State of New Mexico
Energy, Minerals and Natural Resources Department

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

Operator Signature Date: 2-11-14
Well information;
Operator Encana, Well Name and Number Lybrook L14-2308 # 1H
API# 30-045-35509, Section 14, Township 23 (N)/S, 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
- o Spacing rule violation. Operator must follow up with change of status notification on other well to be shut in or abandoned
- o 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
- o 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 Perrin
NMOCD Approved by Signature

6-5-2014
Date

1220 South St. Francis Drive • Santa Fe, New Mexico 87505
Phone (505) 476-3460 • Fax (505) 476-3462 • www.emnrd.state.nm.us/ocd

CONFIDENTIAL

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FEB 13 2014

Farmington Field Office
Bureau of Land Management

Form 3160-3
(August 2007)

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

5. Lease Serial No.: ~~NMNM 118132~~ & NMNM 76842

6. If Indian, Allotee or Tribe Name: N/A

7. If Unit or CA Agreement, Name and No.: PENDING

8. Lease Name and Well No.: Lybrook L14-2308 01H

9. API Well No.: 30-045-35509

10. Field and Pool, or Exploratory: Basin Mancos

11. Sec., T. R. M. or Blk. and Survey or Area: Section 14, 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)*: 720-876-3533

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*
At surface L 2467' FSL and 128' FWL Section 14, T23N, R8W
At proposed prod. zone N 330' FSL and 2570' FWL Section 14, T23N, R8W

14. Distance in miles and direction from nearest town or post office*
+/- 46.4 miles southeast of the 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): BHL is 330' from south lease line Section 14, T23N, R8W

16. No. of acres in lease: NMNM 118132 - 2,320.0; NMNM 76842 - 2,560.0

17. Spacing Unit dedicated to this well: 320 acres - S2 Section 14, T23N, R8W

OIL CONS. DIV DIST. 3

MAY 30 2014

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.: Federal-15 41 is +/- 2,000' NW of wellbore

19. Proposed Depth: 5,337' TVD/8,370' MD

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

21. Elevations (Show whether DF, KDB, RT, GL, etc.): 6,879' GL, 6,895' KB

22. Approximate date work will start*: 07/24/2016

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 [signature]	Name *(Printed/Typed)* Katie Wegner	Date 2/11/14
Title: Regulatory Analyst		
Approved by *(Signature)* [signature]	Name *(Printed/Typed)*	Date 5/29/14
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.

(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

NMOCD AV

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".

DISTRICT I
1625 N. French Dr., Hobbs, N.M. 88240
Phone: (575) 393-6161 Fax: (575) 393-0720

DISTRICT II
811 S. First St., Artesia, N.M. 88210
Phone: (575) 748-1283 Fax: (575) 748-9720

DISTRICT III
1000 Rio Brazos Rd., Aztec, N.M. 87410
Phone: (505) 334-6178 Fax: (505) 334-6170

DISTRICT IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department

RECEIVED

Form C-102
Revised August 1, 2011

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
Bureau of Land Management

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

[1] API Number	[2] Pool Code	[3] Pool Name
30-045-35509	97232	BASIN MANCOS

[4] Property Code	[5] Property Name	[6] Well Number
313321	LYBROOK L14-2308	01H

OIL CONS. DIV DIST. 3
MAY 30 2014

[7] OGRID No.	[8] Operator Name	[9] Elevation
282327	ENCANA OIL & GAS (USA) INC.	6879.0'

[10] Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
L	14	23N	8W		2467'	SOUTH	128'	WEST	SAN JUAN

[11] Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
N	14	23N	8W		330'	SOUTH	2570'	WEST	SAN JUAN

[12] Dedicated Acres	[13] Joint or Infill	[14] Consolidation Code	[15] Order No.
320.00 ACRES S/2 SEC. 14 PROJECT AREA			

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

16

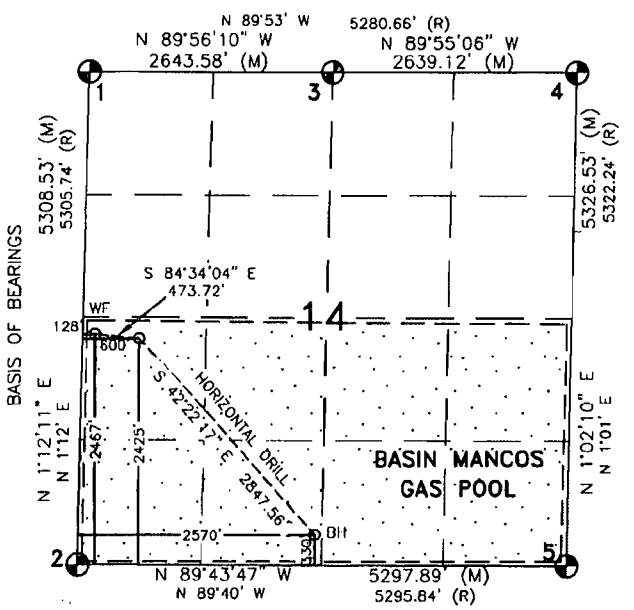
1 LAT. 36.234283° N (NAD83)
LONG. 107.659990° W (NAD83)
LAT. 36.234270° N (NAD27)
LONG. 107.659380° W (NAD27)

