

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.

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)

720-876-5867

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)

SHL: 1354' FNL and 50' FEL Sec 9, T23N, R8W
BHL: 400' FNL and 330' FEL Sec 10, T23N, R8W

5. Lease Serial No.

NMNM 118132

6. If Indian Allottee or Tribe Name

N/A

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

8. Well Name and No.

Lybrook H09-2308 01H

9. API Well No.

30-045-35508

10. Field and Pool or Exploratory Area

Basin Mancos Gas/Nageezi Gallup

11. County or Parish, State

San Juan, 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.)

Encana Oil & Gas (USA) Inc. (Encana) wishes to modify the drilling plan for the Lybrook H09-2308 01H 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

CONDITIONS OF APPROVAL

Adhere to previously issued stipulations

NOV 17 2014

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 NMOC
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

11/13/14

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by

William Tambekou

Title

Petroleum Engineer

Date

11/14/2014

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.

Lybrook H09-2308 01H

SHL: SE/4 NE/4 Sec 9 T23N R8W, 1354' FNL, 50' FEL

BHL:

, New Mexico

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

OIL CONS. DIV DIST. 3

NOV 17 2014

1. ESTIMATED TOPS OF GEOLOGICAL MARKERS (TVD)

The estimated tops of important geologic markers are as follows:

Formation	Depth (TVD) units = feet
Ojo Alamo	983
Kirtland Shale	1,146
Fruitland Coal	1,402
Pictured Cliffs Ss.	1,691
Lewis Shale	1,791
Cliffhouse Ss.	3,097
Menefee Fn.	3,181
Point Lookout Ss.	4,015
Mancos Shale	4,241
Mancos Silt	4,788
Gallup Fn.	5,047
Horizontal Target	5,322
Base Gallup	5,345
Mancos Top	off @

The referenced surface elevation is 0', KB 5322'

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

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

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

Lybrook H09-2308 01H

SHL: SE/4 NE/4 Sec 9 T23N R8W, 1354' FNL, 50' FEL

BHL:

, 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'-5508'	8 3/4"	7"	26#	J55, LTC New
Production Liner	5408'-10761'	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 H09-2308 01H

SHL: SE/4 NE/4 Sec 9 T23N R8W, 1354' FNL, 50' FEL

BHL:

, 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'-5508'	100% open hole excess Stage 1 Lead: 513 sks Stage 1 Tail: 391 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	5408'- 10761'	50% OH excess Stage 1 Blend Total: 302sks	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 3900'. Directional plans are attached.

Description	Proposed Depth (TVD/MD)	Formation
Horizontal Lateral TD	5296'/10761'	Gallup

Lybrook H09-2308 01H
SHL: SE/4 NE/4 Sec 9 T23N R8W, 1354' FNL, 50' FEL
BHL:
, 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'/5508'	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'/5508'- 5296'/10761'	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 +/- 2491 psi based on a 9.0 ppg at 5322' 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.

