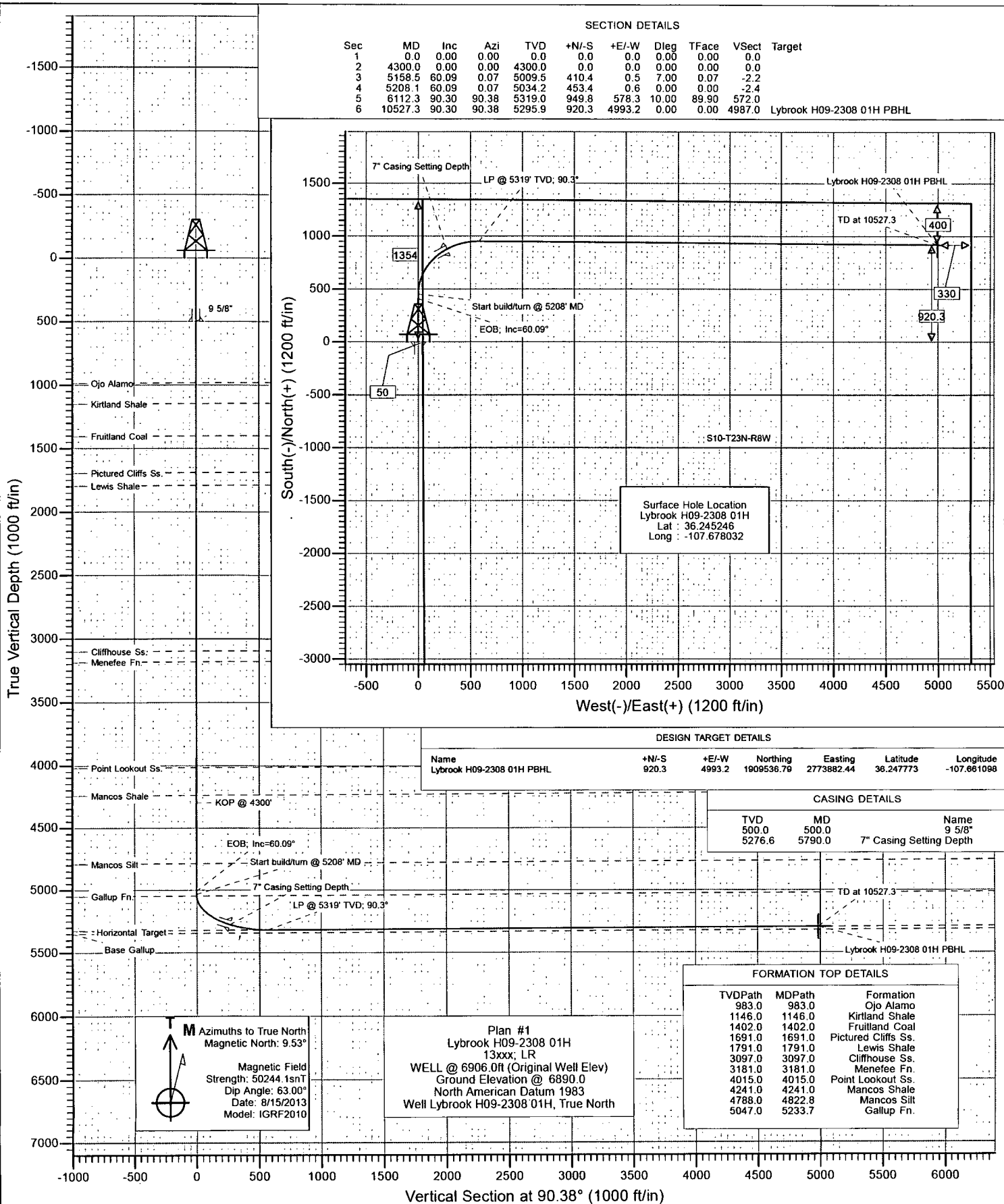
LOC: Sec 9-T23N-R8W County: San Juan WELL: Lybrook H09-2308 01H			Encana Natural Gas  WELL SUMMARY					ENG: 2/3/14 RIG: GLE: 6890 RKBE: 6906	
MWD LWD	OPEN HOLE LOGGING	FORM	DEPTH			HOLE SIZE	CASING SPECS	MW MUD TYPE	DEVIATION INFORMATION
			TVD	MD					
			60	60'		30	20" 94# 100sx Type I Neat 16ppg cmt	Fresh wtr 8.3-9.2	
Surveys After csg is run	None					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	Ojo Alamo Kirtland  Fruitland Coal  Pictured Cliffs Ss Lewis Shale  Cliffhouse Ss Menefee Fn	983 1146  1402  1691 1791  3097 3181		Stage tool @1741'	8 3/4	7" 26ppf J55 LTC  TOC @ surface 30% OH excess: 591 sksTotal. Stage 1 Lead: 260sks Stage 1 Tail: 178sks. Stage 2 Lead: 153sks	Fresh Wtr 8.5-8.8	Vertical <1°
	Mud logger onsite	Point Lookout Ss Mancos Sh  KICK OFF PT  Mancos Silt  Gallup Top  7" csg	4015 4241  4300  4788  5047  5277	5790					KOP 4300 10 deg/100'
Surveys every 500' Gyro at CP MWD Gamma Directional	No OH Logs	horz target  Base Gallup	5319  5345	6112		6 1/8	200' overlap at liner top  4415' Lateral	8.6-9.0 OBM  Switch to OBM 8.6-9.0	.25deg updip 5296'TVD TD = 10527' 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 4300', 8 3/4" hole size,
- 5) PU directional tools and start curve at 10deg/100' build rate
- 6) Drill to casing point of 5790' MD
- 7) R&C 7" casing, circ cmt to surface, switch to OBM
- 8) Land at 90deg, drill 4415' lateral to 10527', run 4 1/2" liner with external swellable csg packers



