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JUL 30 2014

Form 3160-5
(March 2012)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

Farmington Field
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.
NM36943, NMNM81638, NOG14031912

6. If Indian, Allottee or Tribe Name
Allottee
RCVD AUG 19 '14

SUBMIT IN TRIPLICATE, - Other instructions on page 2.

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)
720-876-3926

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)
SHL: 1331' FNL and 2114' FEL Sec 30, T23N, R7W
BHL: 400' FNL and 330' FWL Sec 25, T23N, R8W

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

8. Well Name and No.
Lybrook G30-2307 01H

9. API Well No.
30-043-21235

10. Field and Pool or Exploratory Area
Basin Mancos Pool

11. County or Parish, State
Sandoval County, 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 recomplate 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.)

Encana Oil & Gas (USA) Inc. (Encana) would like to revise the Lybrook G30-2307 01H 10-Point Drilling Plan, Well Summary Diagram, and Directional Drilling Plan submitted on March 20, 2014. The surface hole location latitude in the directional drilling plan contained a typo.

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

Title Petroleum Engineer

Date 8/14/2014

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

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Lybrook G30-2307 01H
 SHL: SWNE Sec 30 T23N R7W
 1331' FNL, 2114' FEL
 BHL: Nan Sec 25 T23N R8W
 400' FNL, 330' FEL
 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.	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	4,772
Gallup Fn.	5,039
Horizontal Target	5,338

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	4,772
Oil/Gas	Gallup Fn.	5,039

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.

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- 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'-5678'	8 3/4"	7"	26#	J55, LTC New
Production Liner	5478'-13100'	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.

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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'-5678'	30% open hole excess Stage 1 Lead: 362 sks Stage 1 Tail: 371 sks Stage 2 Lead: 180 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	5478'-13100'	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 2750'. Directional plans are attached.

Description	Proposed Depth (TVD/MD)	Formation
Horizontal Lateral TD	5282'/13100'	Gallup

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 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'-5304'/5678'	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"	5304'/5678'- 5282'/13100'	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 +/- 2498 psi based on a 9.0 ppg at 5338' 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.

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9. ANTICIPATED START DATE AND DURATION OF OPERATIONS

Drilling is estimated to commence on January 1, 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.

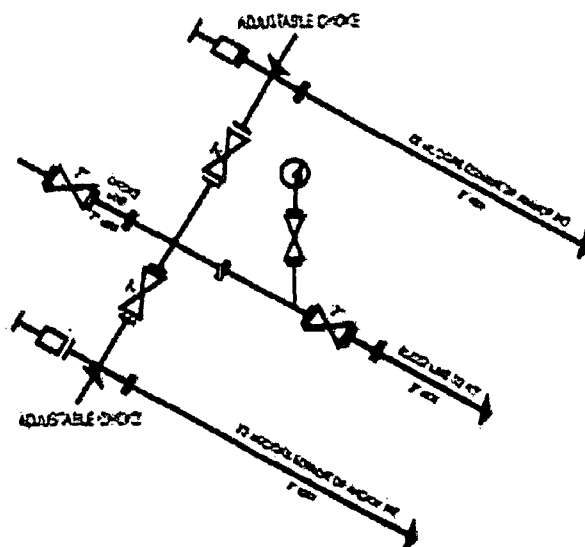
It is anticipated that the drilling of this well will take approximately 20 days.

