

State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

David Martin
Cabinet Secretary

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 3160-4 or 3160-5 form.

Operator Signature Date: 7/24/2014

Well information:

API WELL #	Well Name	Well #	Operator Name	Type	Stat	County	Surf. Owner	UL	Sec	Twp	N/S	Rng	W/E
30-043-21217-00-00	LYBROOK G31 2307	001H	ENCANA OIL & GAS (USA) INC.	G	N	Sandoval	F	G	31	23	N	7	W

Application Type:

☐ P&A ☒ Drilling/Casing Change ☐ Recomplete/DHC
☒ Location Change ☒ Other: Project area enlarged

Conditions of Approval:

Notify NMOCD 24hrs prior to beginning operations

Hold C104 for directional survey, as drilled plat, NSL, and NSP

NMOCD Approved by Signature

8/14/2014

Date

RECEIVED

JUL 30 2014

Form 3160-5
(March 2012)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

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

SUNDRY NOTICES AND REPORTS ON WELLS
Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160-3 (APD) for such proposals.

5. Lease/Serial No.
NM LG-9090, BIA NO-G-1403-1946

6. If Indian, Allottee or Tribe Name
Allottee

SUBMIT IN TRIPLICATE - Other instructions on page 2.

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

1. Type of Well

☐ Oil Well ☒ Gas Well ☐ Other

8. Well Name and No.
Lybrook G31-2307 01H

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

9. API Well No.
30-043-21217

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

3b. Phone No. (include area code)
720-876-3926

10. Field and Pool or Exploratory Area
Basin Mancos Pool

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)
SHL: 1358' FNL and 2375' FEL Sec 31, T23N, R7W
BHL: 400' FNL and 330' FWL Sec 36, T23N, R8W

11. County or Parish, State
Sandoval and San Juan Counties: NM

12. CHECK THE APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
☒ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
☐ Subsequent Report	☐ Alter Casing	☐ Fracture Treat	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☐ Other _____
	☒ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	

13. Describe Proposed or Completed Operation: Clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports must be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 must be filed once testing has been completed. Final Abandonment Notices must be filed only after all requirements, including reclamation, have been completed and the operator has determined that the site is ready for final inspection.)

In order to avoid stranding allottee minerals, Encana Oil & Gas (USA) Inc. (Encana) extended the Lybrook G31-2307.01H well lateral to include the N2NW of Section 36, T23N, R8W. Encana would like to revise the survey plat, 10-Point Drilling Plan, Well Summary Diagram, and Directional Drilling Plan submitted on March 20, 2014. Additionally, Encana is revising the C-102 to reflect these changes as well as a change to the project area and bottom hole location.

OIL CONS. DIV DIST. 3

AUG 13 2014

CONDITIONS OF APPROVAL

Adhere to previously issued stipulations.

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

14. I hereby certify that the foregoing is true and correct. Name (Printed/Typed)

Jessica Gregg

Title Regulatory Analyst

Signature

Jessica Gregg

Date 07/24/2014

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by

William Tambekou

Petroleum Engineer

Date 8/11/2014

Conditions of approval, if any, are attached. Approval of this notice 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.

Office FFO

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.

(Instructions on page 2)

NMOCDA

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

District II
811 S. First Street, Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720

District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6179 Fax: (505) 334-6170

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

State of New Mexico
Energy, Minerals & Natural Resources Department

Form C-102
Revised August 1, 2011

Submit one copy to
Appropriate District Office

OIL CONSERVATION DIVISION

1220 South St. Francis Drive
Santa Fe, NM 87505

☐ AMENDED REPORT
RECEIVED

JUL 30 2014

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number 30-043-21217		Pool Code 97232	Pool Name BASIN MANCOSE
Property Code 313185	Property Name LYBROOK G31-2307		Well Number 01H
GRID NO. 282327	Operator Name ENCANA OIL & GAS (USA) INC.		Elevation 6995'

