

State of New Mexico  
Energy, Minerals and Natural Resources Department

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**Susana Martinez**  
Governor

**David Martin**  
Cabinet Secretary-Designate

**Brett F. Woods, Ph.D.**  
Deputy Cabinet Secretary

**Jami Bailey, Division Director**  
Oil Conservation Division



New Mexico Oil Conservation Division approval and conditions listed below are made in accordance with OCD Rule 19.15.7.11 and are in addition to the actions approved by BLM on the following 3160-4 or 3160-5 form.

Operator Signature Date: March 22, 2013

Well information:  
Encana Oil & Gas  
30-043-21142  
Lybrook E29-2306 #03H  
S29-T23N-R6W

Conditions of Approval:

\*Notify NMOCD 24hrs prior to beginning operations.

\***Hold C104 for as drilled plat and directional survey**

\_\_\_\_\_  
NMOCD Approved by Signature

AUG 13 2013

\_\_\_\_\_  
Date

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 117564

6. If Indian, Allottee or Tribe Name  
N/A

SUBMIT IN TRIPLICATE - Other instructions on page 12

1. Type of Well  
 Oil Well     Gas Well     Other  
 MAR 25 2013

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

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

8. Well Name and No.  
Lybrook E29-2306 03H

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

3b. Phone No. (include area code)  
Bureau of Land Management  
720-876-5353

9. API Well No.  
PENDING 30-043-21142

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)  
SHL: 1336' FNL and 330' FWL Sec 29, T23N, R6W  
BHL: 1750' FNL and 330' FWL Sec 30, T23N, R6W

10. Field and Pool or Exploratory Area  
Lybrook Gallup

11. Country or Parish, State  
Sandoval, NM

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

TYPE OF SUBMISSION	TYPE OF ACTION			
<input checked="" type="checkbox"/> Notice of Intent	<input type="checkbox"/> Acidize	<input type="checkbox"/> Deepen	<input type="checkbox"/> Production (Start/Resume)	<input type="checkbox"/> Water Shut-Off
<input type="checkbox"/> Subsequent Report	<input type="checkbox"/> Alter Casing	<input type="checkbox"/> Fracture Treat	<input type="checkbox"/> Reclamation	<input type="checkbox"/> Well Integrity
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Casing Repair	<input type="checkbox"/> New Construction	<input type="checkbox"/> Recomplete	<input type="checkbox"/> Other _____
	<input checked="" type="checkbox"/> Change Plans	<input type="checkbox"/> Plug and Abandon	<input type="checkbox"/> Temporarily Abandon	
	<input type="checkbox"/> Convert to Injection	<input type="checkbox"/> Plug Back	<input type="checkbox"/> 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) would like to revise the hole sizes, casing sizes, and cement plans for the Lybrook E29-2306 03H well. Encana would like to change the intermediate hole size from 8 1/2" to 8 3/4" and change the cementing program to accommodate the hole size changes. Please see attached 10 point drilling plan and wellbore diagram. Drilling is estimated to commence on February 6, 2014.

RCVD AUG 8 '13  
OIL CONS. DIV.  
DIST. 3

14. I hereby certify that the foregoing is true and correct.  
Name (Printed/Typed) Amie Weis Title Drilling Engineer

Signature *Amie Weis* Date 3/22/2013

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by *[Signature]* Title AFM Date 8/2/13

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.

NMOC

MWD LWD		OPEN HOLE LOGGING	FORM	DEPTH		HOLE SIZE	CASING SPECS	MW MUD TYPE	DEVIATION INFORMATION
				TVD	MD				
				60	60'	30	20" 94# 100sx Type I Neat 48.8ppg cmt	Fresh wtr 8.3-9.2	
Surveys After csg is run		None		500	500	12 1/4	9 5/8" 36ppf J55 STC  TOC @ surface 178 sks Type III Cmt	Fresh wtr 8.4-8.6	Vertical <1°
Surveys every 500'		No OH logs	Ojo Alamo Kirtland Fruitland Coal Pictured Cliffs Ss Lewis Shale Cliffhouse Ss Menefee Fn	1373 1,607 1729 1989 2090 2840 3467		8 3/4	7" 26ppf J55 LTC  TOC @ surface 30% OH excess: 614 sks Total. Stage 1 Lead: 257sks Stage 1 Tail: 176sks. Stage 2 Lead: 180sks	Fresh Wtr 8.5-8.8	Vertical <1°
		Mud logger onsite	Point Lookout Ss Mancos Sh	4287 4440		Stage tool @ 2040'			
			KICK OFF PT	4893					
			Mancos Silt	5039					
			Gallup Top	5297					KOP 4893 10 deg/100'
				5551	6047				
Surveys every 500' Gyro at CP MWD Gamma Directional		No OH Logs	horz target Base Gallup	5551 5616	6047	6 1/8	200' overlap at liner top  4630' Lateral	8.6-9.0 OBM Switch to OBM 8.6-9.0	.25deg updip 5518'TVD TD = 10677' MD
							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		

