

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

CONFIDENTIAL

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

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.
NMNM 81638, NM 36943, BIA-1403-1912

6. If Indian, Allottee or Tribe Name

SUBMIT IN TRIPLICATE - Other instructions on page 2

NOV 12 2014

1. Type of Well

☐ Oil Well ☒ Gas Well ☐ Other

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)
720-876-5867

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

8. Well Name and No.
Lybrook G30-2307 02H

9. API Well No.
30043-21236

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)
SHL: 1361' FNL, 2114' FEL, Section 30, Township 23N, Range 7W
BHL: 1320' FNL, 330' FWL, Section 25, Township 23N, Range 8W

10. Field and Pool or Exploratory Area
Basin Mancos

11. Country or Parish, State
Sandoval and San Juan Counties, New Mexico

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

TYPE OF SUBMISSION

TYPE OF ACTION

☒ Notice of Intent

☐ Subsequent Report

☐ Final Abandonment Notice

☐ Acidize

☐ Alter Casing

☐ Casing Repair

☒ Change Plans

☐ Convert to Injection

☐ Deepen

☐ Fracture Treat

☐ New Construction

☐ Plug and Abandon

☐ Plug Back

☐ Production (Start/Resume)

☐ Reclamation

☐ Recomplete

☐ Temporarily Abandon

☐ Water Disposal

☐ Water Shut-Off

☐ Well Integrity

☐ Other

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 recompleat 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 recompleat 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.)

Encana Oil & Gas (USA) Inc. (Encana) wishes to modify the drilling plan for the Lybrook G30-2307 02H well to cement the 4 1/2" production liner, instead of running open hole swell packers, as previously planned. Attached is an updated Directional Drilling Plan, 10-Point Drilling Plan and Wellbore Diagram that reflect this change. Please note, the 7" ICP was also moved from approximately 72 degrees to approximately 55 degrees.

OIL CONS. DIV DIST. 3

NOV 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

ADHERE TO PREVIOUS NMOCD
CONDITIONS OF APPROVAL

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

Cristi Bauer

Title Operations Technician

Signature

Cristi Bauer

Date

11/11/14

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by

William Tambekou

Title

Petroleum Engineer

Date

11/12/2014

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

FFD

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)

NMOCD

Lybrook G30-2307 02H

SHL: SW/4 NE/4 Sec 30 T23N R7W, 1361' FNL, 2114' FEL

BHL: SW/4 NW/4 Sec 25 T23N R8W, 1320' FNL, 330' FWL

Sandoval, New Mexico

**Encana Oil & Gas (USA) Inc.
Drilling Plan**

1. ESTIMATED TOPS OF GEOLOGICAL MARKERS (TVD)

The estimated tops of important geologic markers are as follows:

Formation	Depth (TVD) units = feet
Nacimiento	0
Ojo Alamo	1,091
Kirtland Shale	1,301
Fruitland Coal	1,569
Pictured Cliffs Ss.	1,687
Lewis Shale	1,809
Cliffhouse Ss.	2,503
Menefee Fn.	3,211
Point Lookout Ss.	4,045
Mancos Shale	4,249
Mancos Silt	4,771
Gallup Fn.	5,033
Horizontal Target	5,327

The referenced surface elevation is 7076', KB 7092'

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

Substance	Formation	Depth (TVD) units = feet
Water/Gas	Fruitland Coal	1,569
Oil/Gas	Pictured Cliffs Ss.	1,687
Oil/Gas	Cliffhouse Ss.	2,503
Gas	Menefee Fn.	3,211
Oil/Gas	Point Lookout Ss.	4,045
Oil/Gas	Mancos Shale	4,249
Oil/Gas	Mancos Silt	4,771
Oil/Gas	Gallup Fn.	5,033

All shows of fresh water and minerals will be reported and protected.