10 Surface Location

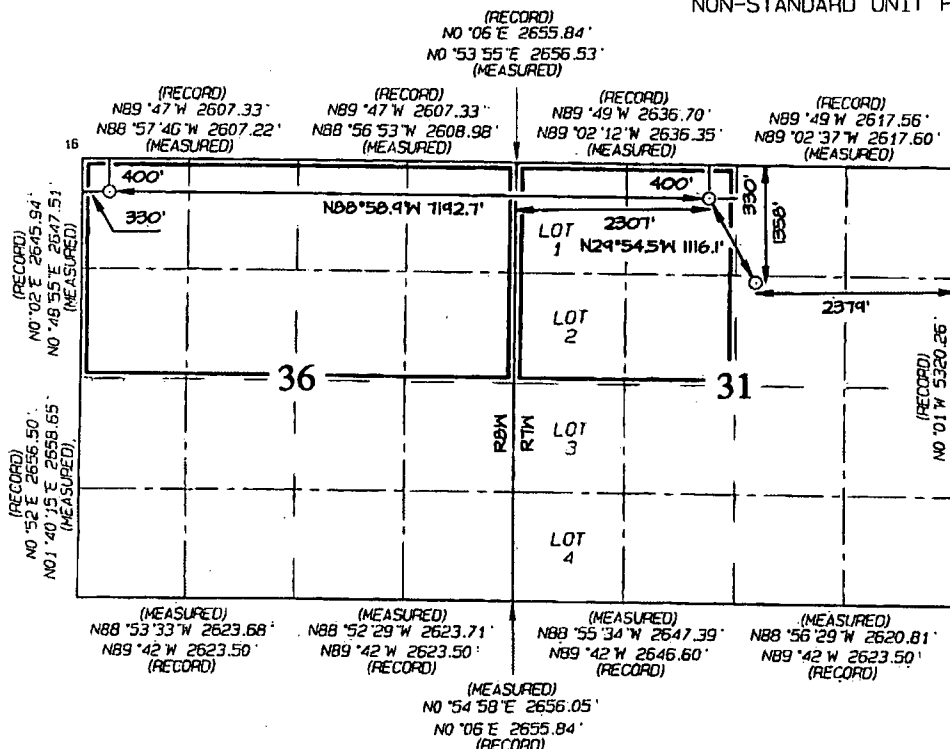
UL or Lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
G	31	23N	7W		1358	NORTH	2379	EAST	SANDOVAL

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
D	36	23N	8W		400	NORTH	330	WEST	SAN JUAN

Dedicated Acres 481.24 Acres	NW/4 of Section 31 N/2 of Section 36	Joint or Infill	Consolidation Code	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



END-OF-LATERAL
400' FNL 330' FNL
SECTION 36, T23N, R7W
LAT: 36.18958°N
LONG: 107.64028°W
DATUM: NAD1927

LAT: 36.18959°N
LONG: 107.64089°W
DATUM: NAD1983

POINT-OF-ENTRY
400' FNL 2307' FNL
SECTION 31, T23N, R7W
LAT: 36.18951°N
LONG: 107.61591°W
DATUM: NAD1927

LAT: 36.18952°N
LONG: 107.61652°W
DATUM: NAD1983

SURFACE LOCATION
1358' FNL 2379' FEL
SECTION 31, T23N, R7W
LAT: 36.18687°N
LONG: 107.61398°W
DATUM: NAD1927

LAT: 36.18688°N
LONG: 107.61459°W
DATUM: NAD1983

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: Holly Hill Date: 5/24/14
Printed Name: Holly Hill
E-mail Address: holly.hill@encana.com

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

Date Revised: APRIL 15, 2014
Survey Date: NOVEMBER 12, 2013

Signature and Seal of Professional Surveyor



JASON C. EDWARDS
Certificate Number 15269

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

in Bloomfield, NM to Encana Oil & Gas (USA) Inc. Lybrook G31-2307 01H

1358' FNL & 2379' FEL, Section 31, T23N, R7W, N.M.P.M., Sandoval County, NM

Latitude: 36.18688°N Longitude: 107.61459°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 2.8 miles to three-way intersection;

Go left (North-easterly) for 0.2 miles to new access on right-hand side of existing roadway;