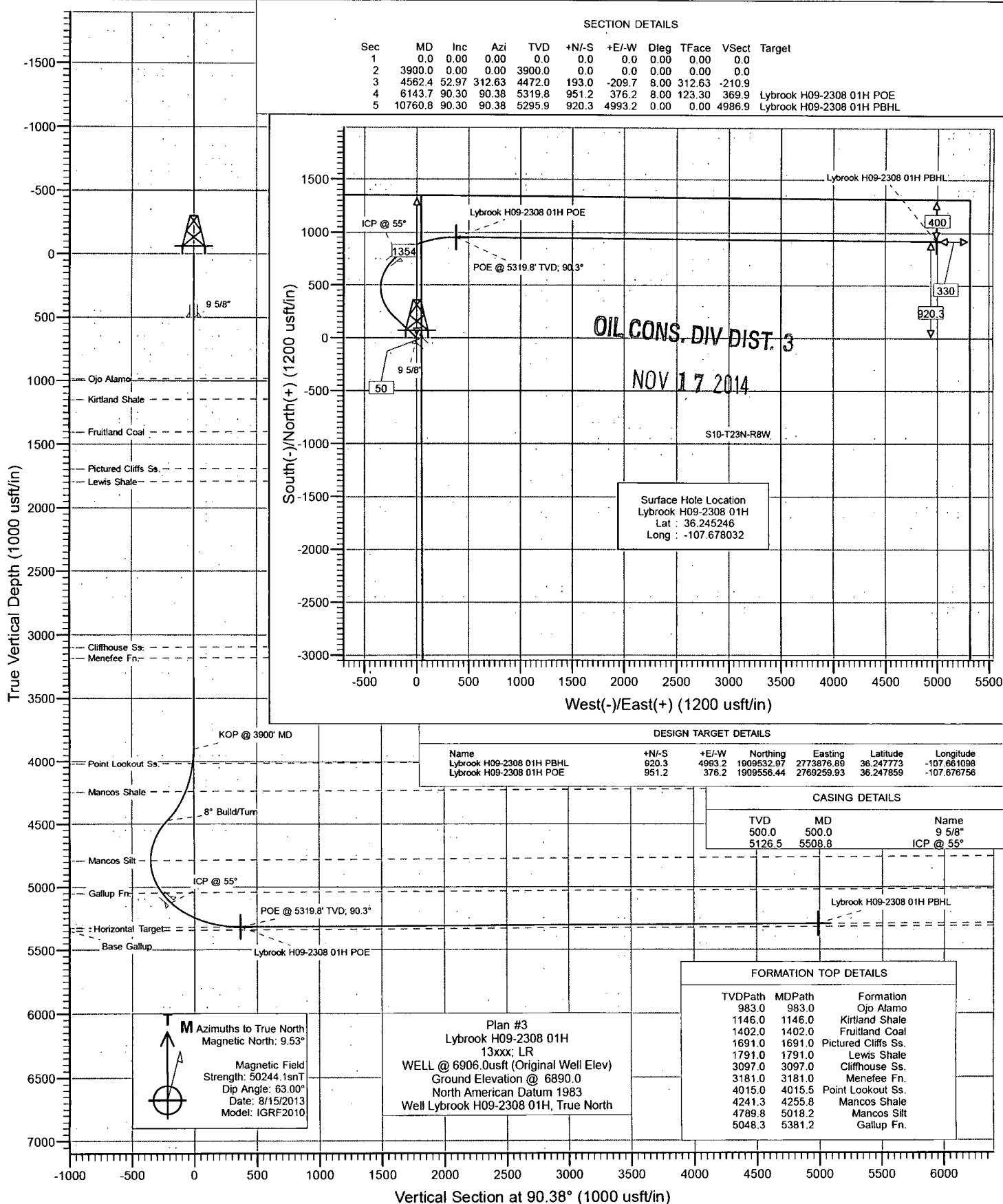
LOC: Lybrook H09-2308 01H		Encana Natural Gas				ENG: 0		11/13/14	
County: 0		WELL SUMMARY				RIG: Aztec 920			
WELL: Lybrook H09-2308 01H						GLE: 0			
						RKBE: 5322			
MWD	OPEN HOLE	FORM	DEPTH			HOLE	CASING	MW	DEVIATION
LWD	LOGGING		TVD	MD		SIZE	SPECS	MUD TYPE	INFORMATION
			60	60'		26	16" 42.09# 100sx Type I Neat 16.0ppg cmt	Fresh wtr 8.3-9.2	
		San Jose Fn.	0						
Multi-Well pad take survey every stand and run anti-collision report prior to spud	None					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	0						
		9 5/8" Csg	500	500.00					
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	983			8 3/4	7" 26ppf J55 LTC TOC @ surface (100% OH excess - 70% Lead 30% Tail) Stage 1 Total: 904sks Stage 1 Lead: 513 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°
		Kirtland Shale	1,146						
		Fruitland Coal	1,402						
		Pictured Cliffs Ss.	1,691						
		Lewis Shale	1,791						
		Cliffhouse Ss.	3,097						
		Menefee Fn.	3,181						
		Point Lookout Ss.	4,015						
		Mancos Shale	4,241						
	Mud logger onsite	KOP	3,900	3,900					
Surveys every 30' through the curve		Mancos Silt	4,788						
		Gallup Fn.	5,047						
		7" Csg	5,126	5,508'					
Surveys every stand to TD unless directed otherwise by Geologist		Horizontal Target	5,322			6 1/8	100' overlap at liner top		Horz Inc/TVD deg/90.3 degft
		TD	5,296	10,761			5253' Drilled Lateral		TD = 10760.8 MD
		Base Gallup	5,345						
MWD Gamma Directional	No OH Logs						4 1/2" 11.6ppf SB80 LTC TOC @ hanger (50% OH excess) Stage 1 Total: 302sks Stage 1 Blend: 302 sks Premium Lite High Strength FM + 0.7% bwoc R-3 + 3% bwoc 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 3900', 8 3/4 inch holesize
- 5) Start curve at 10deg/100' build rate
- 6) Drill to csg point of 5508' MD
- 7) R&C 7" csg, circ cmt to surface
- 8) Land at -90 deg, drill lateral to 10761' run 4 1/2 inch cemented liner