Project: San Juan County, NM  
 Site: S9-T23N-R8W (Lybrook)  
 Well: Lybrook H09-2308 01H  
 Wellbore: Hz  
 Design: Plan #1



# Planning Report

Database: USA EDM 5000 Multi Users DB  
 Company: EnCana Oil & Gas (USA) Inc  
 Project: San Juan County, NM  
 Site: S9-T23N-R8W (Lybrook)  
 Well: Lybrook H09-2308 01H  
 Wellbore: Hz  
 Design: Plan #1

Local Co-ordinate Reference: Well Lybrook H09-2308 01H  
 TVD Reference: WELL @ 6906.0ft (Original Well Elev)  
 MD Reference: WELL @ 6906.0ft (Original Well Elev)  
 North Reference: True  
 Survey Calculation Method: Minimum Curvature

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

Site: S9-T23N-R8W (Lybrook)  
 Site Position: Northing: 1,908,608.46 ft Latitude: 36.245246  
 From: Lat/Long Easting: 2,768,890.75 ft Longitude: -107.678032  
 Position Uncertainty: 0.0 ft Slot Radius: 13.200 in Grid Convergence: 0.09 °

Well: Lybrook H09-2308 01H  
 Well Position: +N/-S 0.0 ft Northing: 1,908,608.46 ft Latitude: 36.245246  
 +E/-W 0.0 ft Easting: 2,768,890.75 ft Longitude: -107.678032  
 Position Uncertainty: 0.0 ft Wellhead Elevation: ft Ground Level: 6,890.0 ft

Wellbore: Hz  
 Magnetics: Model Name Sample Date Declination (°) Dip Angle (°) Field Strength (nT)  
 IGRF2010 8/15/2013 9.54 63.00 50,244

Design: Plan #1  
 Audit Notes:  
 Version: Phase: PLAN Tie On Depth: 0.0  
 Vertical Section: Depth From (TVD) +N/-S +E/-W Direction (°)  
 (ft) (ft) (ft)  
 0.0 0.0 0.0 90.38

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	
4,300.0	0.00	0.00	4,300.0	0.0	0.0	0.00	0.00	0.00	0.00	
5,158.5	60.09	0.07	5,009.5	410.4	0.5	7.00	7.00	0.00	0.07	
5,208.1	60.09	0.07	5,034.2	453.4	0.6	0.00	0.00	0.00	0.00	
6,112.3	90.30	90.38	5,319.0	949.8	578.3	10.00	3.34	9.99	89.90	
10,527.3	90.30	90.38	5,295.9	920.3	4,993.2	0.00	0.00	0.00	0.00	Lybrook H09-2308 01

# Planning Report

**Database:** USA EDM 5000 Multi Users DB  
**Company:** EnCana Oil & Gas (USA) Inc  
**Project:** San Juan County, NM  
**Site:** S9-T23N-R8W (Lybrook)  
**Well:** Lybrook H09-2308 01H  
**Wellbore:** Hz  
**Design:** Plan #1