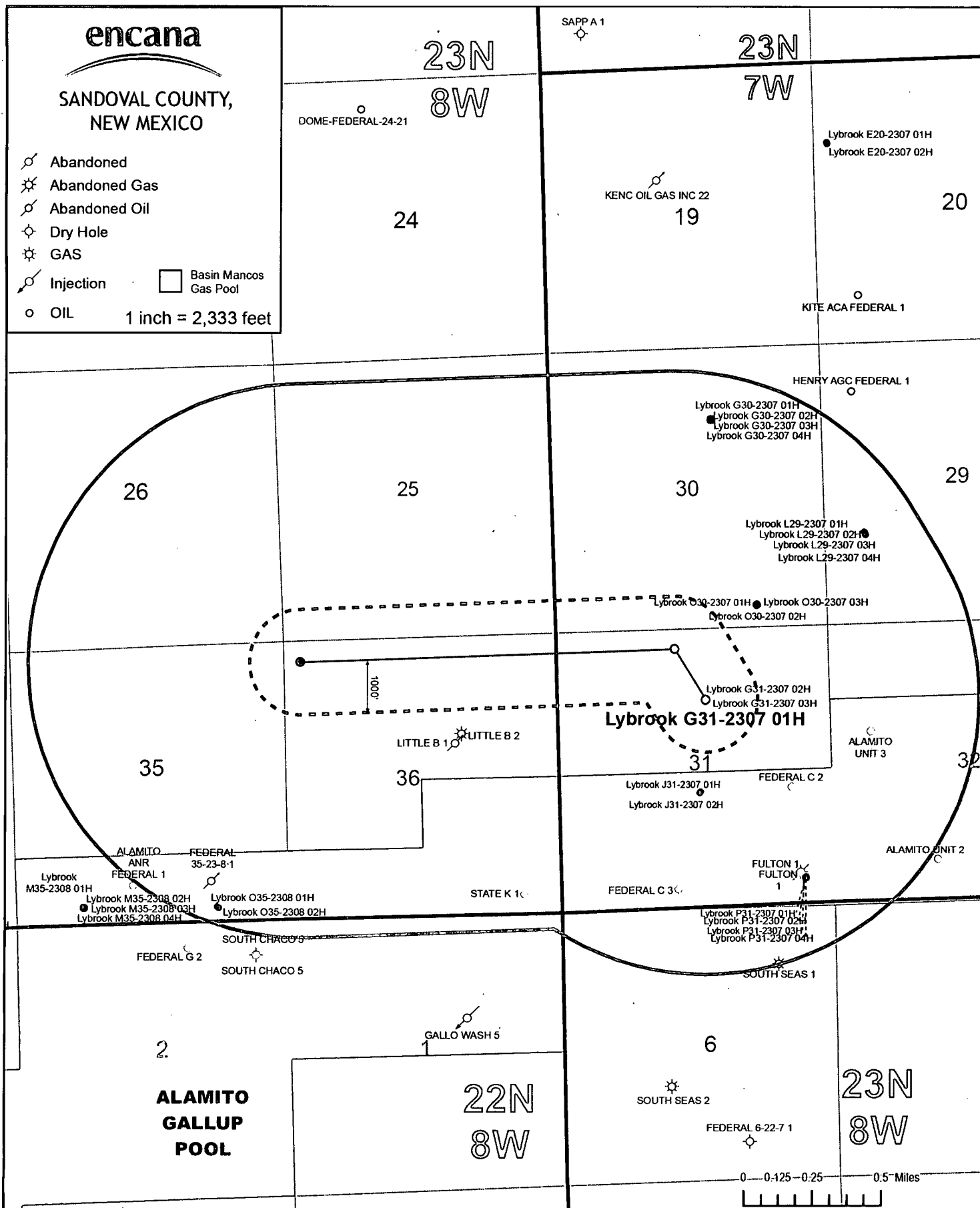
Go right (North-easterly) for 4149' along Encana Lybrook J31-2307 01H proposed access to new access on left-hand-side which continues for an additional 1169' to staked Encana Lybrook G31-2307 01H location.

encana

**SANDOVAL COUNTY,
NEW MEXICO**

- ⊗ Abandoned
 - ⊗ Abandoned Gas
 - ⊗ Abandoned Oil
 - ⊗ Dry Hole
 - ⊗ GAS
 - ⊗ Injection
 - OIL
- 1 inch = 2,333 feet

Basin Mancos
Gas Pool



Lybrook G31-2307 01H
 SHL: SWNE Sec 31 T23N R7W
 1358' FNL, 2379' FEL
 BHL: NWNE Sec 36 T23N R8W
 400' FNL, 330' FWL
 San Juan 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.	924
Kirtland Shale	1,119
Fruitland Coal	1,385
Pictured Cliffs Ss.	1,509
Lewis Shale	1,625
Cliffhouse Ss.	2,278
Menefee Fn.	3,068
Point Lookout Ss.	3,893
Mancos Shale	4,075
Mancos Silt	4,601
Gallup Fn.	4,866

The referenced surface elevation is 6995', KB 7011'

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

Substance	Formation	Depth (TVD) units = feet
Water/Gas	Fruitland Coal	1,385
Oil/Gas	Pictured Cliffs Ss.	1,509
Oil/Gas	Cliffhouse Ss.	2,278
Gas	Menefee Fn.	3,068
Oil/Gas	Point Lookout Ss.	3,893
Oil/Gas	Mancos Shale	4,075
Oil/Gas	Mancos Silt	4,601
Oil/Gas	Gallup Fn.	4,866

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 G31-2307 01H
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 San Juan 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#	
Surface	0'-500'	12 1/4"	9 5/8"	36#	J55, STC New
Intermediate	0'-5585'	8 3/4"	7"	26#	J55, LTC New
Production Liner	5385'-12878'	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 G31-2307 01H
 SHL: SWNE Sec 31 T23N R7W
 1358' FNL, 2379' FEL
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 400' FNL, 330' FWL
 San Juan 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'	314 sks	HALCEM™ SYSTEM + 2% CaCl ₂ + 0.125lbm/sk Poly-E-Flake. 15.8 ppg, 1.174 cuft/sk	Surface	1 per joint on bottom 3 joints
Intermediate	0'-5585'	30% open hole excess Stage 1 Lead: 325 sks Stage 1 Tail: 405 sks Stage 2 Lead: 161 sks	Stage 1 Lead: HALCEM™ SYSTEM + 0.2% HR-5 + 5lbm/sk Kol-Seal + 0.125lbm/sk Poly-E-Flake. 12.3 ppg, 1.948 cuft/sk Stage 1 Tail: VARICEM™ CEMENT + .15% CFR-3 + 5lbm/sk Kol-Seal + 0.125% Poly-E-Flake. 13.5 ppg, 1.308 cuft/sk. Stage 2 Contingency: HALCEM™ SYSTEM + 5lbm/sk Kol-Seal + 0.125lbm/sk Poly-E-Flake. 12.3 ppg,	Surface	1 every 3 joints through water bearing zones
Production Liner	5385'-12878'	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 2700'. Directional plans are attached.