Lybrook G30-2307 02H

SHL: SW/4 NE/4 Sec 30 T23N R7W, 1361' FNL, 2114' FEL

BHL: SW/4 NW/4 Sec 25 T23N R8W, 1320' FNL, 330' FWL

Sandoval, New Mexico

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 (MD)	Hole Size	Csg Size	Weight	Grade
Conductor	0'-60'	26"	16"	42.09#	
Surface	0'-500'	12 1/4"	9 5/8"	36#	J55, STC New
Intermediate	0'-5288'	8 3/4"	7"	26#	J55, LTC New
Production Liner	5188'-13011'	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

Lybrook G30-2307 02H**SHL: SW/4 NE/4 Sec 30 T23N R7W, 1361' FNL, 2114' FEL****BHL: SW/4 NW/4 Sec 25 T23N R8W, 1320' FNL, 330' FWL****Sandoval, New Mexico**

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

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'	228 sks	Type III Cement + 1% bwoc Calcium Chloride + 0.25 lbs/sack Cello Flake + 0.2% bwoc FL-52A + 58.9% Fresh Water	Surface	1 per joint on bottom 3 joints
Intermediate	0'-5288'	100% open hole excess Stage 1 Lead: 491 sks Stage 1 Tail: 377 sks	Lead: PremLite + 3% CaCl + 0.25lb/sk CelloFlake + 5lb/sk LCM, 12.1ppg 2.13cuft/sk Tail: Type III Cmt + 1% CaCl + 0.25lb/sk Cello Flake 14.5ppg 1.38cuft/sk	Surface	1 every 3 joints through water bearing zones
Production Liner	5188'- 13011'	50% OH excess Stage 1 Blend Total: 435sks	Blend: Premium Lite High Strength FM + 0.7% bwoc R-3 + 3% bwow Potassium Chloride + 0.25lbs/sack Cello Flake + 0.5% bwoc CD-32 + 1.15% bwoc FL- 52A + 60 lbs/sack Calcium Carbonate + 124.4% Fresh Water. Yield 2.63 cuft/sk	Liner Hanger	N/A

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 4510'. Directional plans are attached.

Description	Proposed Depth (TVD/MD)	Formation
Horizontal Lateral TD	5271'/13011'	Gallup

Lybrook G30-2307 02H**SHL: SW/4 NE/4 Sec 30 T23N R7W, 1361' FNL, 2114' FEL****BHL: SW/4 NW/4 Sec 25 T23N R8W, 1320' FNL, 330' FWL****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'-5172'/5288'	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"	5172'/5288'- 5271'/13011'	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 +/- 2493 psi based on a 9.0 ppg at 5327' TVD of the horizontal lateral target. No abnormal pressure or temperatures are anticipated.

No hydrogen sulfide gas is anticipated, however, if H₂S is encountered, the guidelines in Onshore Order No. 6 will be followed.