**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 4893', 8 3/4" hole size,
- 5) PU directional tools and start curve at 10deg/100' build rate
- 6) Drill to casing point of 6047' MD
- 7) R&C 7" casing, circ cmt to surface, switch to OBM
- 8) Land at 90deg, drill 4630' lateral to 10677', run 4 1/2" liner with external swellable csg packers

**Lybrook E29-2306 03H**

**SHL: SWNW Section 29, T23N, R6W  
1336 FNL and 330 FWL**

**BHL: SWNW Section 30, T23N, R6W  
1750 FNL and 330 FWL**

**Sandoval County, New Mexico**

**Lease Number: NMNM 117564**

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

**1. ESTIMATED TOPS OF GEOLOGICAL MARKERS (TVD)**

The estimated tops of important geologic markers are as follows:

<b><u>Formation</u></b>	<b><u>Depth (TVD)</u></b>
Ojo Alamo Ss.	1373'
Kirtland	1607'
Fruitland Coal	1729'
Pictured Cliffs	1989'
Lewis	2090'
Cliffhouse	2840'
Menefee	3467'
Point Lookout	4287'
Mancos Shale	4440'
Mancos Silt	5039'
Gallup	5297'

The referenced surface elevation is 7080', KB 7093'

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

<b><u>Substance</u></b>	<b><u>Formation</u></b>	<b><u>Depth (TVD)</u></b>
Gas	Fruitland Coal	1729'
Gas	Pictured Cliffs	1989'
Gas	Cliffhouse	2840'
Gas	Point Lookout	4287'
Oil/Gas	Mancos	4440'

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

**3. PRESSURE CONTROL**

- a) Pressure control equipment and configuration will be designed to meet 2M standards.
- b) Working pressure on rams and BOPE will be 3,000 psi
- c) Function test and visual inspection of the BOP will be conducted daily and noted in the IADC Daily Drilling Report.
- d) The Annular BOP will be pressure tested to a minimum of 50 percent of its rated working pressure.
- e) Blind and Pipe Rams/BOP will be tested against a test plug to 100 percent of rated working pressure.
- f) Pressure tests are required before drilling out from under all casing strings set and cemented in place.
- g) BOP controls must be installed prior to drilling the surface casing plug and will remain in use until the well is completed or abandoned.
- h) BOP testing procedures and testing frequency will conform to Onshore Order No. 2.

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- i) BOP remote controls shall be located on the rig floor at a location readily accessible to the driller. Master controls shall be on the ground at the accumulator and shall have the capability to function all preventers.
- j) The kill line shall be 2-inch minimum and contain two kill line valves, one of which shall be a check valve.
- k) The choke line shall be a 2-inch minimum and contain two choke line valves (2-inch minimum).
- l) The choke and manifold shall contain two adjustable chokes.
- m) Hand wheels shall be installed on all ram preventers.
- n) Safety valves and wrenches (with subs for drill string connections) shall be available on the rig floor at all times.
- o) Inside BOP or float sub shall also be available on the rig floor at all times.

Proposed BOP and choke manifold arrangements are attached.

**4. CASING & CEMENTING PROGRAM**

The proposed casing and cementing program has been designed to protect and/or isolate all usable water zones, potentially productive zones, lost circulation zones, abnormally pressured zones, and any prospectively valuable deposits of minerals. Any isolating medium other than cement shall receive approval prior to use. The casing setting depth shall be calculated to position the casing seat opposite a competent formation which will contain the maximum pressure to which it will be exposed during normal drilling operations. All indications of useable water shall be reported.

- a) The proposed casing design is as follows:

Casing	Depth	Hole Size	Csg Size	Weight	Grade
Conductor	0-60'	30"	20"	94#	H40, STC New
Surface	0'-500'	12 1/4"	9 5/8"	36#	J55, STC New
Intermediate	0'-6047'MD	8 3/4"	7"	26#	J55, LTC New
Production Liner	5847'-10677'MD	6 1/8"	4 1/2"	11.6#	B80*, LTC New

Casing String				Casing Strength Properties			Minimum Design Factors		
Size	Weight (lb/ft)	Grade	Connection	Collapse (psi)	Burst (psi)	Tensile (1000lb)	Collapse	Burst	Tension
9 5/8"	36	J55	STC	2020	3520	394	1.125	1.1	1.5
7"	26	J55	LTC	4320	4980	367	1.125	1.1	1.5
4 1/2"	11.6	B80	LTC	6350	7780	201	1.125	1.1	1.5

\*B80 pipe specifications are attached

Casing design is subject to revision based on geologic conditions encountered.