OIL CONS. DIV DIST. 3

NOV 17 2014



Cathedral Energy Services

Planning Report

Database: USA EDM 5000 Multi Users DB
 Company: EnCana Oil & Gas (USA) Inc
 Project: San Juan County, NM
 Site: S9-T23N-R8W (Lybrook)
 Well: Lybrook H09-2308 01H
 Wellbore: Hz
 Design: Plan #3

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

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

Site	S9-T23N-R8W (Lybrook)			
Site Position:		Northing:	1,908,604.64 usft	Latitude: 36.245246
From:	Lat/Long	Easting:	2,768,885.21 usft	Longitude: -107.678032
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16"	Grid Convergence: 0.09 °

Well	Lybrook H09-2308 01H			
Well Position	+N/-S	0.0 usft	Northing:	1,908,604.64 usft
	+E/-W	0.0 usft	Easting:	2,768,885.21 usft
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft
			Ground Level:	6,890.0 usft

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

Design	Plan #3			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	90.38

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
3,900.0	0.00	0.00	3,900.0	0.0	0.0	0.00	0.00	0.00	0.00	
4,562.4	52.97	312.63	4,472.0	193.0	-209.7	8.00	8.00	0.00	312.63	
6,143.7	90.30	90.38	5,319.8	951.2	376.2	8.00	2.36	8.71	123.30	Lybrook H09-2308 01
10,760.8	90.30	90.38	5,295.9	920.3	4,993.2	0.00	0.00	0.00	0.00	Lybrook H09-2308 01