LOC: NE/4 NW/4 Sec 30 T23N R7W, 400' F County: Sandoval WELL: Lybrook G30-2307 01H			Encana Natural Gas WELL SUMMARY				ENG: Ashley Lantz RIG: Aztec 950 GLE: 7076 RKBE: 7092		7/21/14
MWD LWD	OPEN HOLE LOGGING	FORM	DEPTH			HOLE SIZE	CASING SPECS	MW MUD TYPE	DEVIATION INFORMATION
			TVD	MD					
			60	60'		30	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	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	Vertical ≤1°
Survey Every 60'-120', updating anticollision report after surveys. Stop operations and contact drilling engineer if separation factor approaches 1.5	No OH logs	Ojo Alamo Ss. Kirtland Shale Fruitland Coal Pictured Cliffs Ss. Lewis Shale Cliffhouse Ss. Menelee Fm. Point Lookout Ss. Mancos Shale	1,091 1,301 1,569 1,687 1,809 2,503 3,211 4,045 4,249		Stage tool @ ~ 1,859	8 3/4	7" 26ppf J55 LTC TOC @ surface (30% OH excess) Stage 1 Total: 734sks If necessary, Stage 2 Total: 180sks Stage 1 Lead: 363 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: 371 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: 180 sks HALCEM™ SYSTEM + 5lbm/sk Kol-Seal + 0.125lbm/sk Poly- E-Flake. Mixed at 12.3 ppg. Yield 1.946 cuft/sk.	Fresh Wtr 8.3-10	Vertical ≤1°
Surveys every 30' through the curve	Mud logger onsite	KOP Mancos Silt Gallup Fm. 7" Csg	2,750 4,772 5,039 5,304	2,750					
Surveys every stand to TD unless directed otherwise by Geologist	No OH Logs	Horizontal Target TD Base Gallup	5,338 5,282 5,367	13,100		6 1/8	200' overlap at liner top 7422' Drilled Lateral		Horz Inc/TVD 90.4 degdeg/5338R TD = 13099.8 MD
MWD Gamma Directional							4 1/2" 11.6ppf SB80 LTC Running external swellable csg packers for isolation of prod string Plan on setting top packer within 100' of intermediate casing shoe	WBM 8.3-10	

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 2750', 8 3/4 inch holesize
- 5) Start curve at 10deg/100' build rate
- 6) Drill to csg point of 5678' MD
- 7) R&C 7" csg, circ cmt to surface, switch to WBM
- 8) Land at 90 deg, drill lateral to 13100' run 4 1/2 inch liner with external swellable csg packers

encana





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
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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

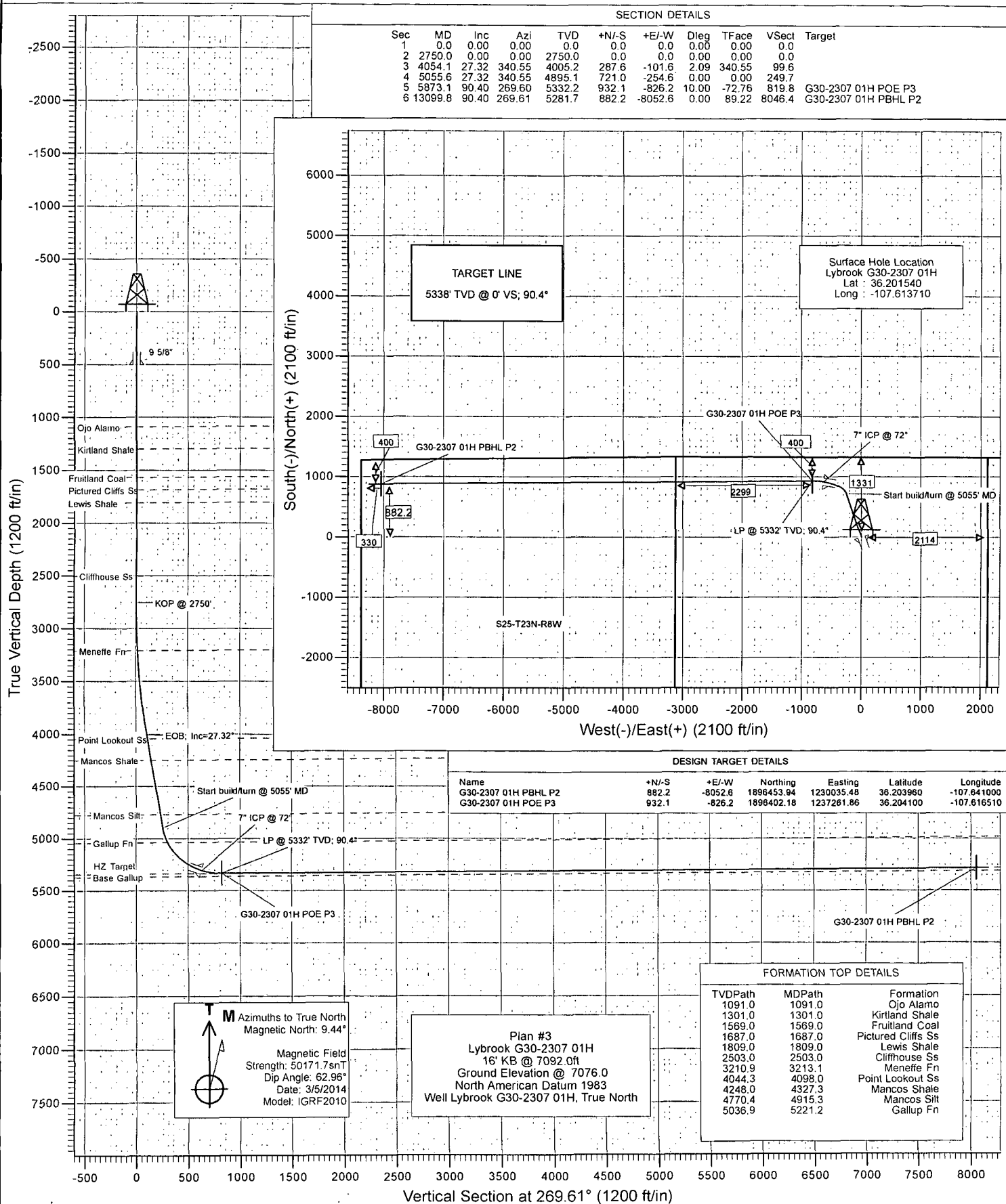
Minimum Make-up Torque (ft-lbs)	_____	1,640
Nominal Make-up Torque (ft-lbs)	_____	2,190
Maximum Make-up Torque (ft-lbs)	_____	2,740