9. ANTICIPATED START DATE AND DURATION OF OPERATIONS

Drilling is estimated to commence on November 5, 2015. 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: Lybrook G30-2307 02H County: Sandoval WELL: Lybrook G30-2307 02H			Encana Natural Gas WELL SUMMARY				ENG: Jeff Villalobos 11/11/14 RIG: Unassigned GLE: 7076 RKBE: 7092				
MWD LWD	OPEN HOLE LOGGING	FORM	DEPTH			HOLE SIZE	CASING SPECS	MW MUD TYPE	DEVIATION INFORMATION		
			TVD	MD							
			60	60'		26	16" 42.09# 100sx Type I Neat 16.0ppg cmt	Fresh wtr 8.3-9.2			
Multi-Well pad take survey every stand and run anti- collision report prior to spud	None	San Jose Fn.	0			12 1/4	9 5/8" 36ppf J55 STC TOC Surface with 100% OH Excess: 228 sks Type III Cement + 1% bwoc Calcium Chloride + 0.25 lbs/sack Cello Flake + 0.2% bwoc FL-52A + 58.9% Fresh Water.	Fresh wtr 8.3-10	Vertical <1°		
		Nacimiento 9 5/8" Csg	0 500	500.00							
Survey Every 60'-120', updating anticollision report after surveys. Stop operations and contact drilling engineer if separation factor approaches 1.5 Surveys every 30' through the curve	No OH logs	Ojo Alamo Kirtland Shale	1,091 1,301			8 3/4	7" 26ppf J55 LTC TOC @ surface (100% OH excess - 70% Lead 30% Tail) Stage 1 Total: 868sks Stage 1 Lead: 491 sks Premium Lite FM + 3% CaCl2 + 0.25/sk Cello Flake + 5#/sk LCM-1 + 8% Bentonite + 0.4% FL-52A + 0.4% Sodium Metasilicate. Mixed at 12.1 ppg. Yield 2.13 cuft/sk.	Fresh Wtr 8.3-10	Vertical <1°		
		Fruitland Coal	1,569								
		Pictured Cliffs Ss. Lewis Shale	1,687 1,809								
		Cliffhouse Ss. Menefee Fn.	2,503 3,211								
		Point Lookout Ss. Mancos Shale	4,045 4,249								
		KOP	4,510	4,510							
		Mancos Silt	4,771								
		Gallup Fn.	5,033								
		7" Csg	5,172	5,288'							
		Surveys every stand to TD unless directed otherwise by Geologist MWD Gamma Directional	No OH Logs	Horizontal Target TD	5,327 5,271		13,011			6 1/8	100' overlap at liner top 7723' Drilled Lateral
Base Gallup	5,356						4 1/2" 11.6ppf SB80 LTC TOC @ hanger (50% OH excess) Stage 1 Total: 435sks Stage 1 Blend: 435 sks Premium Lite High Strength FM + 0.7% bwoc R-3 + 3% bwow Potassium Chloride + 0.25lbs/sack Cello Flake + 0.5% bwoc CD-32 + 1.15% bwoc FL- 52A + 60 lbs/sack Calcium Carbonate + 124.4% Fresh Water. Yield 2.63 cuft/sk.	WBM 8.3-10			

NOTES:

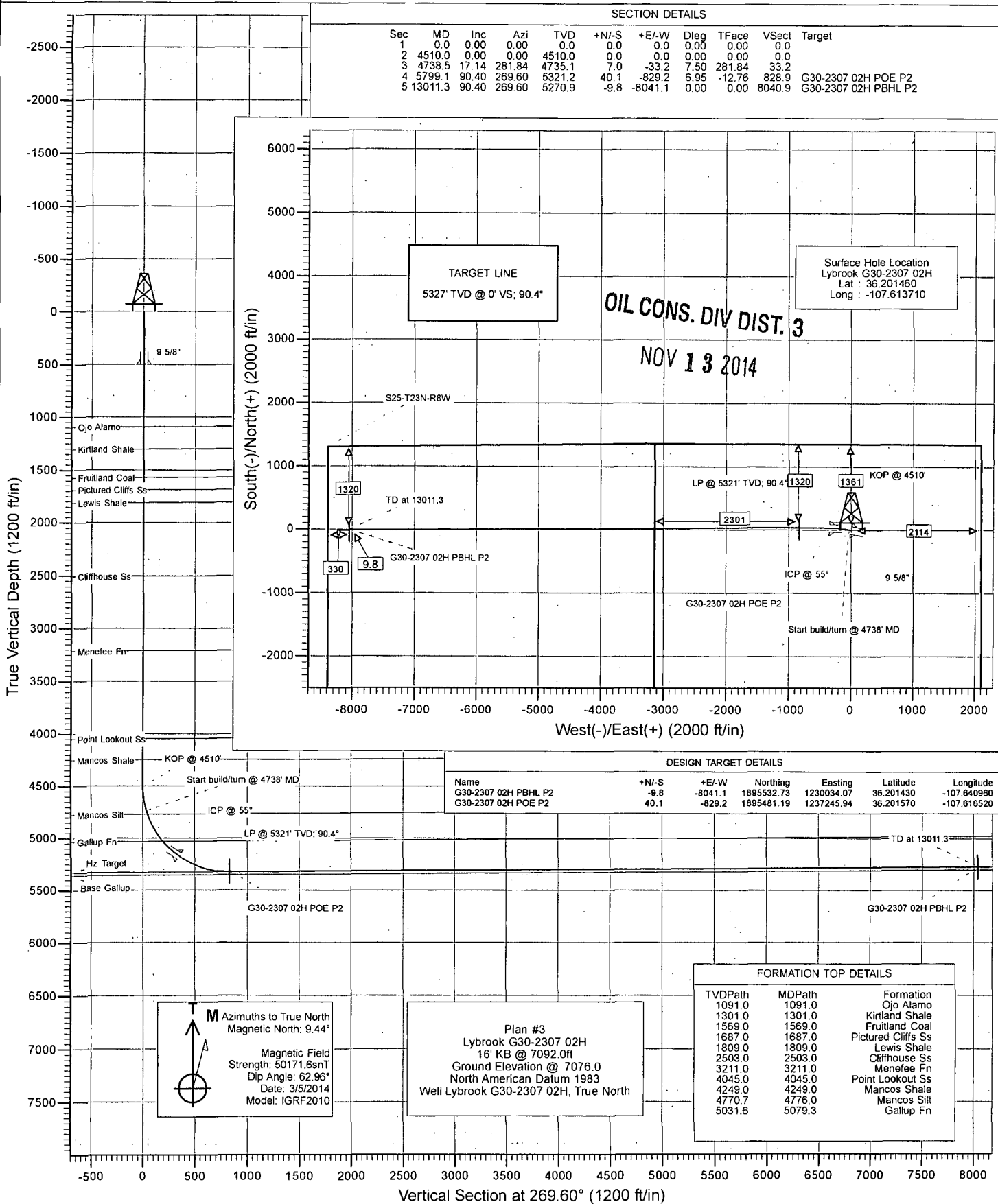
- 1) Drill with 26" bit to 60', set 16" 42.09ppf conductor pipe
- 2) Drill surface to 500', R&C 9 5/8" casing
- 3) N/U BOP and surface equipment
- 4) Drill to KOP of 4510', 8 3/4 inch holesize
- 5) Start curve at 10deg/100' build rate
- 6) Drill to csg point of 5288' MD
- 7) R&C 7" csg, circ cmt to surface
- 8) Land at ~90 deg, drill lateral to 13011' run 4 1/2 inch cemented liner

OIL CONS. DIV DIST. 3

NOV 13 2014



Project: Sandoval County, NM
 Site: S30-T23N-R7W
 Well: Lybrook G30-2307 02H
 Wellbore: HZ
 Design: Plan #3



Planning Report

Database: USA EDM 5000 Multi Users DB
Company: EnCana Oil & Gas (USA) Inc
Project: Sandoval County, NM
Site: S30-T23N-R7W
Well: Lybrook G30-2307 02H
Wellbore: HZ
Design: Plan #3

Local Co-ordinate Reference: Well Lybrook G30-2307 02H
TVD Reference: 16' KB @ 7092.0ft
MD Reference: 16' KB @ 7092.0ft
North Reference: True
Survey Calculation Method: Minimum Curvature

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	S30-T23N-R7W				
Site Position:		Northing:	1,891,883.94 ft	Latitude:	36.191750
From:	Lat/Long	Easting:	1,238,783.16 ft	Longitude:	-107.611140
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	-0.80 °

Well	Lybrook G30-2307 02H					
Well Position	+N/-S	0.0 ft	Northing:	1,895,429.47 ft	Latitude:	36.201460
	+E/-W	0.0 ft	Easting:	1,238,074.48 ft	Longitude:	-107.613710
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	7,076.0 ft

Wellbore	HZ				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	3/5/2014	9.44	62.96	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	269.60

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	
4,510.0	0.00	0.00	4,510.0	0.0	0.0	0.00	0.00	0.00	0.00	
4,738.5	17.14	281.84	4,735.1	7.0	-33.2	7.50	7.50	0.00	281.84	
5,799.1	90.40	269.60	5,321.2	40.1	-829.2	6.95	6.91	-1.15	-12.76	G30-2307 02H POE F
13,011.3	90.40	269.60	5,270.9	-9.8	-8,041.1	0.00	0.00	0.00	0.00	G30-2307 02H PBHL