**Local Co-ordinate Reference:** Well Lybrook H09-2308 01H  
**TVD Reference:** WELL @ 6906.0ft (Original Well Elev)  
**MD Reference:** WELL @ 6906.0ft (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	
983.0	0.00	0.00	983.0	0.0	0.0	0.0	0.00	0.00	Ojo Alamo
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	
1,146.0	0.00	0.00	1,146.0	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	
1,402.0	0.00	0.00	1,402.0	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	
1,691.0	0.00	0.00	1,691.0	0.0	0.0	0.0	0.00	0.00	Pictured Cliffs Ss.
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	
1,791.0	0.00	0.00	1,791.0	0.0	0.0	0.0	0.00	0.00	Lewis Shale
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	
2,100.0	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	
3,097.0	0.00	0.00	3,097.0	0.0	0.0	0.0	0.00	0.00	Cliffhouse Ss.
3,100.0	0.00	0.00	3,100.0	0.0	0.0	0.0	0.00	0.00	
3,181.0	0.00	0.00	3,181.0	0.0	0.0	0.0	0.00	0.00	Menefee Fn.
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	
3,700.0	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	
4,015.0	0.00	0.00	4,015.0	0.0	0.0	0.0	0.00	0.00	Point Lookout Ss.
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	
4,241.0	0.00	0.00	4,241.0	0.0	0.0	0.0	0.00	0.00	Mancos Shale

# Planning Report

Database: USA EDM 5000 Multi Users DB  
 Company: EnCana Oil & Gas (USA) Inc  
 Project: San Juan County, NM  
 Site: S9-T23N-R8W (Lybrook)  
 Well: Lybrook H09-2308 01H  
 Wellbore: Hz  
 Design: Plan #1