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
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Project: Sandoval County, NM
 Site: S30-T23N-R7W
 Well: Lybrook G30-2307 01H
 Wellbore: HZ
 Design: Plan #3



Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Lybrook G30-2307 01H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	16' KB @ 7092.0ft
Project:	Sandoval County, NM	MD Reference:	16' KB @ 7092.0ft
Site:	S30-T23N-R7W	North Reference:	True
Well:	Lybrook G30-2307 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	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 01H					
Well Position	+N/-S	0.0 ft	Northing:	1,895,458.60 ft	Latitude:	36.201540
	+E/-W	0.0 ft	Easting:	1,238,074.88 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	269.61	

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	
2,750.0	0.00	0.00	2,750.0	0.0	0.0	0.00	0.00	0.00	0.00	
4,054.1	27.32	340.55	4,005.2	287.6	-101.6	2.09	2.09	0.00	340.55	
5,055.6	27.32	340.55	4,895.1	721.0	-254.6	0.00	0.00	0.00	0.00	
5,873.1	90.40	269.60	5,332.2	932.1	-826.2	10.00	7.72	-8.68	-72.76	G30-2307 01H POE F
13,099.8	90.40	269.61	5,281.7	882.2	-8,052.6	0.00	0.00	0.00	89.22	G30-2307 01H PBHL