Description	Proposed Depth (TVD/MD)	Formation
Horizontal Lateral TD	5071'/12878'	Gallup

Lybrook G31-2307 01H

SHL: SWNE Sec 31 T23N R7W

1358' FNL, 2379' FEL

BHL: NWNE Sec 36 T23N R8W

400' FNL, 330' FWL

San Juan Sandoval, New Mexico

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	8.3-10	60-70	NC
8 3/4"	500'/500'-5126'/5585'	Fresh Water LSND	8.3-10	40-50	8-10

- 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"	5126'/5585'- 5071'/12878'	Fresh Water LSND	8.3-10	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. 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 +/- 2405 psi based on a 9.0 ppg at 5138' 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.

Lybrook G31-2307 01H

**SHL: SWNE Sec 31 T23N R7W
1358' FNL, 2379' FEL**

**BHL: NWNE Sec 36 T23N R8W
400' FNL, 330' FWL**

San Juan Sandoval, New Mexico

9. ANTICIPATED START DATE AND DURATION OF OPERATIONS

Drilling is estimated to commence on November 13, 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: NE/4 NW/4 Sec 31 T23N R7W, 400' F County: Sandoval WELL: Lybrook G31-2307 01H			Encana Natural Gas			ENG: Ashley Lantz 7/21/14 RIG: Aztec 950 GLE: 6995 RKBE: 7011		
WELL SUMMARY								
MWD	OPEN HOLE		DEPTH			HOLE	CASING	MW
LWD	LOGGING	FORM	TVD	MD		SIZE	SPECS	MUD TYPE
			GO	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 anticollision 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 with 100% OH Excess: 314 sks of HALCEM™ SYSTEM + 2% CaCl2 + 0.125lbm/sk Poly-E-Flake. Mixed at 15.8 ppg. Yield 1.174 cuft/sk.	Fresh wtr 8.3-10
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. Monterey Fm. Point Lookout Ss. Mancos Shale	924 1,110 1,365 1,509 1,625 2,278 3,068 3,893 4,075		Stage tool @ ~ 1,675	8 3/4	7" 26ppf J55 LTC TOC @ surface (30% OH excess) Stage 1 Total: 731sks If necessary, Stage 2 Total: 161sks Stage 1 Lead: 325 sks HALCEM™ SYSTEM + 0.2% HR-5 + 5lbm/sk Kol-Seal + 0.125lbm/sk Poly-E-Flake. Mixed at 12.3 ppg. Yield 1.948 cuft/sk. Stage 1 Tail: 406 sks VARICEM™ CEMENT + .15% CFR-3 + 5lbm/sk Kol-Seal + 0.125% Poly-E-Flake. Mixed at 13.5 ppg. Yield 1.308 cuft/sk. Stage 2: 161 sks HALCEM™ SYSTEM + 5lbm/sk Kol-Seal + 0.125lbm/sk Poly-E-Flake. Mixed at 12.3 ppg. Yield 1.948 cuft/sk.	Fresh Wtr 8.3-10
Surveys every 30' through the curve	Mud logger onsite	KOP Mancos Silt Gallup Fm. 7" Csg	2,700 4,801 4,866 5,126	2,700 5,585'		6 1/8	200' overlap at liner top 7293' Drilled Lateral	
Surveys every stand to TD unless directed otherwise by Geologist	No OH Logs	Horizontal Target TD Base Gallup	5,138 5,071 5,212	12,878			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	WBM 8.3-10
MWD Gamma Directional								Horiz Inc/TVD 90.5 deg/deg/51380 TD = 12878.2 MD

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 2700', 8 3/4 inch holesize
- 5) Start curve at 10deg/100' build rate
- 6) Drill to csg point of 5585' MD
- 7) R&C 7" csg, circ cmt to surface, switch to WBM
- 8) Land at 90 deg, drill lateral to 12878' run 4 1/2 inch liner with external swellable csg packers