Cathedral Energy Services

Planning Report

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 Company: EnCana Oil & Gas (USA) Inc
 Project: San Juan County, NM
 Site: S9-T23N-R8W (Lybrook)
 Well: Lybrook H09-2308 01H
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Local Co-ordinate Reference: Well Lybrook H09-2308 01H
 TVD Reference: WELL @ 6906.0usft (Original Well Elev)
 MD Reference: WELL @ 6906.0usft (Original Well Elev)
 North Reference: True
 Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100u)	Comments / Formations
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	9 5/8"
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	
983.0	0.00	0.00	983.0	0.0	0.0	0.0	0.00	0.00	Ojo Alamo
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	
1,146.0	0.00	0.00	1,146.0	0.0	0.0	0.0	0.00	0.00	Kirtland Shale
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	
1,402.0	0.00	0.00	1,402.0	0.0	0.0	0.0	0.00	0.00	Fruitland Coal
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	
1,691.0	0.00	0.00	1,691.0	0.0	0.0	0.0	0.00	0.00	Pictured Cliffs Ss.
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	
1,791.0	0.00	0.00	1,791.0	0.0	0.0	0.0	0.00	0.00	Lewis Shale
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	
2,100.0	0.00	0.00	2,100.0	0.0	0.0	0.0	0.00	0.00	
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	0.00	
2,300.0	0.00	0.00	2,300.0	0.0	0.0	0.0	0.00	0.00	
2,400.0	0.00	0.00	2,400.0	0.0	0.0	0.0	0.00	0.00	
2,500.0	0.00	0.00	2,500.0	0.0	0.0	0.0	0.00	0.00	
2,600.0	0.00	0.00	2,600.0	0.0	0.0	0.0	0.00	0.00	
2,700.0	0.00	0.00	2,700.0	0.0	0.0	0.0	0.00	0.00	
2,800.0	0.00	0.00	2,800.0	0.0	0.0	0.0	0.00	0.00	
2,900.0	0.00	0.00	2,900.0	0.0	0.0	0.0	0.00	0.00	
3,000.0	0.00	0.00	3,000.0	0.0	0.0	0.0	0.00	0.00	
3,097.0	0.00	0.00	3,097.0	0.0	0.0	0.0	0.00	0.00	Cliffhouse Ss.
3,100.0	0.00	0.00	3,100.0	0.0	0.0	0.0	0.00	0.00	
3,181.0	0.00	0.00	3,181.0	0.0	0.0	0.0	0.00	0.00	Menefee Fn.
3,200.0	0.00	0.00	3,200.0	0.0	0.0	0.0	0.00	0.00	
3,300.0	0.00	0.00	3,300.0	0.0	0.0	0.0	0.00	0.00	
3,400.0	0.00	0.00	3,400.0	0.0	0.0	0.0	0.00	0.00	
3,500.0	0.00	0.00	3,500.0	0.0	0.0	0.0	0.00	0.00	
3,600.0	0.00	0.00	3,600.0	0.0	0.0	0.0	0.00	0.00	
3,700.0	0.00	0.00	3,700.0	0.0	0.0	0.0	0.00	0.00	
3,800.0	0.00	0.00	3,800.0	0.0	0.0	0.0	0.00	0.00	
3,900.0	0.00	0.00	3,900.0	0.0	0.0	0.0	0.00	0.00	KOP @ 3900' MD
3,950.0	4.00	312.63	3,950.0	1.2	-1.3	-1.3	8.00	8.00	
4,000.0	8.00	312.63	3,999.7	4.7	-5.1	-5.2	8.00	8.00	
4,015.5	9.24	312.63	4,015.0	6.3	-6.8	-6.9	8.00	8.00	Point Lookout Ss.
4,050.0	11.99	312.63	4,048.9	10.6	-11.5	-11.6	8.00	8.00	
4,100.0	15.99	312.63	4,097.4	18.8	-20.4	-20.5	8.00	8.00	

Cathedral Energy Services

Planning Report

Database: USA EDM 5000 Multi Users DB
Company: EnCana Oil & Gas (USA) Inc
Project: San Juan County, NM
Site: S9-T23N-R8W (Lybrook)
Well: Lybrook H09-2308 01H
Wellbore: Hz
Design: Plan #3