Planning Report

Database: USA EDM 5000 Multi Users DB
 Company: EnCana Oil & Gas (USA) Inc
 Project: Sandoval County, NM
 Site: S30-T23N-R7W
 Well: Lybrook G30-2307 02H
 Wellbore: HZ
 Design: Plan #3

Local Co-ordinate Reference: Well Lybrook G30-2307 02H
 TVD Reference: 16' KB @ 7092.0ft
 MD Reference: 16' KB @ 7092.0ft
 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	
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	
1,091.0	0.00	0.00	1,091.0	0.0	0.0	0.0	0.00	0.00	Ojo Alamo
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	
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	
1,301.0	0.00	0.00	1,301.0	0.0	0.0	0.0	0.00	0.00	Kirtland Shale
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	
1,569.0	0.00	0.00	1,569.0	0.0	0.0	0.0	0.00	0.00	Fruitland Coal
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	
1,687.0	0.00	0.00	1,687.0	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	
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	
1,809.0	0.00	0.00	1,809.0	0.0	0.0	0.0	0.00	0.00	Lewis Shale
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	
2,503.0	0.00	0.00	2,503.0	0.0	0.0	0.0	0.00	0.00	Cliffhouse Ss
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	
3,200.0	0.00	0.00	3,200.0	0.0	0.0	0.0	0.00	0.00	
3,211.0	0.00	0.00	3,211.0	0.0	0.0	0.0	0.00	0.00	Menefee Fn
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	
4,045.0	0.00	0.00	4,045.0	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	
4,249.0	0.00	0.00	4,249.0	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: Sandoval County, NM
 Site: S30-T23N-R7W
 Well: Lybrook G30-2307 02H
 Wellbore: HZ
 Design: Plan #3