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

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

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

5 LAT. 36.219637° N (NAD83)
LONG. 107.642417° W (NAD83)
LAT. 36.219624° N (NAD27)
LONG. 107.641807° W (NAD27)



WELL FLAG
LAT. 36.226482° N (NAD83)
LONG. 107.659762° W (NAD83)
LAT. 36.226469° N (NAD27)
LONG. 107.659152° W (NAD27)

ENTRY POINT
LAT. 36.226358° N (NAD83)
LONG. 107.658163° W (NAD83)
LAT. 36.226345° N (NAD27)
LONG. 107.657553° W (NAD27)

BOTTOM HOLE
LAT. 36.220581° N (NAD83)
LONG. 107.651661° W (NAD83)
LAT. 36.220568° N (NAD27)
LONG. 107.651051° 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.

Signature — Date: 2/11/14

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.

JUNE 26, 2013
Date of Survey

Signature and Seal of Professional Surveyor:

DAVID R. RUSSELL
NEW MEXICO
10201
REGISTERED PROFESSIONAL LAND SURVEYOR

DAVID RUSSELL
Certificate Number 10201

Lybrook L14-2308 01H
SHL: NWSW Section 14, T23N, R8W
2467 FSL and 128 FWL
BHL: SESW Section 14, T23N, R8W
330 FSL and 2570 FWL
San Juan County, New Mexico
Lease Number: NMNM 118132 & NM 76842

Encana Oil & Gas (USA) Inc.
Drilling Plan

1. ESTIMATED TOPS OF GEOLOGICAL MARKERS (TVD)

The estimated tops of important geologic markers are as follows:

Formation	Depth (TVD) units = feet
Ojo Alamo Ss.	946
Kirtland Shale	1027
Fruitland Coal	1194
Pictured Cliffs Ss.	1584
Lewis Shale	1699
Cliffhouse Ss.	2446
Menefee Fn.	3165
Point Lookout Ss.	4036
Mancos Shale	4122
Mancos Silt	4642
Gallup Fn.	4911

The referenced surface elevation is 6,879', KB 6,895'

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

Substance	Formation	Depth (TVD) units = feet
Water/Gas	Fruitland Coal	1194
Oil/Gas	Pictured Cliffs Ss.	1584
Oil/Gas	Cliffhouse Ss.	2446
Gas	Menefee Fn.	3165
Oil/Gas	Point Lookout Ss.	4036
Oil/Gas	Mancos Shale	4122
Oil/Gas	Mancos Silt	4642
Oil/Gas	Gallup Fn.	4911

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.
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'-5541'MD	8 3/4"	7"	26#	J55, LTC New
Production Liner	5341'-8370'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 L14-2308 01H
SHL: NWSW Section 14, T23N, R8W
2467 FSL and 128 FWL
BHL: SESW Section 14, T23N, R8W
330 FSL and 2570 FWL
San Juan County, New Mexico
Lease Number: NMNM 118132 & NM 76842

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.

Casing	Depth	Cement Volume (sacks)	Cement Type&Yield	Designed TOC	Centralizers
Conductor	60'	100sk	Type I Neat 14.8 ppg	Surface	None
Surface	500'	178sk	Type III Cement + 1% CaCl + 0.25lb/sk Cello Flake + 0.2% FL, 14.6ppg, 1.38cuf/sk	Surface	1 per joint on bottom 3 joints
Intermediate	5541'MD	30% open hole excess Stage 1 Lead: 212sks Stage 1 Tail: 146sks Stage 2 Lead: 127sks	**Lead** (Stages 1 and 2): PremLite + 3% CaCl + 0.25lb/sk CelloFlake + 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 per joint for bottom 3 joints, 1 every 3 joints for remaining joints
Production Liner*	5341'-8370'	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 L14-2308 01H
SHL: NWSW Section 14, T23N, R8W
2467 FSL and 128 FWL
BHL: SESW Section 14, T23N, R8W
330 FSL and 2570 FWL
San Juan County, New Mexico
Lease Number: NMNM 118132 & NM 76842

5. WELL PLAN & DIRECTIONAL DRILLING PROGRAM

The proposed horizontal well will have a kick off point of 4569'. Directional plans are attached.