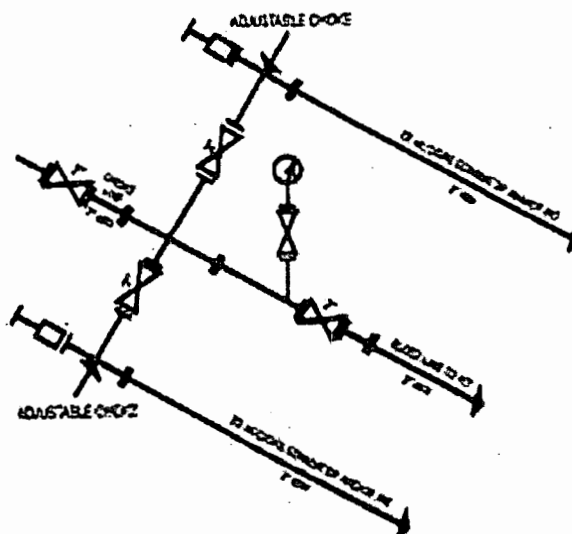
encana

11" 3K Rotating Head

11" 3K Annular

3K Double Ram
Top: Pipe Ram
Bottom: Blind Ram
3" Outlets Below Ram

3K Mud Cross 3" gate valves





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

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Lybrook G31-2307 01H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	WELL @ 7011.0ft (Original Well Elev)
Project:	Sandoval County, NM	MD Reference:	WELL @ 7011.0ft (Original Well Elev)
Site:	S31-T23N-R7W	North Reference:	True
Well:	Lybrook G31-2307 01H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Hz		
Design:	Plan #3		

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

Site	S31-T23N-R7W			
Site Position:		Northing:	1,890,125.34 ft	Latitude: 36.186880
From:	Lat/Long	Easting:	1,237,740.16 ft	Longitude: -107.614590
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence: -0.81 °

Well	Lybrook G31-2307 01H			
Well Position	+N/-S	0.0 ft	Northing: 1,890,125.34 ft	Latitude: 36.186880
	+E/-W	0.0 ft	Easting: 1,237,740.16 ft	Longitude: -107.614590
Position Uncertainty	0.0 ft	Wellhead Elevation:	ft	Ground Level: 6,995.0 ft

Wellbore	Hz				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
			(°)	(°)	(nT)
	IGRF2010	2/3/2014	9.44	62.95	50,172

Design	Plan #3			
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	270.21

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	
2,700.0	0.00	0.00	2,700.0	0.0	0.0	0.00	0.00	0.00	0.00	
4,188.6	29.77	0.57	4,122.5	378.1	3.7	2.00	2.00	0.00	0.57	
4,779.5	29.77	0.57	4,635.4	671.5	6.6	0.00	0.00	0.00	0.00	
5,685.6	90.50	270.21	5,133.0	961.2	-569.6	10.00	6.70	-9.97	-90.06	Lybrook G31-2307 01
12,878.2	90.50	270.21	5,070.2	987.7	-7,761.9	0.00	0.00	0.00	0.00	Lybrook G31-2307 01

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Lybrook G31-2307 01H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	WELL @ 7011.0ft (Original Well Elev)
Project:	Sandoval County, NM	MD Reference:	WELL @ 7011.0ft (Original Well Elev)
Site:	S31-T23N-R7W	North Reference:	True
Well:	Lybrook G31-2307 01H	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #3		

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	
924.0	0.00	0.00	924.0	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	
1,119.0	0.00	0.00	1,119.0	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	
1,385.0	0.00	0.00	1,385.0	0.0	0.0	0.0	0.00	0.00	Fruitland Coal
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	
1,509.0	0.00	0.00	1,509.0	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	
1,625.0	0.00	0.00	1,625.0	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	
2,278.0	0.00	0.00	2,278.0	0.0	0.0	0.0	0.00	0.00	Cliffhouse Ss.
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	KOP @ 2700'
2,800.0	2.00	0.57	2,800.0	1.7	0.0	0.0	2.00	2.00	
2,900.0	4.00	0.57	2,899.8	7.0	0.1	0.0	2.00	2.00	
3,000.0	6.00	0.57	2,999.5	15.7	0.2	-0.1	2.00	2.00	
3,069.0	7.38	0.57	3,068.0	23.7	0.2	-0.1	2.00	2.00	Menefee Fn.
3,100.0	8.00	0.57	3,098.7	27.9	0.3	-0.2	2.00	2.00	
3,200.0	10.00	0.57	3,197.5	43.5	0.4	-0.3	2.00	2.00	
3,300.0	12.00	0.57	3,295.6	62.6	0.6	-0.4	2.00	2.00	
3,400.0	14.00	0.57	3,393.1	85.1	0.8	-0.5	2.00	2.00	
3,500.0	16.00	0.57	3,489.6	111.0	1.1	-0.7	2.00	2.00	
3,600.0	18.00	0.57	3,585.3	140.2	1.4	-0.9	2.00	2.00	
3,700.0	20.00	0.57	3,679.8	172.8	1.7	-1.1	2.00	2.00	
3,800.0	22.00	0.57	3,773.2	208.6	2.1	-1.3	2.00	2.00	
3,900.0	24.00	0.57	3,865.2	247.7	2.4	-1.5	2.00	2.00	
3,930.5	24.61	0.57	3,893.0	260.2	2.6	-1.6	2.00	2.00	Point Lookout Ss.
4,000.0	26.00	0.57	3,955.8	289.9	2.9	-1.8	2.00	2.00	
4,100.0	28.00	0.57	4,044.9	335.3	3.3	-2.1	2.00	2.00	
4,134.2	28.68	0.57	4,075.0	351.5	3.5	-2.2	2.00	2.00	Mancos Shale
4,188.6	29.77	0.57	4,122.5	378.1	3.7	-2.3	2.00	2.00	EOB; Inc=29.77°