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

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100u)	Comments / Formations
4,150.0	19.99	312.63	4,145.0	29.2	-31.8	-32.0	8.00	8.00	
4,200.0	23.99	312.63	4,191.3	41.9	-45.5	-45.8	8.00	8.00	
4,250.0	27.99	312.63	4,236.2	56.8	-61.6	-62.0	8.00	8.00	
4,255.8	28.45	312.63	4,241.3	58.6	-63.7	-64.0	8.00	8.00	Mancos Shale
4,300.0	31.98	312.63	4,279.5	73.7	-80.0	-80.5	8.00	8.00	
4,350.0	35.98	312.63	4,321.0	92.6	-100.6	-101.2	8.00	8.00	
4,400.0	39.98	312.63	4,360.4	113.4	-123.2	-124.0	8.00	8.00	
4,450.0	43.98	312.63	4,397.6	136.1	-147.8	-148.7	8.00	8.00	
4,500.0	47.98	312.63	4,432.3	160.4	-174.3	-175.3	8.00	8.00	
4,550.0	51.97	312.63	4,464.5	186.4	-202.4	-203.7	8.00	8.00	
4,562.4	52.97	312.63	4,472.0	193.0	-209.7	-210.9	7.99	7.99	8° Build/Turn
4,600.0	51.36	315.85	4,495.1	213.7	-230.9	-232.3	8.00	-4.28	
4,650.0	49.36	320.35	4,527.0	242.4	-256.6	-258.2	8.00	-3.99	
4,700.0	47.56	325.12	4,560.1	272.1	-279.3	-281.1	8.00	-3.62	
4,750.0	45.96	330.15	4,594.4	302.8	-298.8	-300.8	8.00	-3.20	
4,800.0	44.59	335.44	4,629.6	334.4	-315.1	-317.3	8.00	-2.73	
4,850.0	43.48	340.97	4,665.6	366.6	-328.0	-330.4	8.00	-2.22	
4,900.0	42.64	346.69	4,702.1	399.4	-337.5	-340.1	8.00	-1.67	
4,950.0	42.10	352.57	4,739.1	432.5	-343.5	-346.4	8.00	-1.08	
5,000.0	41.86	358.54	4,776.3	465.8	-346.1	-349.2	8.00	-0.47	
5,018.2	41.85	0.72	4,789.8	478.0	-346.2	-349.4	8.00	-0.05	Mancos Silt
5,050.0	41.94	4.53	4,813.5	499.2	-345.2	-348.5	8.00	0.26	
5,100.0	42.32	10.46	4,850.6	532.4	-340.9	-344.4	8.00	0.77	
5,150.0	43.00	16.28	4,887.4	565.3	-333.0	-336.8	8.00	1.37	
5,200.0	43.97	21.92	4,923.7	597.8	-321.8	-325.7	8.00	1.94	
5,250.0	45.21	27.33	4,959.3	629.7	-307.1	-311.3	8.00	2.47	
5,300.0	46.69	32.50	4,994.1	660.8	-289.2	-293.6	8.00	2.96	
5,350.0	48.39	37.41	5,027.8	691.0	-268.1	-272.7	8.00	3.40	
5,381.2	49.55	40.34	5,048.3	709.3	-253.3	-258.0	8.00	3.73	Gallup Fn.
5,400.0	50.29	42.05	5,060.4	720.1	-243.8	-248.6	8.00	3.91	
5,450.0	52.36	46.43	5,091.7	748.1	-216.6	-221.6	8.00	4.15	
5,500.0	54.59	50.56	5,121.4	774.7	-186.5	-191.6	8.00	4.45	
5,508.8	54.99	51.26	5,126.5	779.2	-180.9	-186.1	8.00	4.62	ICP @ 55°
5,550.0	56.95	54.46	5,149.6	799.8	-153.7	-159.0	8.00	4.74	
5,600.0	59.42	58.16	5,175.9	823.3	-118.4	-123.8	8.00	4.95	
5,650.0	61.99	61.67	5,200.4	845.2	-80.6	-86.2	8.00	5.15	
5,700.0	64.65	65.01	5,222.9	865.2	-40.7	-46.4	8.00	5.32	
5,750.0	67.38	68.21	5,243.2	883.3	1.2	-4.6	8.00	5.46	
5,800.0	70.18	71.28	5,261.3	899.5	44.9	39.0	8.00	5.58	
5,850.0	73.02	74.24	5,277.1	913.5	90.2	84.2	8.00	5.68	
5,900.0	75.90	77.12	5,290.5	925.4	136.9	130.8	8.00	5.77	
5,950.0	78.82	79.92	5,301.4	935.1	184.7	178.5	8.00	5.83	
6,000.0	81.76	82.66	5,309.8	942.6	233.4	227.2	8.00	5.89	
6,050.0	84.72	85.37	5,315.7	947.7	282.8	276.5	8.00	5.92	
6,100.0	87.69	88.05	5,319.0	950.6	332.6	326.3	8.00	5.94	
6,143.7	90.30	90.38	5,319.8	951.2	376.3	370.0	8.00	5.95	POE @ 5319.8' TVD; 90.3°
6,200.0	90.30	90.38	5,319.5	950.8	432.5	426.2	0.00	0.00	
6,300.0	90.30	90.38	5,319.0	950.2	532.5	526.2	0.00	0.00	
6,400.0	90.30	90.38	5,318.5	949.5	632.5	626.2	0.00	0.00	
6,500.0	90.30	90.38	5,318.0	948.8	732.5	726.2	0.00	0.00	
6,600.0	90.30	90.38	5,317.4	948.1	832.5	826.2	0.00	0.00	
6,700.0	90.30	90.38	5,316.9	947.5	932.5	926.2	0.00	0.00	