Local Co-ordinate Reference: Well Lybrook G30-2307 02H
 TVD Reference: 16' KB @ 7092.0ft
 MD Reference: 16' KB @ 7092.0ft
 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	
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	
4,510.0	0.00	0.00	4,510.0	0.0	0.0	0.0	0.00	0.00	KOP @ 4510'
4,600.0	6.75	281.84	4,599.8	1.1	-5.2	5.2	7.50	7.50	
4,700.0	14.25	281.84	4,698.0	4.8	-23.0	23.0	7.50	7.50	
4,738.5	17.14	281.84	4,735.1	7.0	-33.2	33.2	7.50	7.50	Start build/turn @ 4738' MD
4,776.0	19.69	280.14	4,770.7	9.2	-44.8	44.8	6.95	6.80	Mancos Silt
4,800.0	21.32	279.25	4,793.2	10.6	-53.1	53.0	6.95	6.82	
4,900.0	28.18	276.62	4,883.9	16.3	-94.6	94.4	6.95	6.86	
5,000.0	35.07	274.96	4,969.0	21.5	-146.7	146.6	6.95	6.89	
5,079.3	40.55	274.00	5,031.6	25.3	-195.2	195.0	6.95	6.91	Gallup Fn
5,100.0	41.98	273.79	5,047.2	26.2	-208.8	208.6	6.95	6.91	
5,200.0	48.90	272.89	5,117.3	30.3	-279.9	279.6	6.95	6.92	
5,288.2	55.00	272.25	5,171.7	33.4	-349.2	349.0	6.95	6.92	ICP @ 55°
5,300.0	55.82	272.17	5,178.4	33.8	-358.9	358.7	6.95	6.92	
5,400.0	62.75	271.56	5,229.4	36.6	-444.8	444.5	6.95	6.93	
5,500.0	69.67	271.01	5,269.7	38.6	-536.2	535.9	6.95	6.93	
5,600.0	76.60	270.52	5,298.7	39.9	-631.9	631.6	6.95	6.93	
5,700.0	83.53	270.05	5,316.0	40.4	-730.3	730.0	6.95	6.93	
5,799.1	90.40	269.60	5,321.2	40.1	-829.2	828.9	6.95	6.93	LP @ 5321' TVD; 90.4°
5,800.0	90.40	269.60	5,321.2	40.1	-830.1	829.8	0.00	0.00	
5,900.0	90.40	269.60	5,320.5	39.4	-930.1	929.8	0.00	0.00	
6,000.0	90.40	269.60	5,319.8	38.7	-1,030.1	1,029.8	0.00	0.00	
6,100.0	90.40	269.60	5,319.1	38.0	-1,130.1	1,129.8	0.00	0.00	
6,200.0	90.40	269.60	5,318.4	37.3	-1,230.1	1,229.8	0.00	0.00	
6,300.0	90.40	269.60	5,317.7	36.6	-1,330.1	1,329.8	0.00	0.00	
6,400.0	90.40	269.60	5,317.0	35.9	-1,430.1	1,429.8	0.00	0.00	
6,500.0	90.40	269.60	5,316.3	35.2	-1,530.1	1,529.8	0.00	0.00	
6,600.0	90.40	269.60	5,315.6	34.5	-1,630.1	1,629.8	0.00	0.00	
6,700.0	90.40	269.60	5,314.9	33.8	-1,730.1	1,729.8	0.00	0.00	
6,800.0	90.40	269.60	5,314.2	33.1	-1,830.0	1,829.8	0.00	0.00	
6,900.0	90.40	269.60	5,313.5	32.4	-1,930.0	1,929.8	0.00	0.00	
7,000.0	90.40	269.60	5,312.8	31.8	-2,030.0	2,029.8	0.00	0.00	
7,100.0	90.40	269.60	5,312.1	31.1	-2,130.0	2,129.8	0.00	0.00	
7,200.0	90.40	269.60	5,311.4	30.4	-2,230.0	2,229.8	0.00	0.00	
7,300.0	90.40	269.60	5,310.7	29.7	-2,330.0	2,329.8	0.00	0.00	
7,400.0	90.40	269.60	5,310.0	29.0	-2,430.0	2,429.8	0.00	0.00	
7,500.0	90.40	269.60	5,309.3	28.3	-2,530.0	2,529.8	0.00	0.00	
7,600.0	90.40	269.60	5,308.6	27.6	-2,630.0	2,629.8	0.00	0.00	
7,700.0	90.40	269.60	5,307.9	26.9	-2,730.0	2,729.8	0.00	0.00	
7,800.0	90.40	269.60	5,307.2	26.2	-2,830.0	2,829.7	0.00	0.00	
7,900.0	90.40	269.60	5,306.5	25.5	-2,930.0	2,929.7	0.00	0.00	
8,000.0	90.40	269.60	5,305.8	24.8	-3,030.0	3,029.7	0.00	0.00	
8,100.0	90.40	269.60	5,305.1	24.2	-3,130.0	3,129.7	0.00	0.00	
8,200.0	90.40	269.60	5,304.4	23.5	-3,230.0	3,229.7	0.00	0.00	
8,300.0	90.40	269.60	5,303.7	22.8	-3,330.0	3,329.7	0.00	0.00	
8,400.0	90.40	269.60	5,303.0	22.1	-3,430.0	3,429.7	0.00	0.00	
8,500.0	90.40	269.60	5,302.3	21.4	-3,530.0	3,529.7	0.00	0.00	
8,600.0	90.40	269.60	5,301.7	20.7	-3,630.0	3,629.7	0.00	0.00	
8,700.0	90.40	269.60	5,301.0	20.0	-3,730.0	3,729.7	0.00	0.00	
8,800.0	90.40	269.60	5,300.3	19.3	-3,830.0	3,829.7	0.00	0.00	

Planning Report

Database: USA EDM 5000 Multi Users DB
Company: EnCana Oil & Gas (USA) Inc
Project: Sandoval County, NM
Site: S30-T23N-R7W
Well: Lybrook G30-2307 02H
Wellbore: HZ
Design: Plan #3