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Lybrook G31-2307 01H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	WELL @ 7011.0ft (Original Well Elev)
Project:	Sandoval County, NM	MD Reference:	WELL @ 7011.0ft (Original Well Elev)
Site:	S31-T23N-R7W	North Reference:	True
Well:	Lybrook G31-2307 01H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Hz		
Design:	Plan #3		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
4,200.0	29.77	0.57	4,132.4	383.8	3.8	-2.4	0.00	0.00	
4,300.0	29.77	0.57	4,219.2	433.4	4.3	-2.7	0.00	0.00	
4,400.0	29.77	0.57	4,306.0	483.1	4.8	-3.0	0.00	0.00	
4,500.0	29.77	0.57	4,392.8	532.7	5.3	-3.3	0.00	0.00	
4,600.0	29.77	0.57	4,479.6	582.4	5.7	-3.6	0.00	0.00	
4,700.0	29.77	0.57	4,566.4	632.0	6.2	-3.9	0.00	0.00	
4,739.9	29.77	0.57	4,601.0	651.8	6.4	-4.0	0.00	0.00	Mancos Silt
4,779.5	29.77	0.57	4,635.4	671.5	6.6	-4.2	0.00	0.00	Start build/turn @ 4779' MD
4,800.0	29.83	356.44	4,653.2	681.7	6.4	-3.9	10.00	0.30	
4,900.0	31.90	337.29	4,739.3	731.0	-5.4	8.1	10.00	2.06	
5,000.0	36.42	321.34	4,822.1	778.7	-34.2	37.1	10.00	4.52	
5,055.0	39.66	314.12	4,865.5	803.7	-57.1	60.0	10.00	5.90	Gallup Fn.
5,100.0	42.61	308.95	4,899.4	823.3	-79.2	82.2	10.00	6.55	
5,200.0	49.84	299.36	4,968.6	863.4	-139.0	142.2	10.00	7.23	
5,300.0	57.71	291.69	5,027.7	897.8	-211.8	215.1	10.00	7.87	
5,400.0	65.97	285.28	5,074.9	925.6	-295.3	298.7	10.00	8.26	
5,500.0	74.46	279.65	5,108.7	945.7	-387.1	390.6	10.00	8.49	
5,585.0	81.78	275.24	5,126.2	956.4	-469.5	473.0	10.00	8.62	7" ICP @ 230°/82°
5,600.0	83.08	274.48	5,128.2	957.7	-484.3	487.8	9.99	8.65	
5,684.2	90.38	270.28	5,133.0	961.2	-568.2	571.7	10.00	8.67	Horizontal Target
5,685.6	90.50	270.21	5,133.0	961.2	-569.6	573.1	10.00	8.68	LP @ 5133' TVD; 90.5°
5,700.0	90.50	270.21	5,132.9	961.2	-584.0	587.5	0.00	0.00	
5,800.0	90.50	270.21	5,132.0	961.6	-684.0	687.5	0.00	0.00	
5,900.0	90.50	270.21	5,131.1	962.0	-784.0	787.5	0.00	0.00	
6,000.0	90.50	270.21	5,130.3	962.3	-884.0	887.5	0.00	0.00	
6,100.0	90.50	270.21	5,129.4	962.7	-984.0	987.5	0.00	0.00	
6,200.0	90.50	270.21	5,128.5	963.1	-1,084.0	1,087.5	0.00	0.00	
6,300.0	90.50	270.21	5,127.6	963.4	-1,184.0	1,187.5	0.00	0.00	
6,400.0	90.50	270.21	5,126.8	963.8	-1,284.0	1,287.5	0.00	0.00	
6,500.0	90.50	270.21	5,125.9	964.2	-1,384.0	1,387.5	0.00	0.00	
6,600.0	90.50	270.21	5,125.0	964.6	-1,484.0	1,487.5	0.00	0.00	
6,700.0	90.50	270.21	5,124.1	964.9	-1,584.0	1,587.5	0.00	0.00	
6,800.0	90.50	270.21	5,123.3	965.3	-1,684.0	1,687.5	0.00	0.00	
6,900.0	90.50	270.21	5,122.4	965.7	-1,784.0	1,787.5	0.00	0.00	
7,000.0	90.50	270.21	5,121.5	966.0	-1,884.0	1,887.5	0.00	0.00	
7,100.0	90.50	270.21	5,120.7	966.4	-1,984.0	1,987.5	0.00	0.00	
7,200.0	90.50	270.21	5,119.8	966.8	-2,084.0	2,087.5	0.00	0.00	
7,300.0	90.50	270.21	5,118.9	967.1	-2,184.0	2,187.5	0.00	0.00	
7,400.0	90.50	270.21	5,118.0	967.5	-2,284.0	2,287.5	0.00	0.00	
7,500.0	90.50	270.21	5,117.2	967.9	-2,383.9	2,387.5	0.00	0.00	
7,600.0	90.50	270.21	5,116.3	968.2	-2,483.9	2,487.5	0.00	0.00	
7,700.0	90.50	270.21	5,115.4	968.6	-2,583.9	2,587.5	0.00	0.00	
7,800.0	90.50	270.21	5,114.5	969.0	-2,683.9	2,687.5	0.00	0.00	
7,900.0	90.50	270.21	5,113.7	969.3	-2,783.9	2,787.5	0.00	0.00	
8,000.0	90.50	270.21	5,112.8	969.7	-2,883.9	2,887.5	0.00	0.00	
8,100.0	90.50	270.21	5,111.9	970.1	-2,983.9	2,987.5	0.00	0.00	
8,200.0	90.50	270.21	5,111.1	970.5	-3,083.9	3,087.5	0.00	0.00	
8,300.0	90.50	270.21	5,110.2	970.8	-3,183.9	3,187.4	0.00	0.00	
8,400.0	90.50	270.21	5,109.3	971.2	-3,283.9	3,287.4	0.00	0.00	
8,500.0	90.50	270.21	5,108.4	971.6	-3,383.9	3,387.4	0.00	0.00	
8,600.0	90.50	270.21	5,107.6	971.9	-3,483.9	3,487.4	0.00	0.00	
8,700.0	90.50	270.21	5,106.7	972.3	-3,583.9	3,587.4	0.00	0.00	