Local Co-ordinate Reference: Well Lybrook H09-2308 01H  
 TVD Reference: WELL @ 6906.0ft (Original Well Elev)  
 MD Reference: WELL @ 6906.0ft (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	0.00	0.00	4,300.0	0.0	0.0	0.0	0.00	0.00	KOP @ 4300'
4,400.0	7.00	0.07	4,399.8	6.1	0.0	0.0	7.00	7.00	
4,500.0	14.00	0.07	4,498.0	24.3	0.0	-0.1	7.00	7.00	
4,600.0	21.00	0.07	4,593.3	54.4	0.1	-0.3	7.00	7.00	
4,700.0	28.00	0.07	4,684.3	95.8	0.1	-0.5	7.00	7.00	
4,800.0	35.00	0.07	4,769.5	148.0	0.2	-0.8	7.00	7.00	
4,822.8	36.60	0.07	4,788.0	161.4	0.2	-0.9	7.00	7.00	Mancos Silt
4,900.0	42.00	0.07	4,847.7	210.2	0.3	-1.1	7.00	7.00	
5,000.0	49.00	0.07	4,917.7	281.5	0.3	-1.5	7.00	7.00	
5,100.0	56.00	0.07	4,978.6	360.8	0.4	-1.9	7.00	7.00	
5,158.5	60.09	0.07	5,009.5	410.4	0.5	-2.2	7.00	7.00	EOB; Inc=60.09°
5,200.0	60.09	0.07	5,030.2	446.4	0.6	-2.4	0.00	0.00	
5,208.1	60.09	0.07	5,034.2	453.4	0.6	-2.4	0.00	0.00	Start build/turn @ 5208' MD
5,233.7	60.13	3.03	5,047.0	475.6	1.2	-2.0	10.00	0.15	Gallup Fn.
5,300.0	60.53	10.65	5,079.9	532.7	8.0	4.5	10.00	0.61	
5,400.0	61.94	21.94	5,128.1	616.7	32.6	28.5	10.00	1.41	
5,500.0	64.25	32.86	5,173.5	695.6	73.6	69.0	10.00	2.30	
5,600.0	67.33	43.29	5,214.6	767.2	129.9	124.8	10.00	3.08	
5,700.0	71.06	53.23	5,250.2	829.3	199.6	194.0	10.00	3.73	
5,790.0	74.84	61.77	5,276.6	875.4	272.1	266.3	10.00	4.21	7" Casing Setting Depth
5,800.0	75.29	62.70	5,279.2	879.9	280.6	274.8	10.00	4.42	
5,900.0	79.88	71.79	5,300.7	917.5	370.6	364.5	10.00	4.60	
5,915.9	80.64	73.21	5,303.4	922.2	385.5	379.4	10.00	4.76	Lybrook H09-2308 01H POE
6,000.0	84.73	80.63	5,314.1	941.1	466.7	460.4	10.00	4.86	
6,100.0	89.69	89.32	5,319.0	949.8	566.1	559.8	10.00	4.96	
6,112.3	90.30	90.38	5,319.0	949.8	578.3	572.0	10.00	4.99	LP @ 5319' TVD; 90.3°
6,200.0	90.30	90.38	5,318.5	949.3	666.1	659.8	0.00	0.00	
6,300.0	90.30	90.38	5,318.0	948.6	766.1	759.8	0.00	0.00	
6,400.0	90.30	90.38	5,317.5	947.9	866.1	859.8	0.00	0.00	
6,500.0	90.30	90.38	5,317.0	947.3	966.1	959.8	0.00	0.00	
6,600.0	90.30	90.38	5,316.4	946.6	1,066.1	1,059.7	0.00	0.00	
6,700.0	90.30	90.38	5,315.9	945.9	1,166.0	1,159.7	0.00	0.00	
6,800.0	90.30	90.38	5,315.4	945.2	1,266.0	1,259.7	0.00	0.00	
6,900.0	90.30	90.38	5,314.9	944.6	1,366.0	1,359.7	0.00	0.00	
7,000.0	90.30	90.38	5,314.3	943.9	1,466.0	1,459.7	0.00	0.00	
7,100.0	90.30	90.38	5,313.8	943.2	1,566.0	1,559.7	0.00	0.00	
7,200.0	90.30	90.38	5,313.3	942.6	1,666.0	1,659.7	0.00	0.00	
7,300.0	90.30	90.38	5,312.8	941.9	1,766.0	1,759.7	0.00	0.00	
7,400.0	90.30	90.38	5,312.3	941.2	1,866.0	1,859.7	0.00	0.00	
7,500.0	90.30	90.38	5,311.7	940.6	1,966.0	1,959.7	0.00	0.00	
7,600.0	90.30	90.38	5,311.2	939.9	2,066.0	2,059.7	0.00	0.00	
7,700.0	90.30	90.38	5,310.7	939.2	2,166.0	2,159.7	0.00	0.00	
7,800.0	90.30	90.38	5,310.2	938.6	2,266.0	2,259.7	0.00	0.00	
7,900.0	90.30	90.38	5,309.6	937.9	2,366.0	2,359.7	0.00	0.00	
8,000.0	90.30	90.38	5,309.1	937.2	2,466.0	2,459.7	0.00	0.00	
8,100.0	90.30	90.38	5,308.6	936.6	2,566.0	2,559.7	0.00	0.00	
8,200.0	90.30	90.38	5,308.1	935.9	2,666.0	2,659.7	0.00	0.00	
8,300.0	90.30	90.38	5,307.5	935.2	2,766.0	2,759.7	0.00	0.00	
8,400.0	90.30	90.38	5,307.0	934.5	2,866.0	2,859.7	0.00	0.00	
8,500.0	90.30	90.38	5,306.5	933.9	2,966.0	2,959.7	0.00	0.00	
8,600.0	90.30	90.38	5,306.0	933.2	3,066.0	3,059.7	0.00	0.00	
8,700.0	90.30	90.38	5,305.4	932.5	3,166.0	3,159.7	0.00	0.00	

# Planning Report

Database: USA EDM 5000 Multi Users DB  
 Company: EnCana Oil & Gas (USA) Inc  
 Project: San Juan County, NM  
 Site: S9-T23N-R8W (Lybrook)  
 Well: Lybrook H09-2308 01H  
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 Design: Plan #1