Description	Proposed Depth (TVD/MD)	Formation
Horizontal Lateral TD	5337'/8370'	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-5314'TVD/5541'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"	5541'-8370'	Synthetic Oil Based Mud	8.6-9.0	15-25	<15

c) There will be sufficient mud on location to control a blowout should one occur. Mud flow and volume will be monitored both visually and with electronic pit volume totalizers. Mud tests shall be performed every 24 hours after mudding up to determine, as applicable: density, viscosity, gel strength, filtration, and pH.

d) A closed-loop system will be used to recover drilling fluid and dry cuttings in both phases of the well and on all hole intervals, including fresh water and oil-based operations. Above-ground tanks will be utilized to hold cuttings and fluids for rig operations. A frac tank will be on location to store fresh water. Waste will be disposed of properly at an EPA-approved hazardous waste facility. Fresh water cuttings will be disposed of at Basin Disposal, Inc. and/or Industrial Ecosystems, Inc. The location will be lined in accordance with the Surface Use Plan of Operations.

7. TESTING, CORING and LOGGING

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

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

8. ABNORMAL PRESSURES & HYDROGEN SULFIDE

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

No hydrogen sulfide gas is anticipated, however, if H_2S 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 July 24, 2016. 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 14 T23N R8W**
County: **San Juan**
WELL: **Lybrook L14-2308 01H**

Encana Natural Gas

WELL SUMMARY

encana

ENG: **2/3/14**
RIG:
GLE: **6879**
RKBE: **6895**

MWD LWD	OPEN HOLE LOGGING	FORM	DEPTH TVD	DEPTH MD	HOLE SIZE	CASING SPECS	MW MUD TYPE	DEVIATION INFORMATION
			60	60'	**30**	**20" 94#** 100sx Type I Neat 48.8ppg cmt	**Fresh wtr** 8.3-9.2	
Surveys After csg is run	None		**500**	**500**	**12 1/4**	**9 5/8" 36ppf J55 STC** TOC @ surface 178 sks Type III Cmt	**Fresh wtr** 8.4-8.6	Vertical <1°
Surveys every 500'	No OH logs Mud logger onsite	Ojo Alamo Kirtland Fruitland Coal Pictured Cliffs Ss Lewis Shale Cliffhouse Ss Menefee Fn Point Lookout Ss Mancos Sh **KICK OFF PT** Mancos Silt Gallup Top Base Gallup 7" csg	946 1027 1194 1584 1699 2446 3165 4036 4122 4569 4642 4911 5275 5314	5541	**8 3/4**	**7" 26ppf J55 LTC** Stage tool @1634' TOC @ surface 30% OH excess: 485 sksTotal. Stage 1 Lead: 212sks Stage 1 Tail: 146sks. Stage 2 Lead: 127sks	**Fresh Wtr** 8.5-8.8	Vertical <1° KOP 4569 10 deg/100'
		horz target	5346	5745	**6 1/8**	200' overlap at liner top		.25deg updip 5337'TVD TD = 8370' MD
						2625' Lateral	8.6-9.0 OBM	
Surveys every 500' Gyro at CP MWD Gamma Directional	No OH Logs					**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) N/U BOP and surface equipment
4) Drill to KOP of 4569' , 8 3/4" hole size,
5) PU directional tools and start curve at 10deg/100' build rate
6) Drill to casing point of 5314' MD
7) R&C 7" casing, circ cmt to surface, switch to OBM
8) Land at 90deg, drill 2625' lateral to 8370', run 4 1/2" liner with external swellable csg packers

Boomerang Tube LLC

CASING (OR) TUBING DESCRIPTION AND PERFORMANCE PROPERTIES

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

MAXIMUM DEPTH/LENGTH BASED ON MUD WTS & SAFETY FACTORS

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

API RELATED VALUES and INTERMEDIATE CALCULATION RESULTS

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

encana natural gas

Project: San Juan County, NM
Site: S14-T23N-R8W
Well: Lybrook L14-2308 01H
Wellbore: Hz
Design: Plan #1