All casing strings below the conductor shall be pressure tested to 0.22 psi per foot of casing string length or 1,500 psi, whichever is greater, but not to exceed 70 percent of the minimum internal yield. If pressure declines more than 10 percent in 30 minutes, corrective action shall be taken.

- b) The proposed cementing program is as follows:

Top plugs shall be used to reduce contamination of cement by displacement fluid. A bottom plug or other acceptable technique, such as a pre-flush fluid, inner string cement method, etc. shall be utilized to help isolate the cement from contamination by the mud fluid being displaced ahead of the cement slurry.

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Casing	Depth	Cement Volume (sacks)	Cement Type&Yield	Designed TOC	Centralizers
Conductor	60'	100sk	Type I Neat 14.8 ppg	Surface	None
Surface	500'	178sk	Type III Cement + 1% CaCl + 0.25lb/sk Cello Flake + 0.2% FL, 14.6ppg, 1.38cuf/sk	Surface	1 per joint on bottom 3 joints
Intermediate	6047'MD	30% open hole excess Stage 1 Lead: 257sks Stage 1 Tail: 176sks Stage 2 Lead: 180sks	<b>Lead</b> (Stages 1 and 2): PremLite + 3% CaCl + 0.25lb/sk CelloFlake + 5lb/sk LCM, 12.1ppg 2.13cuf/sk <b>Tail</b> (Stage 1): Type III Cmt + 1% CaCl + 0.25lb/sk Cello Flake 14.5ppg 1.38cuf/sk	Surface	1 per joint for bottom 3 joints, 1 every 3 joints for remaining joints
Production Liner*	5847'-10,677'	None – External casing packers	N/A	N/A	N/A

\*Production liner clarification: Utilizing external swell casing packer system for zonal isolation will not use cement in the production liner.

Actual volumes will be calculated and determined by conditions onsite. All cement slurries will meet or exceed minimum BLM and New Mexico Oil Conservation Division requirements. Slurries used will be the slurries listed above or equivalent slurries depending on service provider selected. Cement yields may change depending on slurries selected.

All waiting on cement times shall be a minimum of 8 hours or adequate to achieve a minimum of 500 psi compressive strength at the casing shoe prior to drilling out.

**5. WELL PLAN & DIRECTIONAL DRILLING PROGRAM**

The proposed horizontal well will have a kick off point of 4893'. Directional plans are attached.

Description	Proposed Depth (TVD/MD)	Formation
Horizontal Lateral TD	5518'/10,677	Gallup

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**6. DRILLING FLUIDS PROGRAM**

a) Surface through Intermediate Casing Point:

Hole Size (in)	Depth (ft)	Mud Type	Density (lb/gal)	Viscosity (sec/qt)	Fluid Loss (cc)
30"	0-60' TVD	Fresh Water	8.3-9.2	38-100	4-28
12 1/4"	0-500' TVD	Fresh Water	8.4-8.6	60-70	NC
8 3/4"	500'TVD- 5551'TVD/6047'MD	Fresh Water LSND	8.5-8.8	40-50	8-10

b) Intermediate Casing Point to TD:

Hole Size (in)	MD (ft)	Mud Type	Density (lb/gal)	Viscosity (sec/qt)	Fluid Loss (cc)
6 1/8"	6047'-10,677'	Synthetic Oil Based Mud	8.6-9.0	15-25	<15

- c) There will be sufficient mud on location to control a blowout should one occur. Mud flow and volume will be monitored both visually and with electronic pit volume totalizers. Mud tests shall be performed every 24 hours after mudding up to determine, as applicable: density, viscosity, gel strength, filtration, and pH.
- d) A closed-loop system will be used to recover drilling fluid and dry cuttings in both phases of the well and on all hole intervals, including fresh water and oil-based operations. Above-ground tanks will be utilized to hold cuttings and fluids for rig operations. A frac tank will be on location to store fresh water. Waste will be disposed of properly at an EPA-approved hazardous waste facility. Fresh water cuttings will be disposed of at Basin Disposal, Inc. and/or Industrial Ecosystems, Inc. The location will be lined in accordance with the Surface Use Plan of Operations.

**7. TESTING, CORING and LOGGING**

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

Cased Hole:

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

**8. ABNORMAL PRESSURES & HYDROGEN SULFIDE**

The anticipated bottom hole pressure is +/- 2598 psi based on a 9.0 ppg at 5551' TVD of the landing point of the horizontal lateral. No abnormal pressure or temperatures are anticipated.

No hydrogen sulfide gas is anticipated, however, if H<sub>2</sub>S 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 February 6, 2014. It is anticipated that completion operations will begin within 30 days after the well has been drilled depending on fracture treatment schedules with various pumping service companies.

It is anticipated that the drilling of this well will take approximately 25 days.