Cathedral Energy Services

Planning Report

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 Well: Lybrook H09-2308 01H
 Wellbore: Hz
 Design: Plan #3

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

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100u)	Comments / Formations
6,800.0	90.30	90.38	5,316.4	946.8	1,032.5	1,026.2	0.00	0.00	
6,900.0	90.30	90.38	5,315.9	946.1	1,132.5	1,126.2	0.00	0.00	
7,000.0	90.30	90.38	5,315.4	945.5	1,232.5	1,226.2	0.00	0.00	
7,100.0	90.30	90.38	5,314.8	944.8	1,332.5	1,326.2	0.00	0.00	
7,200.0	90.30	90.38	5,314.3	944.1	1,432.5	1,426.2	0.00	0.00	
7,300.0	90.30	90.38	5,313.8	943.5	1,532.5	1,526.2	0.00	0.00	
7,400.0	90.30	90.38	5,313.3	942.8	1,632.5	1,626.2	0.00	0.00	
7,500.0	90.30	90.38	5,312.8	942.1	1,732.5	1,726.2	0.00	0.00	
7,600.0	90.30	90.38	5,312.3	941.5	1,832.5	1,826.2	0.00	0.00	
7,700.0	90.30	90.38	5,311.7	940.8	1,932.5	1,926.2	0.00	0.00	
7,800.0	90.30	90.38	5,311.2	940.1	2,032.5	2,026.2	0.00	0.00	
7,900.0	90.30	90.38	5,310.7	939.5	2,132.5	2,126.2	0.00	0.00	
8,000.0	90.30	90.38	5,310.2	938.8	2,232.5	2,226.2	0.00	0.00	
8,100.0	90.30	90.38	5,309.7	938.1	2,332.5	2,326.2	0.00	0.00	
8,200.0	90.30	90.38	5,309.1	937.4	2,432.5	2,426.2	0.00	0.00	
8,300.0	90.30	90.38	5,308.6	936.8	2,532.5	2,526.2	0.00	0.00	
8,400.0	90.30	90.38	5,308.1	936.1	2,632.4	2,626.2	0.00	0.00	
8,500.0	90.30	90.38	5,307.6	935.4	2,732.4	2,726.2	0.00	0.00	
8,600.0	90.30	90.38	5,307.1	934.8	2,832.4	2,826.2	0.00	0.00	
8,700.0	90.30	90.38	5,306.6	934.1	2,932.4	2,926.2	0.00	0.00	
8,800.0	90.30	90.38	5,306.0	933.4	3,032.4	3,026.2	0.00	0.00	
8,900.0	90.30	90.38	5,305.5	932.8	3,132.4	3,126.2	0.00	0.00	
9,000.0	90.30	90.38	5,305.0	932.1	3,232.4	3,226.2	0.00	0.00	
9,100.0	90.30	90.38	5,304.5	931.4	3,332.4	3,326.2	0.00	0.00	
9,200.0	90.30	90.38	5,304.0	930.8	3,432.4	3,426.2	0.00	0.00	
9,300.0	90.30	90.38	5,303.4	930.1	3,532.4	3,526.2	0.00	0.00	
9,400.0	90.30	90.38	5,302.9	929.4	3,632.4	3,626.2	0.00	0.00	
9,500.0	90.30	90.38	5,302.4	928.8	3,732.4	3,726.2	0.00	0.00	
9,600.0	90.30	90.38	5,301.9	928.1	3,832.4	3,826.2	0.00	0.00	
9,700.0	90.30	90.38	5,301.4	927.4	3,932.4	3,926.2	0.00	0.00	
9,800.0	90.30	90.38	5,300.8	926.7	4,032.4	4,026.2	0.00	0.00	
9,900.0	90.30	90.38	5,300.3	926.1	4,132.4	4,126.2	0.00	0.00	
10,000.0	90.30	90.38	5,299.8	925.4	4,232.4	4,226.2	0.00	0.00	
10,100.0	90.30	90.38	5,299.3	924.7	4,332.4	4,326.2	0.00	0.00	
10,200.0	90.30	90.38	5,298.8	924.1	4,432.4	4,426.2	0.00	0.00	
10,300.0	90.30	90.38	5,298.3	923.4	4,532.4	4,526.2	0.00	0.00	
10,400.0	90.30	90.38	5,297.7	922.7	4,632.4	4,626.2	0.00	0.00	
10,500.0	90.30	90.38	5,297.2	922.1	4,732.4	4,726.2	0.00	0.00	
10,600.0	90.30	90.38	5,296.7	921.4	4,832.4	4,826.2	0.00	0.00	
10,700.0	90.30	90.38	5,296.2	920.7	4,932.4	4,926.2	0.00	0.00	
10,760.8	90.30	90.38	5,295.9	920.3	4,993.2	4,986.9	0.00	0.00	PBHL @ 10759' MD