CATHEDRAL

SECTION DETAILS

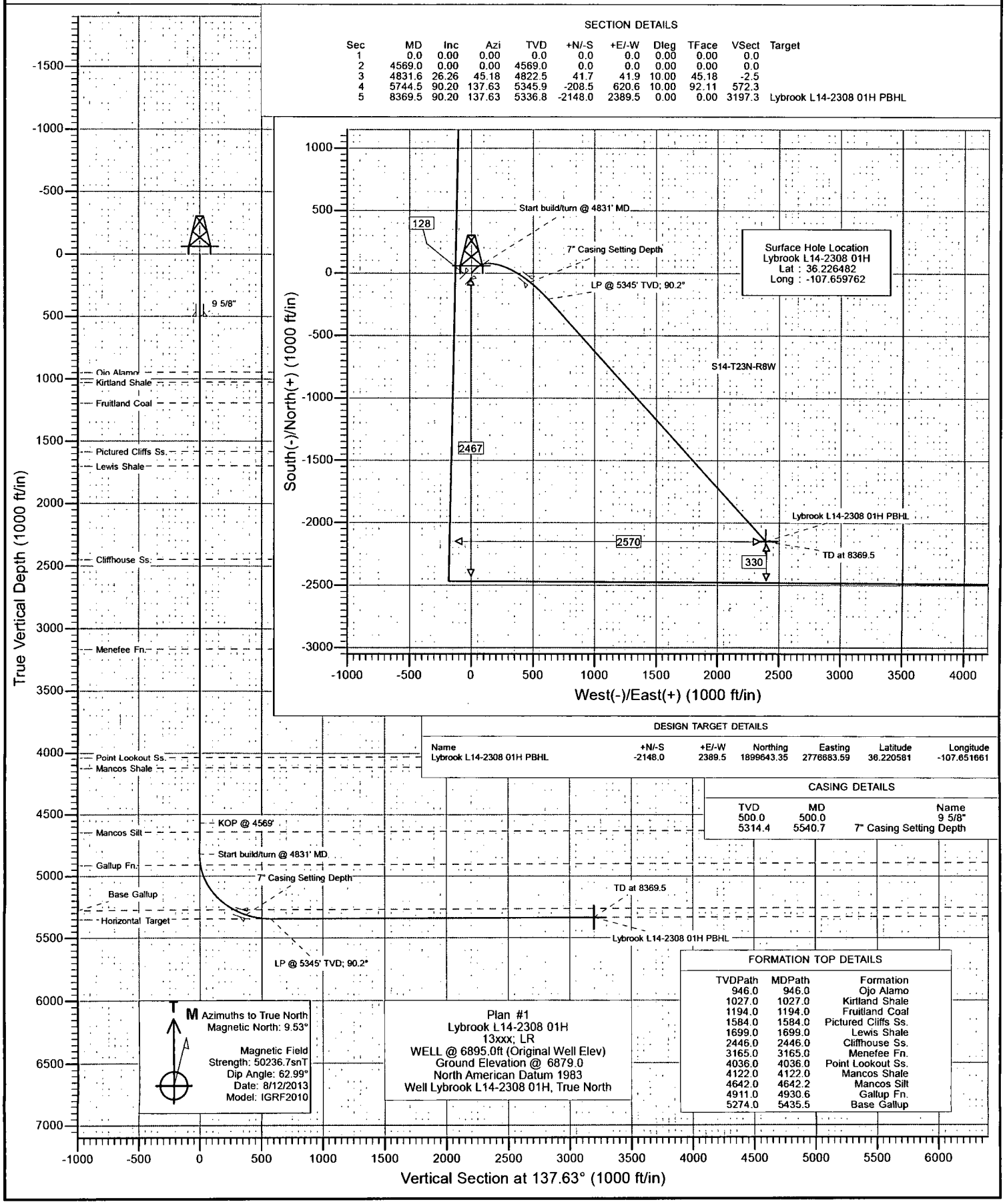
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	4569.0	0.00	0.00	4569.0	0.0	0.0	0.00	0.00	0.0	
3	4831.6	26.26	45.18	4822.5	41.7	41.9	10.00	45.18	-2.5	
4	5744.5	90.20	137.63	5345.9	-208.5	620.6	10.00	92.11	572.3	
5	8369.5	90.20	137.63	5336.8	-2148.0	2389.5	0.00	0.00	3197.3	Lybrook L14-2308 01H PBHL

DESIGN TARGET DETAILS

Name	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
Lybrook L14-2308 01H PBHL	-2148.0	2389.5	1899643.35	2776683.59	36.220581	-107.651661

CASING DETAILS

TVD	MD	Name
500.0	500.0	9 5/8"
5314.4	5540.7	7" Casing Setting Depth



M Azimuths to True North
Magnetic North: 9.53°

Magnetic Field
Strength: 50236.7snT
Dip Angle: 62.99°
Date: 8/12/2013
Model: IGRF2010

Plan #1
Lybrook L14-2308 01H
13xxx; LR
WELL @ 6895.0ft (Original Well Elev)
Ground Elevation @ 6879.0
North American Datum 1983
Well Lybrook L14-2308 01H, True North

