

State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

David Martin
Cabinet Secretary

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

Jami Bailey, Division Director
Oil Conservation Division



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

Operator Signature Date: 10/10/2014

Well information:

API WELL #	Well Name	Well #	Operator Name	Type	Stat	County	Surf. Owner
30-043-21206-00-00	GALLO CANYON UNIT O27 2306	001H	ENCANA OIL & GAS (USA) INC.	O	N	Sandoval	F

Application Type:

- ☐ P&A ☒ Drilling/Casing Change ☐ Location Change
☐ Recomplete/DHC (For hydraulic fracturing operations review EPA
Underground injection control Guidance #84)
☐ Other:

Conditions of Approval:

Notify NMOCD 24hrs prior to beginning operations, casing & cement

Hold C-104 for directional survey & "As Drilled" Plat

See APD Conditions of approval regarding Hydraulic Fracturing, Oil base muds and Well-bore communication.

Charlie T. Lerrin

NMOCD Approved by Signature

10-17-2014
Date

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

CONFIDENTIAL

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.
NMNM 17009; NMNM 118128; V0 9212

6. If Indian, Allottee or Tribe Name

N/A

RCVD OCT 17 '14
OIL CONS. DIV.

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

7. If Unit of CA/Agreement, Name and/or No.
NMNM 131017X DIST. 3

8. Well Name and No.
Gallo Canyon Unit 027-2306 01H

9. API Well No.
30-043-21206

10. Field and Pool or Exploratory Area
Counselors Gallup-Dakota

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)
SHL: 26' FSL and 2044' FEL Section 27, T23N, R6W
DHL: 330' FSL and 2525' FWL Section 36, T23N, R6W

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 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 Gallo Canyon Unit 027-2306 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.

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)

Cristi Bauer

Title Operations Technician

Signature

Cristi Bauer

Date

10/10/14

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by

William Tambekou

Title

Petroleum Engineer

Date

10/14/2014

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)

BLM/CD/AV

LOC: GCU 027-2306 01H County: Sandoval WELL: GCU 027-2306 01H			Encana Natural Gas WELL SUMMARY				ENG: Sydney Kuyke 10/10/14 RIG: Unassigned GLE: 6984 RKBE: 7000			
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	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 Surveys every 30' through the curve	No OH logs Mud logger onsite	Ojo Alamo Ss. Kirtland Shale	#N/A 1,515			8 3/4	7" 26ppf J55 LTC TOC @ surface (100% OH excess - 70% Lead 30% Tail) Stage 1 Total: 893sks Stage 1 Lead: 506 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. Stage 1 Tail: 387 sks Type III Cement + 1% CaCl2 + 0.25#/sk Cello Flake + 0.2% FL-52A. Mixed at 14.6 ppg. Yield 1.38 cuft/sk.	Fresh Wtr 8.3-10	Vertical <1°	
		Fruitland Coal	1,678							
		Pictured Cliffs Ss. Lewis Shale	1,920 2,048							
		Cliffhouse Ss. Menefee Fn.	2,739 3,470							
		Point Lookout Ss. Mancos Shale	4,184 4,352							
		KOP	4,839	4,840						
		Mancos Silt	4,959							
		Gallup Fn.	5,223							
		7" Csg	5,346	5,440'						
		Surveys every stand to TD unless directed otherwise by Geologist MWD Gamma Directional	No OH Logs	Horizontal Target TD	5,465 5,441		12,000		6 1/8	100' overlap at liner top
Base Gallup	5,511						6559' Drilled Lateral			TD = 11999.7 MD
							4 1/2" 11.6ppf SB80 LTC TOC @ hanger (50% OH excess) Stage 1 Total: 373sks Stage 1 Blend: 373 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 4840', 8 3/4 inch holesize
- 5) Start curve at 10deg/100' build rate
- 6) Drill to csg point of 5440' MD
- 7) R&C 7" csg, circ cmt to surface
- 8) Land at ~90 deg, drill lateral to 12000' run 4 1/2 inch cemented liner

GCU O27-2306 01H

SHL: SW/4 SE/4 Sec 27 T23N R6W, 26' FSL, 2044' FEL

BHL: SE/4 SW/4 Sec 35 T23N R6W, 330' FSL, 2525' 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	1,366
Kirtland Shale	1,515
Fruitland Coal	1,678
Pictured Cliffs Ss.	1,920
Lewis Shale	2,048
Cliffhouse Ss.	2,739
Menefee Fn.	3,470
Point Lookout Ss.	4,184
Mancos Shale	4,352
Mancos Silt	4,959
Gallup Fn.	5,223
Horizontal Target	5,465

The referenced surface elevation is 6984', KB 7000'

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

Substance	Formation	Depth (TVD) units = feet
Water/Gas	Fruitland Coal	1,678
Oil/Gas	Pictured Cliffs Ss.	1,920
Oil/Gas	Cliffhouse Ss.	2,739
Gas	Menefee Fn.	3,470
Oil/Gas	Point Lookout Ss.	4,184
Oil/Gas	Mancos Shale	4,352
Oil/Gas	Mancos Silt	4,959
Oil/Gas	Gallup Fn.	5,223