Cathedral Energy Services

Planning Report

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Project: San Juan County, NM
Site: S9-T23N-R8W (Lybrook)
Well: Lybrook H09-2308 01H
Wellbore: Hz
Design: Plan #3

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

Targets

Target Name

- hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Lybrook H09-2308 01H I - plan hits target center - Point	0.00	0.00	5,295.9	920.3	4,993.2	1,909,532.97	2,773,876.89	36.247773	-107.661098
Lybrook H09-2308 01H I - plan hits target center - Point	0.00	0.00	5,319.8	951.2	376.2	1,909,556.44	2,769,259.93	36.247859	-107.676756

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
5,508.8	5,126.5	ICP @ 55°	0	0
500.0	500.0	9 5/8"	0	0

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
983.0	983.0	Ojo Alamo		-0.30	90.38
1,146.0	1,146.0	Kirtland Shale		-0.30	90.38
1,402.0	1,402.0	Fruitland Coal		-0.30	90.38
1,691.0	1,691.0	Pictured Cliffs Ss.		-0.30	90.38
1,791.0	1,791.0	Lewis Shale		-0.30	90.38
3,097.0	3,097.0	Cliffhouse Ss.		-0.30	90.38
3,181.0	3,181.0	Menefee Fn.		-0.30	90.38
4,015.5	4,015.0	Point Lookout Ss.		-0.30	90.38
4,255.8	4,241.0	Mancos Shale		-0.30	90.38
5,018.2	4,788.0	Mancos Silt		-0.30	90.38
5,381.2	5,047.0	Gallup Fn.		-0.30	90.38

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
3,900.0	3,900.0	0.0	0.0	KOP @ 3900' MD
4,562.4	4,472.0	193.0	-209.7	8° Build/Turn
6,143.7	5,319.8	951.2	376.3	POE @ 5319.8' TVD; 90.3°
10,760.8	5,295.9	920.3	4,993.2	PBHL @ 10759' MD