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
946.0	946.0	Ojo Alamo
1027.0	1027.0	Kirtland Shale
1194.0	1194.0	Fruitland Coal
1584.0	1584.0	Pictured Cliffs Ss.
1699.0	1699.0	Lewis Shale
2446.0	2446.0	Cliffhouse Ss.
3165.0	3165.0	Menefee Fn.
4036.0	4036.0	Point Lookout Ss.
4122.0	4122.0	Mancos Shale
4642.0	4642.2	Mancos Silt
4911.0	4930.6	Gallup Fn.
5274.0	5435.5	Base Gallup

Planning Report

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well Lybrook L14-2308 01H
Company:	EnCana Oil & Gas (USA) Inc	**TVD Reference:**	WELL @ 6895.0ft (Original Well Elev)
Project:	San Juan County, NM	**MD Reference:**	WELL @ 6895.0ft (Original Well Elev)
Site:	S14-T23N-R8W	**North Reference:**	True
Well:	Lybrook L14-2308 01H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Hz		
Design:	Plan #1		

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	S14-T23N-R8W				
Site Position:		**Northing:**	1,901,787.07 ft	**Latitude:**	36.226482
From:	Lat/Long	**Easting:**	2,774,290.25 ft	**Longitude:**	-107.659762
Position Uncertainty:	0.0 ft	**Slot Radius:**	13.200 in	**Grid Convergence:**	0.10 °

Well	Lybrook L14-2308 01H					
Well Position	**+N/-S**	0.0 ft	**Northing:**	1,901,787.07 ft	**Latitude:**	36.226482
	+E/-W	0.0 ft	**Easting:**	2,774,290.25 ft	**Longitude:**	-107.659762
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	8/12/2013	9.53	62.99	50,237

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	137.63	

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	
4,569.0	0.00	0.00	4,569.0	0.0	0.0	0.00	0.00	0.00	0.00	
4,831.6	26.26	45.18	4,822.5	41.7	41.9	10.00	10.00	0.00	45.18	
5,744.5	90.20	137.63	5,345.9	-208.5	620.6	10.00	7.00	10.13	92.11	
8,369.5	90.20	137.63	5,336.8	-2,148.0	2,389.5	0.00	0.00	0.00	0.00	Lybrook L14-2308 01I

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well Lybrook L14-2308 01H
Company:	EnCana Oil & Gas (USA) Inc	**TVD Reference:**	WELL @ 6895.0ft (Original Well Elev)
Project:	San Juan County, NM	**MD Reference:**	WELL @ 6895.0ft (Original Well Elev)
Site:	S14-T23N-R8W	**North Reference:**	True
Well:	Lybrook L14-2308 01H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Hz		
Design:	Plan #1		

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	
946.0	0.00	0.00	946.0	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	
1,027.0	0.00	0.00	1,027.0	0.0	0.0	0.0	0.00	0.00	Kirtland Shale
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	
1,194.0	0.00	0.00	1,194.0	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	
1,300.0	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	
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	
1,584.0	0.00	0.00	1,584.0	0.0	0.0	0.0	0.00	0.00	Pictured Cliffs Ss.
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	
1,699.0	0.00	0.00	1,699.0	0.0	0.0	0.0	0.00	0.00	Lewis Shale
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	
2,100.0	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	
2,446.0	0.00	0.00	2,446.0	0.0	0.0	0.0	0.00	0.00	Cliffhouse Ss.
2,500.0	0.00	0.00	2,500.0	0.0	0.0	0.0	0.00	0.00	
2,600.0	0.00	0.00	2,600.0	0.0	0.0	0.0	0.00	0.00	
2,700.0	0.00	0.00	2,700.0	0.0	0.0	0.0	0.00	0.00	
2,800.0	0.00	0.00	2,800.0	0.0	0.0	0.0	0.00	0.00	
2,900.0	0.00	0.00	2,900.0	0.0	0.0	0.0	0.00	0.00	
3,000.0	0.00	0.00	3,000.0	0.0	0.0	0.0	0.00	0.00	
3,100.0	0.00	0.00	3,100.0	0.0	0.0	0.0	0.00	0.00	
3,165.0	0.00	0.00	3,165.0	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	
4,036.0	0.00	0.00	4,036.0	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	
4,122.0	0.00	0.00	4,122.0	0.0	0.0	0.0	0.00	0.00	Mancos Shale
4,200.0	0.00	0.00	4,200.0	0.0	0.0	0.0	0.00	0.00	

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well Lybrook L14-2308 01H
Company:	EnCana Oil & Gas (USA) Inc	**TVD Reference:**	WELL @ 6895.0ft (Original Well Elev)
Project:	San Juan County, NM	**MD Reference:**	WELL @ 6895.0ft (Original Well Elev)
Site:	S14-T23N-R8W	**North Reference:**	True
Well:	Lybrook L14-2308 01H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Hz		
Design:	Plan #1		