Local Co-ordinate Reference: Well Lybrook G30-2307 02H
TVD Reference: 16' KB @ 7092.0ft
MD Reference: 16' KB @ 7092.0ft
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
8,900.0	90.40	269.60	5,299.6	18.6	-3,929.9	3,929.7	0.00	0.00	
9,000.0	90.40	269.60	5,298.9	17.9	-4,029.9	4,029.7	0.00	0.00	
9,100.0	90.40	269.60	5,298.2	17.2	-4,129.9	4,129.7	0.00	0.00	
9,200.0	90.40	269.60	5,297.5	16.5	-4,229.9	4,229.7	0.00	0.00	
9,300.0	90.40	269.60	5,296.8	15.9	-4,329.9	4,329.7	0.00	0.00	
9,400.0	90.40	269.60	5,296.1	15.2	-4,429.9	4,429.7	0.00	0.00	
9,500.0	90.40	269.60	5,295.4	14.5	-4,529.9	4,529.7	0.00	0.00	
9,600.0	90.40	269.60	5,294.7	13.8	-4,629.9	4,629.7	0.00	0.00	
9,700.0	90.40	269.60	5,294.0	13.1	-4,729.9	4,729.7	0.00	0.00	
9,800.0	90.40	269.60	5,293.3	12.4	-4,829.9	4,829.7	0.00	0.00	
9,900.0	90.40	269.60	5,292.6	11.7	-4,929.9	4,929.7	0.00	0.00	
10,000.0	90.40	269.60	5,291.9	11.0	-5,029.9	5,029.7	0.00	0.00	
10,100.0	90.40	269.60	5,291.2	10.3	-5,129.9	5,129.7	0.00	0.00	
10,200.0	90.40	269.60	5,290.5	9.6	-5,229.9	5,229.7	0.00	0.00	
10,300.0	90.40	269.60	5,289.8	8.9	-5,329.9	5,329.7	0.00	0.00	
10,400.0	90.40	269.60	5,289.1	8.3	-5,429.9	5,429.7	0.00	0.00	
10,500.0	90.40	269.60	5,288.4	7.6	-5,529.9	5,529.7	0.00	0.00	
10,600.0	90.40	269.60	5,287.7	6.9	-5,629.9	5,629.7	0.00	0.00	
10,700.0	90.40	269.60	5,287.0	6.2	-5,729.9	5,729.7	0.00	0.00	
10,800.0	90.40	269.60	5,286.3	5.5	-5,829.9	5,829.7	0.00	0.00	
10,900.0	90.40	269.60	5,285.6	4.8	-5,929.9	5,929.7	0.00	0.00	
11,000.0	90.40	269.60	5,284.9	4.1	-6,029.8	6,029.7	0.00	0.00	
11,100.0	90.40	269.60	5,284.2	3.4	-6,129.8	6,129.7	0.00	0.00	
11,200.0	90.40	269.60	5,283.5	2.7	-6,229.8	6,229.7	0.00	0.00	
11,300.0	90.40	269.60	5,282.8	2.0	-6,329.8	6,329.7	0.00	0.00	
11,400.0	90.40	269.60	5,282.1	1.3	-6,429.8	6,429.7	0.00	0.00	
11,500.0	90.40	269.60	5,281.4	0.6	-6,529.8	6,529.7	0.00	0.00	
11,600.0	90.40	269.60	5,280.7	0.0	-6,629.8	6,629.7	0.00	0.00	
11,700.0	90.40	269.60	5,280.0	-0.7	-6,729.8	6,729.7	0.00	0.00	
11,800.0	90.40	269.60	5,279.3	-1.4	-6,829.8	6,829.7	0.00	0.00	
11,900.0	90.40	269.60	5,278.6	-2.1	-6,929.8	6,929.6	0.00	0.00	
12,000.0	90.40	269.60	5,277.9	-2.8	-7,029.8	7,029.6	0.00	0.00	
12,100.0	90.40	269.60	5,277.2	-3.5	-7,129.8	7,129.6	0.00	0.00	
12,200.0	90.40	269.60	5,276.5	-4.2	-7,229.8	7,229.6	0.00	0.00	
12,300.0	90.40	269.60	5,275.8	-4.9	-7,329.8	7,329.6	0.00	0.00	
12,400.0	90.40	269.60	5,275.1	-5.6	-7,429.8	7,429.6	0.00	0.00	
12,500.0	90.40	269.60	5,274.4	-6.3	-7,529.8	7,529.6	0.00	0.00	
12,600.0	90.40	269.60	5,273.7	-7.0	-7,629.8	7,629.6	0.00	0.00	
12,700.0	90.40	269.60	5,273.0	-7.6	-7,729.8	7,729.6	0.00	0.00	
12,800.0	90.40	269.60	5,272.3	-8.3	-7,829.8	7,829.6	0.00	0.00	
12,900.0	90.40	269.60	5,271.6	-9.0	-7,929.8	7,929.6	0.00	0.00	
13,000.0	90.40	269.60	5,270.9	-9.7	-8,029.7	8,029.6	0.00	0.00	
13,011.3	90.40	269.60	5,270.9	-9.8	-8,041.1	8,040.9	0.00	0.00	TD at 13011.3