Local Co-ordinate Reference: Well Lybrook H09-2308 01H  
 TVD Reference: WELL @ 6906.0ft (Original Well Elev)  
 MD Reference: WELL @ 6906.0ft (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
8,800.0	90.30	90.38	5,304.9	931.9	3,266.0	3,259.7	0.00	0.00	
8,900.0	90.30	90.38	5,304.4	931.2	3,366.0	3,359.7	0.00	0.00	
9,000.0	90.30	90.38	5,303.9	930.5	3,466.0	3,459.7	0.00	0.00	
9,100.0	90.30	90.38	5,303.4	929.9	3,566.0	3,559.7	0.00	0.00	
9,200.0	90.30	90.38	5,302.8	929.2	3,666.0	3,659.7	0.00	0.00	
9,300.0	90.30	90.38	5,302.3	928.5	3,766.0	3,759.7	0.00	0.00	
9,400.0	90.30	90.38	5,301.8	927.9	3,865.9	3,859.7	0.00	0.00	
9,500.0	90.30	90.38	5,301.3	927.2	3,965.9	3,959.7	0.00	0.00	
9,600.0	90.30	90.38	5,300.7	926.5	4,065.9	4,059.7	0.00	0.00	
9,700.0	90.30	90.38	5,300.2	925.9	4,165.9	4,159.7	0.00	0.00	
9,800.0	90.30	90.38	5,299.7	925.2	4,265.9	4,259.7	0.00	0.00	
9,900.0	90.30	90.38	5,299.2	924.5	4,365.9	4,359.7	0.00	0.00	
10,000.0	90.30	90.38	5,298.6	923.9	4,465.9	4,459.7	0.00	0.00	
10,100.0	90.30	90.38	5,298.1	923.2	4,565.9	4,559.7	0.00	0.00	
10,200.0	90.30	90.38	5,297.6	922.5	4,665.9	4,659.7	0.00	0.00	
10,300.0	90.30	90.38	5,297.1	921.8	4,765.9	4,759.7	0.00	0.00	
10,400.0	90.30	90.38	5,296.5	921.2	4,865.9	4,859.7	0.00	0.00	
10,500.0	90.30	90.38	5,296.0	920.5	4,965.9	4,959.7	0.00	0.00	
10,527.3	90.30	90.38	5,295.9	920.3	4,993.2	4,987.0	0.00	0.00	TD at 10527.3 - Lybrook H09-2308 01H PBHL

## 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 H09-2308 01H I	0.00	0.00	5,295.9	920.3	4,993.2	1,909,536.79	2,773,882.44	36.247773	-107.661098
- plan hits target center									
- Point									
Lybrook H09-2308 01H I	0.00	0.00	5,319.0	951.2	376.2	1,909,560.26	2,769,265.46	36.247859	-107.676756
- plan misses target center by 34.2ft at 5915.9ft MD (5303.4 TVD, 922.2 N, 385.5 E)									
- 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
5,790.0	5,276.6	7" Casing Setting Depth	0.000	0.000

# Planning Report

**Database:** USA EDM 5000 Multi Users DB  
**Company:** EnCana Oil & Gas (USA) Inc  
**Project:** San Juan County, NM  
**Site:** S9-T23N-R8W (Lybrook)  
**Well:** Lybrook H09-2308 01H  
**Wellbore:** Hz  
**Design:** Plan #1

**Local Co-ordinate Reference:** Well Lybrook H09-2308 01H  
**TVD Reference:** WELL @ 6906.0ft (Original Well Elev)  
**MD Reference:** WELL @ 6906.0ft (Original Well Elev)  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature

## Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
983.0	983.0	Ojo Alamo		-0.30	90.38
1,146.0	1,146.0	Kirtland Shale		-0.30	90.38
1,402.0	1,402.0	Fruitland Coal		-0.30	90.38
1,691.0	1,691.0	Pictured Cliffs Ss.		-0.30	90.38
1,791.0	1,791.0	Lewis Shale		-0.30	90.38
3,097.0	3,097.0	Cliffhouse Ss.		-0.30	90.38
3,181.0	3,181.0	Menefee Fn.		-0.30	90.38
4,015.0	4,015.0	Point Lookout Ss.		-0.30	90.38
4,241.0	4,241.0	Mancos Shale		-0.30	90.38
4,822.8	4,788.0	Mancos Silt		-0.30	90.38
5,233.7	5,047.0	Gallup Fn.		-0.30	90.38

## Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
4,300.0	4,300.0	0.0	0.0	KOP @ 4300'
5,158.5	5,009.5	410.4	0.5	EOB; Inc=60.09°
5,208.1	5,034.2	453.4	0.6	Start build/turn @ 5208' MD
6,112.3	5,319.0	949.8	578.3	LP @ 5319' TVD; 90.3°
10,527.3	5,295.9	920.3	4,993.2	TD at 10527.3