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	
4,400.0	0.00	0.00	4,400.0	0.0	0.0	0.0	0.00	0.00	
4,500.0	0.00	0.00	4,500.0	0.0	0.0	0.0	0.00	0.00	
4,569.0	0.00	0.00	4,569.0	0.0	0.0	0.0	0.00	0.00	KOP @ 4569'
4,600.0	3.10	45.18	4,600.0	0.6	0.6	0.0	10.00	10.00	
4,642.2	7.32	45.18	4,642.0	3.3	3.3	-0.2	10.00	10.00	Mancos Silt
4,700.0	13.10	45.18	4,698.9	10.5	10.6	-0.6	10.00	10.00	
4,800.0	23.10	45.18	4,793.8	32.4	32.6	-2.0	10.00	10.00	
4,831.6	26.26	45.18	4,822.5	41.7	41.9	-2.5	10.00	10.00	Start build/turn @ 4831' MD
4,900.0	26.83	60.47	4,883.8	60.0	66.1	0.3	10.00	0.83	
4,930.6	27.59	66.95	4,911.0	66.2	78.7	4.1	10.00	2.50	Gallup Fn.
5,000.0	30.33	80.15	4,971.8	75.5	110.8	18.9	10.00	3.95	
5,100.0	36.14	95.08	5,055.5	77.2	165.1	54.3	10.00	5.80	
5,200.0	43.31	106.02	5,132.5	65.1	227.6	105.3	10.00	7.18	
5,300.0	51.28	114.26	5,200.3	39.5	296.4	170.5	10.00	7.97	
5,400.0	59.71	120.80	5,256.9	1.3	369.2	247.9	10.00	8.43	
5,435.5	62.78	122.85	5,274.0	-15.2	395.7	277.8	10.00	8.63	Base Gallup
5,500.0	68.41	126.29	5,300.7	-48.5	443.9	335.0	10.00	8.74	
5,540.7	72.00	128.32	5,314.4	-71.7	474.4	372.7	10.00	8.82	7" Casing Setting Depth
5,600.0	77.27	131.14	5,330.1	-108.2	518.3	429.3	10.00	8.88	
5,700.0	86.21	135.67	5,344.5	-176.2	590.1	527.9	10.00	8.94	
5,744.5	90.20	137.63	5,345.9	-208.5	620.6	572.3	10.00	8.97	LP @ 5345' TVD; 90.2°
5,800.0	90.20	137.63	5,345.7	-249.5	658.0	627.8	0.00	0.00	
5,900.0	90.20	137.63	5,345.4	-323.4	725.4	727.8	0.00	0.00	
6,000.0	90.20	137.63	5,345.0	-397.3	792.8	827.8	0.00	0.00	
6,100.0	90.20	137.63	5,344.7	-471.2	860.2	927.8	0.00	0.00	
6,200.0	90.20	137.63	5,344.3	-545.1	927.6	1,027.8	0.00	0.00	
6,300.0	90.20	137.63	5,344.0	-619.0	995.0	1,127.8	0.00	0.00	
6,400.0	90.20	137.63	5,343.6	-692.8	1,062.3	1,227.8	0.00	0.00	
6,500.0	90.20	137.63	5,343.3	-766.7	1,129.7	1,327.8	0.00	0.00	
6,600.0	90.20	137.63	5,342.9	-840.6	1,197.1	1,427.8	0.00	0.00	
6,700.0	90.20	137.63	5,342.6	-914.5	1,264.5	1,527.8	0.00	0.00	
6,800.0	90.20	137.63	5,342.2	-988.4	1,331.9	1,627.8	0.00	0.00	
6,900.0	90.20	137.63	5,341.9	-1,062.3	1,399.3	1,727.8	0.00	0.00	
7,000.0	90.20	137.63	5,341.5	-1,136.2	1,466.7	1,827.8	0.00	0.00	
7,100.0	90.20	137.63	5,341.2	-1,210.0	1,534.0	1,927.8	0.00	0.00	
7,200.0	90.20	137.63	5,340.8	-1,283.9	1,601.4	2,027.8	0.00	0.00	
7,300.0	90.20	137.63	5,340.5	-1,357.8	1,668.8	2,127.8	0.00	0.00	
7,400.0	90.20	137.63	5,340.1	-1,431.7	1,736.2	2,227.8	0.00	0.00	
7,500.0	90.20	137.63	5,339.8	-1,505.6	1,803.6	2,327.8	0.00	0.00	
7,600.0	90.20	137.63	5,339.5	-1,579.5	1,871.0	2,427.8	0.00	0.00	
7,700.0	90.20	137.63	5,339.1	-1,653.4	1,938.4	2,527.8	0.00	0.00	
7,800.0	90.20	137.63	5,338.8	-1,727.2	2,005.7	2,627.8	0.00	0.00	
7,900.0	90.20	137.63	5,338.4	-1,801.1	2,073.1	2,727.8	0.00	0.00	
8,000.0	90.20	137.63	5,338.1	-1,875.0	2,140.5	2,827.8	0.00	0.00	
8,100.0	90.20	137.63	5,337.7	-1,948.9	2,207.9	2,927.8	0.00	0.00	
8,200.0	90.20	137.63	5,337.4	-2,022.8	2,275.3	3,027.8	0.00	0.00	
8,300.0	90.20	137.63	5,337.0	-2,096.7	2,342.7	3,127.8	0.00	0.00	
8,369.5	90.20	137.63	5,336.8	-2,148.0	2,389.5	3,197.3	0.00	0.00	TD at 8369.5