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Lybrook G30-2307 01H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	16' KB @ 7092.0ft
Project:	Sandoval County, NM	MD Reference:	16' KB @ 7092.0ft
Site:	S30-T23N-R7W	North Reference:	True
Well:	Lybrook G30-2307 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	
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	
2,750.0	0.00	0.00	2,750.0	0.0	0.0	0.0	0.00	0.00	KOP @ 2750'
2,800.0	1.05	340.55	2,800.0	0.4	-0.2	0.1	2.09	2.09	
2,900.0	3.14	340.55	2,899.9	3.9	-1.4	1.3	2.09	2.09	
3,000.0	5.24	340.55	2,999.7	10.8	-3.8	3.7	2.09	2.09	
3,100.0	7.33	340.55	3,099.0	21.1	-7.4	7.3	2.09	2.09	
3,200.0	9.43	340.55	3,198.0	34.8	-12.3	12.1	2.09	2.09	
3,213.1	9.70	340.55	3,210.9	36.9	-13.0	12.8	2.09	2.09	Meneffe Fn
3,300.0	11.52	340.55	3,296.3	52.0	-18.4	18.0	2.09	2.09	
3,400.0	13.62	340.55	3,393.9	72.5	-25.6	25.1	2.09	2.09	
3,500.0	15.71	340.55	3,490.6	96.3	-34.0	33.4	2.09	2.09	
3,600.0	17.80	340.55	3,586.4	123.5	-43.6	42.8	2.09	2.09	
3,700.0	19.90	340.55	3,681.0	154.0	-54.4	53.3	2.09	2.09	
3,800.0	21.99	340.55	3,774.4	187.7	-66.3	65.0	2.09	2.09	
3,900.0	24.09	340.55	3,866.4	224.6	-79.3	77.8	2.09	2.09	
4,000.0	26.18	340.55	3,956.9	264.7	-93.5	91.7	2.09	2.09	
4,054.1	27.32	340.55	4,005.2	287.6	-101.6	99.6	2.09	2.09	EOB; Inc=27.32°
4,098.0	27.32	340.55	4,044.3	306.6	-108.3	106.2	0.00	0.00	Point Lookout Ss
4,100.0	27.32	340.55	4,046.0	307.5	-108.6	106.5	0.00	0.00	