Planning Report

Database: USA EDM 5000 Multi Users DB
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Project: Sandoval County, NM
Site: S30-T23N-R7W
Well: Lybrook G30-2307 02H
Wellbore: HZ
Design: Plan #3

Local Co-ordinate Reference: Well Lybrook G30-2307 02H
TVD Reference: 16' KB @ 7092.0ft
MD Reference: 16' KB @ 7092.0ft
North Reference: True
Survey Calculation Method: Minimum Curvature

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
G30-2307 02H POE P2 - plan hits target center - Point	0.00	0.00	5,321.2	40.1	-829.2	1,895,481.19	1,237,245.94	36.201570	-107.616520
G30-2307 02H PBHL P2 - plan hits target center - Point	0.00	0.00	5,270.9	-9.8	-8,041.1	1,895,532.73	1,230,034.07	36.201430	-107.640960
G30-2307 02H POE - plan misses target center by 316.7ft at 5795.2ft MD (5321.2 TVD, 40.1 N, -825.3 E) - Point	0.00	0.00	5,321.4	356.8	-826.2	1,895,797.87	1,237,253.35	36.202440	-107.616510
G30-2307 02H PBHL - plan misses target center by 327.2ft at 10391.4ft MD (5289.1 TVD, 8.3 N, -5421.3 E) - Point	0.00	0.00	5,289.2	335.5	-5,423.6	1,895,841.16	1,232,656.14	36.202380	-107.632090

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)
5,288.2	5,171.7	ICP @ 55°	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 (°)
1,091.0	1,091.0	Ojo Alamo		-0.40	269.73
1,301.0	1,301.0	Kirtland Shale		-0.40	269.73
1,569.0	1,569.0	Fruitland Coal		-0.40	269.73
1,687.0	1,687.0	Pictured Cliffs Ss		-0.40	269.73
1,809.0	1,809.0	Lewis Shale		-0.40	269.73
2,503.0	2,503.0	Cliffhouse Ss		-0.40	269.73
3,211.0	3,211.0	Menefee Fn		-0.40	269.73
4,045.0	4,045.0	Point Lookout Ss		-0.40	269.73
4,249.0	4,249.0	Mancos Shale		-0.40	269.73
4,776.0	4,771.0	Mancos Silt		-0.40	269.73
5,079.3	5,033.0	Gallup Fn		-0.40	269.73

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
4,510.0	4,510.0	0.0	0.0	KOP @ 4510'
4,738.5	4,735.1	7.0	-33.2	Start build/turn @ 4738' MD
5,799.1	5,321.2	40.1	-829.2	LP @ 5321' TVD; 90.4°
13,011.3	5,270.9	-9.8	-8,041.1	TD at 13011.3