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well Lybrook L14-2308 01H
Company:	EnCana Oil & Gas (USA) Inc	**TVD Reference:**	WELL @ 6895.0ft (Original Well Elev)
Project:	San Juan County, NM	**MD Reference:**	WELL @ 6895.0ft (Original Well Elev)
Site:	S14-T23N-R8W	**North Reference:**	True
Well:	Lybrook L14-2308 01H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Hz		
Design:	Plan #1		

Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
Lybrook L14-2308 01H F - plan hits target center - Point	0.00	0.00	5,336.8	-2,148.0	2,389.5	1,899,643.35	2,776,683.59	36.220581	-107.651661
Lybrook L14-2308 01H F - plan misses target center by 41.2ft at 5534.4ft MD (5312.5 TVD, -68.0 N, 469.7 E) - Point	0.00	0.00	5,346.7	-45.1	471.6	1,901,742.78	2,774,761.94	36.226358	-107.658163

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)
5,540.7	5,314.4	7" Casing Setting Depth	0.000	0.000
500.0	500.0	9 5/8"	0.000	0.000

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
946.0	946.0	Ojo Alamo		-0.20	137.63
1,027.0	1,027.0	Kirtland Shale		-0.20	137.63
1,194.0	1,194.0	Fruitland Coal		-0.20	137.63
1,584.0	1,584.0	Pictured Cliffs Ss.		-0.20	137.63
1,699.0	1,699.0	Lewis Shale		-0.20	137.63
2,446.0	2,446.0	Cliffhouse Ss.		-0.20	137.63
3,165.0	3,165.0	Menefee Fn.		-0.20	137.63
4,036.0	4,036.0	Point Lookout Ss.		-0.20	137.63
4,122.0	4,122.0	Mancos Shale		-0.20	137.63
4,642.2	4,642.0	Mancos Silt		-0.20	137.63
4,930.6	4,911.0	Gallup Fn.		-0.20	137.63
5,435.5	5,275.0	Base Gallup		-0.20	137.63

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
4,569.0	4,569.0	0.0	0.0	KOP @ 4569'
4,831.6	4,822.5	41.7	41.9	Start build/turn @ 4831' MD
5,744.5	5,345.9	-208.5	620.6	LP @ 5345' TVD; 90.2°
8,369.5	5,336.8	-2,148.0	2,389.5	TD at 8369.5

ENCANA OIL & GAS (USA) INC.

LYBROOK L14-2308 #01H
2467' FSL & 128' FWL
LOCATED IN THE NW/4 SW/4 OF SECTION 14,
T23N, R8W, N.M.P.M.,
SAN JUAN COUNTY, NEW MEXICO