**ENCANA OIL & GAS (USA) INC.**

LYBROOK H09-2308 #01H

1354' FNL & 50' FEL

LOCATED IN THE SE/4 NE/4 OF SECTION 9,

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

SAN JUAN COUNTY, NEW MEXICO

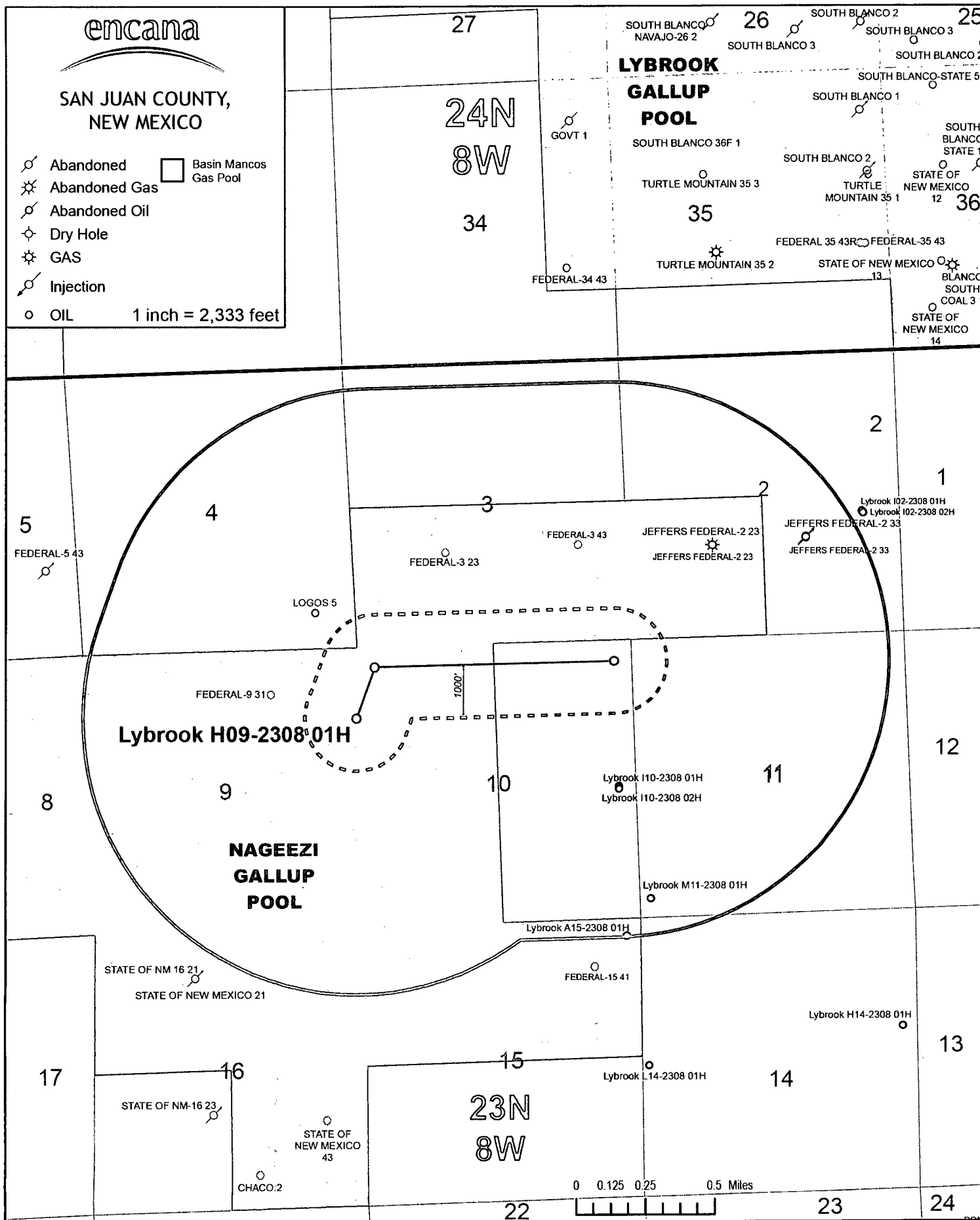
**DIRECTIONS**

- 1) FROM THE INTERSECTION OF US HWY 550 AND US HWY 64, TRAVEL SOUTH ON US HWY 550 FOR 40.3 MILES, MP111.3.
- 2) TURN RIGHT AND GO 0.1 MILES WHERE ACCESS IS STAKED ON LEFT SIDE OF ROAD JUST BEFORE EXISTING LOCATION.

WELL FLAG LOCATED AT LAT. 36.245246° N, LONG. 107.678032° W (NAD 83).







# WELLHEAD BLOWOUT CONTROL SYSTEM



Well name and number:

Lybrook H09-2308 01H