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Lybrook G30-2307 01H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	16' KB @ 7092.0ft
Project:	Sandoval County, NM	MD Reference:	16' KB @ 7092.0ft
Site:	S30-T23N-R7W	North Reference:	True
Well:	Lybrook G30-2307 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	27.32	340.55	4,134.9	350.8	-123.9	121.5	0.00	0.00	
4,300.0	27.32	340.55	4,223.7	394.0	-139.2	136.5	0.00	0.00	
4,327.3	27.32	340.55	4,248.0	405.9	-143.3	140.6	0.00	0.00	Mancos Shale
4,400.0	27.32	340.55	4,312.6	437.3	-154.4	151.5	0.00	0.00	
4,500.0	27.32	340.55	4,401.4	480.6	-169.7	166.4	0.00	0.00	
4,600.0	27.32	340.55	4,490.3	523.8	-185.0	181.4	0.00	0.00	
4,700.0	27.32	340.55	4,579.1	567.1	-200.3	196.4	0.00	0.00	
4,800.0	27.32	340.55	4,668.0	610.4	-215.6	211.4	0.00	0.00	
4,900.0	27.32	340.55	4,756.8	653.6	-230.9	226.4	0.00	0.00	
4,915.3	27.32	340.55	4,770.4	660.3	-233.2	228.7	0.00	0.00	Mancos Silt
5,000.0	27.32	340.55	4,845.7	696.9	-246.1	241.4	0.00	0.00	
5,055.6	27.32	340.55	4,895.1	721.0	-254.6	249.7	0.00	0.00	Start build/turn @ 5055' MD
5,100.0	28.92	331.76	4,934.3	740.0	-263.1	258.1	10.00	3.61	
5,200.0	34.26	315.52	5,019.6	781.5	-294.4	289.0	10.00	5.34	
5,221.2	35.62	312.68	5,036.9	790.0	-303.1	297.7	10.00	6.43	Gallup Fn
5,300.0	41.18	303.67	5,098.7	820.0	-341.6	336.0	10.00	7.06	
5,400.0	49.01	294.86	5,169.3	854.2	-403.4	397.6	10.00	7.83	
5,500.0	57.37	287.99	5,229.2	883.1	-477.9	471.9	10.00	8.36	
5,600.0	66.04	282.31	5,276.6	905.9	-562.8	556.6	10.00	8.67	
5,677.6	72.90	278.43	5,303.8	918.9	-634.2	628.0	10.00	8.83	7" ICP @ 72°
5,700.0	74.89	277.36	5,310.0	921.9	-655.5	649.2	10.00	8.90	
5,800.0	83.84	272.81	5,328.5	930.5	-753.3	747.0	10.00	8.95	
5,873.1	90.40	269.60	5,332.2	932.1	-826.2	819.8	10.00	8.98	LP @ 5332' TVD; 90.4°
5,900.0	90.40	269.60	5,332.0	931.9	-853.2	846.8	0.00	0.00	
6,000.0	90.40	269.60	5,331.3	931.2	-953.1	946.8	0.00	0.00	
6,100.0	90.40	269.60	5,330.6	930.5	-1,053.1	1,046.8	0.00	0.00	
6,200.0	90.40	269.60	5,329.9	929.8	-1,153.1	1,146.8	0.00	0.00	
6,300.0	90.40	269.60	5,329.2	929.1	-1,253.1	1,246.8	0.00	0.00	
6,400.0	90.40	269.60	5,328.5	928.4	-1,353.1	1,346.8	0.00	0.00	
6,500.0	90.40	269.60	5,327.8	927.7	-1,453.1	1,446.8	0.00	0.00	
6,600.0	90.40	269.60	5,327.1	927.0	-1,553.1	1,546.8	0.00	0.00	
6,700.0	90.40	269.60	5,326.4	926.3	-1,653.1	1,646.8	0.00	0.00	
6,800.0	90.40	269.60	5,325.7	925.6	-1,753.1	1,746.8	0.00	0.00	
6,900.0	90.40	269.60	5,325.0	924.9	-1,853.1	1,846.8	0.00	0.00	
7,000.0	90.40	269.60	5,324.3	924.2	-1,953.1	1,946.8	0.00	0.00	
7,100.0	90.40	269.60	5,323.6	923.5	-2,053.1	2,046.8	0.00	0.00	
7,200.0	90.40	269.60	5,322.9	922.8	-2,153.1	2,146.8	0.00	0.00	
7,300.0	90.40	269.60	5,322.2	922.1	-2,253.1	2,246.8	0.00	0.00	
7,400.0	90.40	269.60	5,321.5	921.4	-2,353.1	2,346.8	0.00	0.00	
7,500.0	90.40	269.60	5,320.8	920.7	-2,453.1	2,446.7	0.00	0.00	
7,600.0	90.40	269.60	5,320.1	920.0	-2,553.1	2,546.7	0.00	0.00	
7,700.0	90.40	269.60	5,319.4	919.3	-2,653.1	2,646.7	0.00	0.00	
7,800.0	90.40	269.60	5,318.7	918.7	-2,753.1	2,746.7	0.00	0.00	
7,900.0	90.40	269.60	5,318.0	918.0	-2,853.1	2,846.7	0.00	0.00	
8,000.0	90.40	269.60	5,317.3	917.3	-2,953.0	2,946.7	0.00	0.00	
8,100.0	90.40	269.60	5,316.6	916.6	-3,053.0	3,046.7	0.00	0.00	
8,200.0	90.40	269.60	5,315.9	915.9	-3,153.0	3,146.7	0.00	0.00	
8,300.0	90.40	269.60	5,315.2	915.2	-3,253.0	3,246.7	0.00	0.00	
8,400.0	90.40	269.60	5,314.5	914.5	-3,353.0	3,346.7	0.00	0.00	
8,500.0	90.40	269.60	5,313.8	913.8	-3,453.0	3,446.7	0.00	0.00	
8,600.0	90.40	269.60	5,313.1	913.1	-3,553.0	3,546.7	0.00	0.00	
8,700.0	90.40	269.60	5,312.4	912.4	-3,653.0	3,646.7	0.00	0.00	