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

GCU O27-2306 01H

SHL: SW/4 SE/4 Sec 27 T23N R6W, 26' FSL, 2044' FEL

BHL: SE/4 SW/4 Sec 35 T23N R6W, 330' FSL, 2525' 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'-5440'	8 3/4"	7"	26#	J55, LTC New
Production Liner	5340'-12000'	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

GCU O27-2306 01H

SHL: SW/4 SE/4 Sec 27 T23N R6W, 26' FSL, 2044' FEL

BHL: SE/4 SW/4 Sec 35 T23N R6W, 330' FSL, 2525' 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'-5440'	100% open hole excess Stage 1 Lead: 506 sks Stage 1 Tail: 387 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	5340'- 12000'	50% OH excess Stage 1 Blend Total: 373sks	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 4839'. Directional plans are attached.

Description	Proposed Depth (TVD/MD)	Formation
Horizontal Lateral TD	5441'/12000'	Gallup

GCU O27-2306 01H

SHL: SW/4 SE/4 Sec 27 T23N R6W, 26' FSL, 2044' FEL

BHL: SE/4 SW/4 Sec 35 T23N R6W, 330' FSL, 2525' 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'-5346'/5440'	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"	5346'/5440'- 5441'/12000'	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

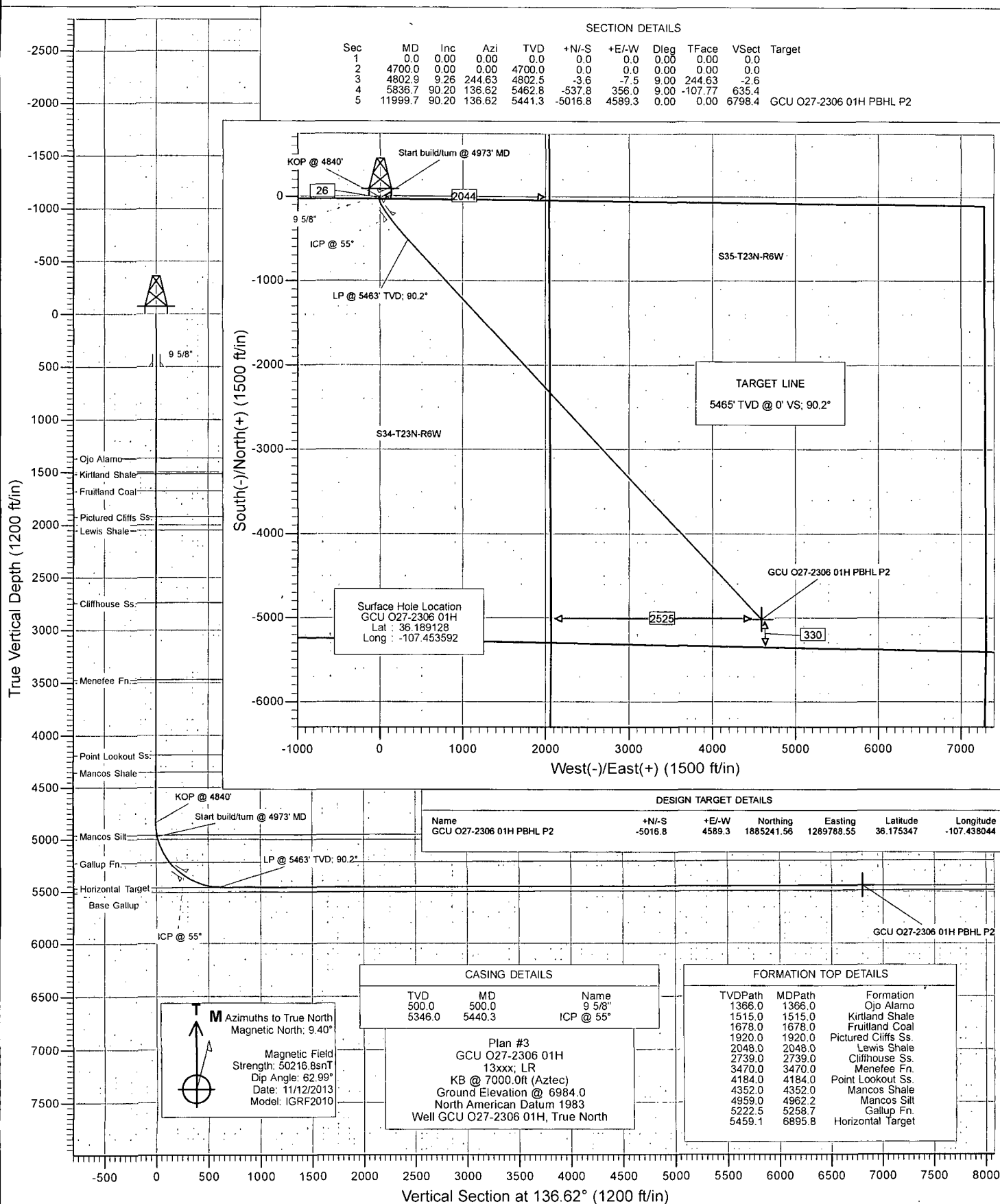
The anticipated bottom hole pressure is +/- 2558 psi based on a 9.0 ppg at 5465' TVD of the horizontal lateral target. No abnormal pressure or temperatures are anticipated.