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Lybrook G31-2307 01H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	WELL @ 7011.0ft (Original Well Elev)
Project:	Sandoval County, NM	MD Reference:	WELL @ 7011.0ft (Original Well Elev)
Site:	S31-T23N-R7W	North Reference:	True
Well:	Lybrook G31-2307 01H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Hz		
Design:	Plan #3		

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	90.50	270.21	5,105.8	972.7	-3,683.9	3,687.4	0.00	0.00	
8,900.0	90.50	270.21	5,104.9	973.0	-3,783.9	3,787.4	0.00	0.00	
9,000.0	90.50	270.21	5,104.1	973.4	-3,883.9	3,887.4	0.00	0.00	
9,100.0	90.50	270.21	5,103.2	973.8	-3,983.9	3,987.4	0.00	0.00	
9,200.0	90.50	270.21	5,102.3	974.1	-4,083.9	4,087.4	0.00	0.00	
9,300.0	90.50	270.21	5,101.5	974.5	-4,183.9	4,187.4	0.00	0.00	
9,400.0	90.50	270.21	5,100.6	974.9	-4,283.9	4,287.4	0.00	0.00	
9,500.0	90.50	270.21	5,099.7	975.3	-4,383.9	4,387.4	0.00	0.00	
9,600.0	90.50	270.21	5,098.8	975.6	-4,483.9	4,487.4	0.00	0.00	
9,700.0	90.50	270.21	5,098.0	976.0	-4,583.9	4,587.4	0.00	0.00	
9,800.0	90.50	270.21	5,097.1	976.4	-4,683.8	4,687.4	0.00	0.00	
9,900.0	90.50	270.21	5,096.2	976.7	-4,783.8	4,787.4	0.00	0.00	
10,000.0	90.50	270.21	5,095.4	977.1	-4,883.8	4,887.4	0.00	0.00	
10,100.0	90.50	270.21	5,094.5	977.5	-4,983.8	4,987.4	0.00	0.00	
10,200.0	90.50	270.21	5,093.6	977.8	-5,083.8	5,087.4	0.00	0.00	
10,300.0	90.50	270.21	5,092.7	978.2	-5,183.8	5,187.4	0.00	0.00	
10,400.0	90.50	270.21	5,091.9	978.6	-5,283.8	5,287.4	0.00	0.00	
10,500.0	90.50	270.21	5,091.0	978.9	-5,383.8	5,387.4	0.00	0.00	
10,600.0	90.50	270.21	5,090.1	979.3	-5,483.8	5,487.4	0.00	0.00	
10,700.0	90.50	270.21	5,089.2	979.7	-5,583.8	5,587.4	0.00	0.00	
10,800.0	90.50	270.21	5,088.4	980.0	-5,683.8	5,687.4	0.00	0.00	
10,900.0	90.50	270.21	5,087.5	980.4	-5,783.8	5,787.4	0.00	0.00	
11,000.0	90.50	270.21	5,086.6	980.8	-5,883.8	5,887.4	0.00	0.00	
11,100.0	90.50	270.21	5,085.8	981.2	-5,983.8	5,987.3	0.00	0.00	
11,200.0	90.50	270.21	5,084.9	981.5	-6,083.8	6,087.3	0.00	0.00	
11,300.0	90.50	270.21	5,084.0	981.9	-6,183.8	6,187.3	0.00	0.00	
11,400.0	90.50	270.21	5,083.1	982.3	-6,283.8	6,287.3	0.00	0.00	
11,500.0	90.50	270.21	5,082.3	982.6	-6,383.8	6,387.3	0.00	0.00	
11,600.0	90.50	270.21	5,081.4	983.0	-6,483.8	6,487.3	0.00	0.00	
11,700.0	90.50	270.21	5,080.5	983.4	-6,583.8	6,587.3	0.00	0.00	
11,800.0	90.50	270.21	5,079.6	983.7	-6,683.8	6,687.3	0.00	0.00	
11,900.0	90.50	270.21	5,078.8	984.1	-6,783.8	6,787.3	0.00	0.00	
12,000.0	90.50	270.21	5,077.9	984.5	-6,883.8	6,887.3	0.00	0.00	
12,100.0	90.50	270.21	5,077.0	984.8	-6,983.7	6,987.3	0.00	0.00	
12,200.0	90.50	270.21	5,076.2	985.2	-7,083.7	7,087.3	0.00	0.00	
12,300.0	90.50	270.21	5,075.3	985.6	-7,183.7	7,187.3	0.00	0.00	
12,400.0	90.50	270.21	5,074.4	985.9	-7,283.7	7,287.3	0.00	0.00	
12,500.0	90.50	270.21	5,073.5	986.3	-7,383.7	7,387.3	0.00	0.00	
12,600.0	90.50	270.21	5,072.7	986.7	-7,483.7	7,487.3	0.00	0.00	
12,700.0	90.50	270.21	5,071.8	987.1	-7,583.7	7,587.3	0.00	0.00	
12,800.0	90.50	270.21	5,070.9	987.4	-7,683.7	7,687.3	0.00	0.00	
12,878.2	90.50	270.21	5,070.2	987.7	-7,761.9	7,765.5	0.00	0.00	TD at 12878.2