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Lybrook G30-2307 01H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	16' KB @ 7092.0ft
Project:	Sandoval County, NM	MD Reference:	16' KB @ 7092.0ft
Site:	S30-T23N-R7W	North Reference:	True
Well:	Lybrook G30-2307 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	90.40	269.60	5,311.7	911.7	-3,753.0	3,746.7	0.00	0.00	
8,900.0	90.40	269.60	5,311.0	911.0	-3,853.0	3,846.7	0.00	0.00	
9,000.0	90.40	269.60	5,310.3	910.3	-3,953.0	3,946.7	0.00	0.00	
9,100.0	90.40	269.60	5,309.6	909.7	-4,053.0	4,046.7	0.00	0.00	
9,200.0	90.40	269.60	5,308.9	909.0	-4,153.0	4,146.7	0.00	0.00	
9,300.0	90.40	269.60	5,308.2	908.3	-4,253.0	4,246.7	0.00	0.00	
9,400.0	90.40	269.60	5,307.5	907.6	-4,353.0	4,346.7	0.00	0.00	
9,500.0	90.40	269.60	5,306.8	906.9	-4,453.0	4,446.7	0.00	0.00	
9,600.0	90.40	269.60	5,306.1	906.2	-4,553.0	4,546.7	0.00	0.00	
9,700.0	90.40	269.61	5,305.4	905.5	-4,653.0	4,646.7	0.00	0.00	
9,800.0	90.40	269.61	5,304.7	904.8	-4,753.0	4,746.7	0.00	0.00	
9,900.0	90.40	269.61	5,304.0	904.1	-4,853.0	4,846.7	0.00	0.00	
10,000.0	90.40	269.61	5,303.3	903.4	-4,953.0	4,946.7	0.00	0.00	
10,100.0	90.40	269.61	5,302.6	902.8	-5,052.9	5,046.7	0.00	0.00	
10,200.0	90.40	269.61	5,301.9	902.1	-5,152.9	5,146.7	0.00	0.00	
10,300.0	90.40	269.61	5,301.3	901.4	-5,252.9	5,246.7	0.00	0.00	
10,400.0	90.40	269.61	5,300.6	900.7	-5,352.9	5,346.7	0.00	0.00	
10,500.0	90.40	269.61	5,299.9	900.0	-5,452.9	5,446.7	0.00	0.00	
10,600.0	90.40	269.61	5,299.2	899.3	-5,552.9	5,546.7	0.00	0.00	
10,700.0	90.40	269.61	5,298.5	898.6	-5,652.9	5,646.7	0.00	0.00	
10,800.0	90.40	269.61	5,297.8	897.9	-5,752.9	5,746.7	0.00	0.00	
10,900.0	90.40	269.61	5,297.1	897.3	-5,852.9	5,846.7	0.00	0.00	
11,000.0	90.40	269.61	5,296.4	896.6	-5,952.9	5,946.7	0.00	0.00	
11,100.0	90.40	269.61	5,295.7	895.9	-6,052.9	6,046.7	0.00	0.00	
11,200.0	90.40	269.61	5,295.0	895.2	-6,152.9	6,146.7	0.00	0.00	
11,300.0	90.40	269.61	5,294.3	894.5	-6,252.9	6,246.7	0.00	0.00	
11,400.0	90.40	269.61	5,293.6	893.8	-6,352.9	6,346.7	0.00	0.00	
11,500.0	90.40	269.61	5,292.9	893.1	-6,452.9	6,446.7	0.00	0.00	
11,600.0	90.40	269.61	5,292.2	892.5	-6,552.9	6,546.6	0.00	0.00	
11,700.0	90.40	269.61	5,291.5	891.8	-6,652.9	6,646.6	0.00	0.00	
11,800.0	90.40	269.61	5,290.8	891.1	-6,752.9	6,746.6	0.00	0.00	
11,900.0	90.40	269.61	5,290.1	890.4	-6,852.9	6,846.6	0.00	0.00	
12,000.0	90.40	269.61	5,289.4	889.7	-6,952.9	6,946.6	0.00	0.00	
12,100.0	90.40	269.61	5,288.7	889.0	-7,052.9	7,046.6	0.00	0.00	
12,200.0	90.40	269.61	5,288.0	888.4	-7,152.8	7,146.6	0.00	0.00	
12,300.0	90.40	269.61	5,287.3	887.7	-7,252.8	7,246.6	0.00	0.00	
12,400.0	90.40	269.61	5,286.6	887.0	-7,352.8	7,346.6	0.00	0.00	
12,500.0	90.40	269.61	5,285.9	886.3	-7,452.8	7,446.6	0.00	0.00	
12,600.0	90.40	269.61	5,285.2	885.6	-7,552.8	7,546.6	0.00	0.00	
12,700.0	90.40	269.61	5,284.5	884.9	-7,652.8	7,646.6	0.00	0.00	
12,800.0	90.40	269.61	5,283.8	884.3	-7,752.8	7,746.6	0.00	0.00	
12,900.0	90.40	269.61	5,283.1	883.6	-7,852.8	7,846.6	0.00	0.00	
13,000.0	90.40	269.61	5,282.4	882.9	-7,952.8	7,946.6	0.00	0.00	
13,099.8	90.40	269.61	5,281.7	882.2	-8,052.6	8,046.4	0.00	0.00	TD at 13099.8