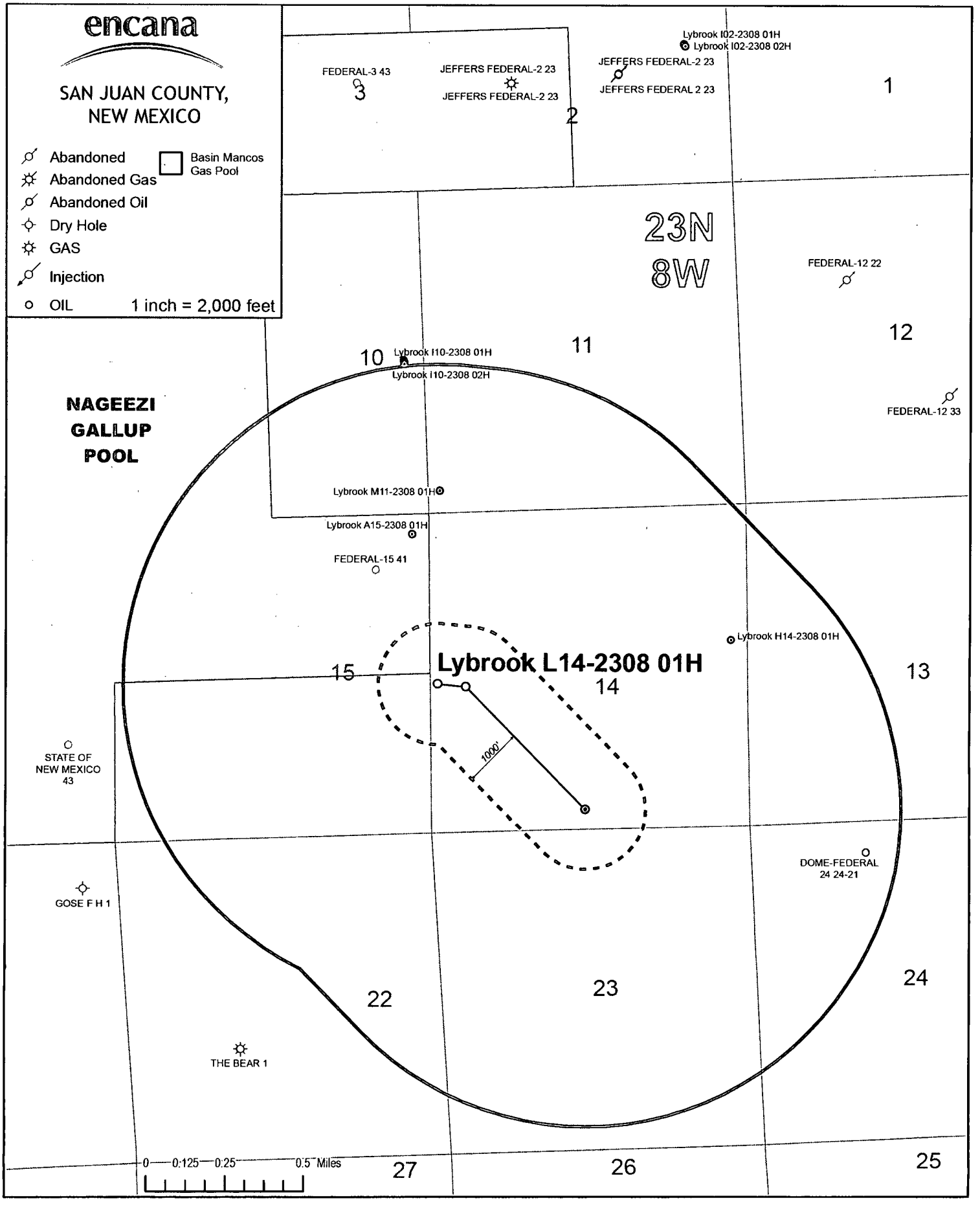
DIRECTIONS

1) FROM THE INTERSECTION OF HWY 64 & HWY 550 IN BLOOMFIELD, GO SOUTH ON HWY 550, 39.0 MILES TO INDIAN ROUTE 7061 (M.P. 112.6).
2) TURN RIGHT AND GO 1.7 MILES TO A DIRT ROAD WITH CATTLE GUARD.
3) TURN LEFT AND GO 0.6 MILES TO "Y" INTERSECTION.
4) TURN LEFT AND GO 0.9 MILES TO "T" INTERSECTION.
5) TURN RIGHT AND GO 1.3 MILES TO WHERE ACCESS IS STAKED ON RIGHT SIDE OF ROAD.

WELL FLAG LOCATED AT LAT. 36.226482° N, LONG.107.659762° W (NAD 83).

JOB No.: ENC086
DATE: 06/29/13

Scorpion Survey & Consulting, L.L.C.
55 County Road 3312
Aztec, New Mexico 87410
(505) 333-2945


encana
SAN JUAN COUNTY,
NEW MEXICO
Abandoned
Abandoned Gas
Abandoned Oil
Dry Hole
GAS
Injection
OIL
Basin Mancos Gas Pool
1 inch = 2,000 feet
FEDERAL-3 43
JEFFERS FEDERAL-2 23
JEFFERS FEDERAL-2 23
JEFFERS FEDERAL 2 23
Lybrook I02-2308 01H
Lybrook I02-2308 02H
23N
8W
FEDERAL-12 22
FEDERAL-12 33
Lybrook I10-2308 01H
Lybrook I10-2308 02H
NAGEEZI
GALLUP
POOL
Lybrook M11-2308 01H
Lybrook A15-2308 01H
FEDERAL-15 41
Lybrook H14-2308 01H
Lybrook L14-2308 01H
1000'
STATE OF
NEW MEXICO
43
DOME-FEDERAL
24 24-21
GOSE F H 1
THE BEAR 1
1
2
3
10
11
12
13
14
15
22
23
24
25
26
27
0 0.125 0.25 0.5 Miles

SHEET D

WELLHEAD BLOWOUT CONTROL SYSTEM

encana™
natural gas

Well name and number:

Lybrook L14-2308 01H