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Lybrook G31-2307 01H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	WELL @ 7011.0ft (Original Well Elev)
Project:	Sandoval County, NM	MD Reference:	WELL @ 7011.0ft (Original Well Elev)
Site:	S31-T23N-R7W	North Reference:	True
Well:	Lybrook G31-2307 01H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Hz		
Design:	Plan #3		

Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- Shape	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)		
Lybrook G31-2307 01H - plan hits target center - Point	0.00	0.00	5,133.0	961.2	-569.6	1,891,094.44	1,237,184.14	36.189520	-107.616520
Lybrook G31-2307 01H - plan hits target center - Point	0.00	0.00	5,070.2	987.7	-7,761.9	1,891,222.12	1,229,992.92	36.189590	-107.640890
Lybrook G31-2307 01H - plan misses target center by 1.9ft at 10272.1ft MD (5093.0 TVD, 978.1 N, -5155.9 E) - Point	0.00	0.00	5,093.0	976.2	-5,155.9	1,891,173.96	1,232,598.50	36.189560	-107.632060

Casing Points				
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)
5,585.0	5,126.2	7" ICP @ 230°/82°	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 (°)
924.0	924.0	Ojo Alamo		-0.50	270.21
1,119.0	1,119.0	Kirtland Shale		-0.50	270.21
1,385.0	1,385.0	Fruitland Coal		-0.50	270.21
1,509.0	1,509.0	Pictured Cliffs Ss.		-0.50	270.21
1,625.0	1,625.0	Lewis Shale		-0.50	270.21
2,278.0	2,278.0	Cliffhouse Ss.		-0.50	270.21
3,069.0	3,068.0	Menefee Fn.		-0.50	270.21
3,930.5	3,893.0	Point Lookout Ss.		-0.50	270.21
4,134.2	4,075.0	Mancos Shale		-0.50	270.21
4,739.9	4,601.0	Mancos Silt		-0.50	270.21
5,055.0	4,866.0	Gallup Fn.		-0.50	270.21
5,684.2	5,138.0	Horizontal Target		-0.50	270.21

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
2,700.0	2,700.0	0.0	0.0	KOP @ 2700'
4,188.6	4,122.5	378.1	3.7	EOB; Inc=29.77°
4,779.5	4,635.4	671.5	6.6	Start build/turn @ 4779' MD
5,685.6	5,133.0	961.2	-569.6	LP @ 5133' TVD; 90.5°
12,878.2	5,070.2	987.7	-7,761.9	TD at 12878.2