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Lybrook G30-2307 01H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	16' KB @ 7092.0ft
Project:	Sandoval County, NM	MD Reference:	16' KB @ 7092.0ft
Site:	S30-T23N-R7W	North Reference:	True
Well:	Lybrook G30-2307 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)		
G30-2307 01H PBHL P2	0.00	0.00	5,281.7	882.2	-8,052.6	1,896,453.94	1,230,035.48	36.203960	-107.641000
- plan hits target center									
- Point									
G30-2307 01H POE	0.00	0.00	5,332.2	961.2	-826.2	1,896,431.31	1,237,262.27	36.204180	-107.616510
- plan misses target center by 29.1ft at 5873.1ft MD (5332.2 TVD, 932.1 N, -826.2 E)									
- Point									
G30-2307 01H POE P3	0.00	0.00	5,332.2	932.1	-826.2	1,896,402.18	1,237,261.86	36.204100	-107.616510
- plan hits target center									
- Point									
G30-2307 01H PBHL	0.00	0.00	5,300.0	943.5	-5,426.4	1,896,478.29	1,232,662.27	36.204130	-107.632100
- plan misses target center by 43.3ft at 10473.2ft MD (5300.0 TVD, 900.2 N, -5426.1 E)									
- Point									

Casing Points				
Measured Depth	Vertical Depth	Name	Casing Diameter	Hole Diameter
(ft)	(ft)		(in)	(in)
500.0	500.0	9 5/8"	0.000	0.000
5,677.6	5,303.8	7" ICP @ 72°	0.000	0.000

Formations					
Measured Depth	Vertical Depth	Name	Lithology	Dip	Dip Direction
(ft)	(ft)			(°)	(°)
1,091.0	1,091.0	Ojo Alamo		-0.40	269.37
1,301.0	1,301.0	Kirtland Shale		-0.40	269.37
1,569.0	1,569.0	Fruitland Coal		-0.40	269.37
1,687.0	1,687.0	Pictured Cliffs Ss		-0.40	269.37
1,809.0	1,809.0	Lewis Shale		-0.40	269.37
2,503.0	2,503.0	Cliffhouse Ss		-0.40	269.37
3,213.1	3,211.0	Meneffe Fn		-0.40	269.37
4,098.0	4,045.0	Point Lookout Ss		-0.40	269.37
4,327.3	4,249.0	Mancos Shale		-0.40	269.37
4,915.3	4,772.0	Mancos Silt		-0.40	269.37
5,221.2	5,039.0	Gallup Fn		-0.40	269.37

Plan Annotations				
Measured Depth	Vertical Depth	Local Coordinates		Comment
(ft)	(ft)	+N/-S	+E/-W	
(ft)	(ft)	(ft)	(ft)	
2,750.0	2,750.0	0.0	0.0	KOP @ 2750'
4,054.1	4,005.2	287.6	-101.6	EOB; Inc=27.32°
5,055.6	4,895.1	721.0	-254.6	Start build/turn @ 5055' MD
5,873.1	5,332.2	932.1	-826.2	LP @ 5332' TVD; 90.4°
13,099.8	5,281.7	882.2	-8,052.6	TD at 13099.8