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.



Planning Report

Database: USA EDM 5000 Multi Users DB
 Company: EnCana Oil & Gas (USA) Inc
 Project: Sandoval County, NM
 Site: S27-T23N-R6W
 Well: GCU O27-2306 01H
 Wellbore: Hz
 Design: Plan #3

Local Co-ordinate Reference: Well GCU O27-2306 01H
 TVD Reference: KB @ 7000.0ft (Aztec)
 MD Reference: KB @ 7000.0ft (Aztec)
 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	S27-T23N-R6W				
Site Position:		Northing:	1,890,314.91 ft	Latitude:	36.189128
From:	Lat/Long	Easting:	1,285,261.84 ft	Longitude:	-107.453592
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	-0.71 °

Well	GCU O27-2306 01H					
Well Position	+N/-S	0.0 ft	Northing:	1,890,314.91 ft	Latitude:	36.189128
	+E/-W	0.0 ft	Easting:	1,285,261.84 ft	Longitude:	-107.453592
Position Uncertainty	0.0 ft	Wellhead Elevation:	ft	Ground Level:	6,984.0 ft	

Wellbore	Hz				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	11/12/2013	9.40	62.99	50,217

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	136.62

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	
4,700.0	0.00	0.00	4,700.0	0.0	0.0	0.00	0.00	0.00	0.00	
4,802.9	9.26	244.63	4,802.5	-3.6	-7.5	9.00	9.00	0.00	244.63	
5,836.7	90.20	136.62	5,462.8	-537.8	356.0	9.00	7.83	-10.45	-107.77	
11,999.7	90.20	136.62	5,441.3	-5,016.8	4,589.3	0.00	0.00	0.00	0.00	GCU O27-2306 01H I

Planning Report

Database: USA EDM 5000 Multi Users DB
 Company: EnCana Oil & Gas (USA) Inc
 Project: Sandoval County, NM
 Site: S27-T23N-R6W
 Well: GCU O27-2306 01H
 Wellbore: Hz
 Design: Plan #3

Local Co-ordinate Reference: Well GCU O27-2306 01H
 TVD Reference: KB @ 7000.0ft (Aztec)
 MD Reference: KB @ 7000.0ft (Aztec)
 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	
1,100.0	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	
1,366.0	0.00	0.00	1,366.0	0.0	0.0	0.0	0.00	0.00	Ojo Alamo
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	
1,515.0	0.00	0.00	1,515.0	0.0	0.0	0.0	0.00	0.00	Kirtland Shale
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	
1,678.0	0.00	0.00	1,678.0	0.0	0.0	0.0	0.00	0.00	Fruitland Coal
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	
1,920.0	0.00	0.00	1,920.0	0.0	0.0	0.0	0.00	0.00	Pictured Cliffs Ss.
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	
2,048.0	0.00	0.00	2,048.0	0.0	0.0	0.0	0.00	0.00	Lewis Shale
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	
2,739.0	0.00	0.00	2,739.0	0.0	0.0	0.0	0.00	0.00	Cliffhouse Ss.
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	
3,300.0	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	
3,470.0	0.00	0.00	3,470.0	0.0	0.0	0.0	0.00	0.00	Menefee Fn.
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	
4,100.0	0.00	0.00	4,100.0	0.0	0.0	0.0	0.00	0.00	
4,184.0	0.00	0.00	4,184.0	0.0	0.0	0.0	0.00	0.00	Point Lookout Ss.
4,200.0	0.00	0.00	4,200.0	0.0	0.0	0.0	0.00	0.00	
4,300.0	0.00	0.00	4,300.0	0.0	0.0	0.0	0.00	0.00	

Planning Report

Database: USA EDM 5000 Multi Users DB
 Company: EnCana Oil & Gas (USA) Inc
 Project: Sandoval County, NM
 Site: S27-T23N-R6W
 Well: GCU O27-2306 01H
 Wellbore: Hz
 Design: Plan #3

Local Co-ordinate Reference: Well GCU O27-2306 01H
 TVD Reference: KB @ 7000.0ft (Aztec)
 MD Reference: KB @ 7000.0ft (Aztec)
 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
4,352.0	0.00	0.00	4,352.0	0.0	0.0	0.0	0.00	0.00	Mancos Shale
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	
4,600.0	0.00	0.00	4,600.0	0.0	0.0	0.0	0.00	0.00	
4,700.0	0.00	0.00	4,700.0	0.0	0.0	0.0	0.00	0.00	Mancos Silt
4,800.0	9.00	244.63	4,799.6	-3.4	-7.1	-2.4	9.00	9.00	
4,802.9	9.26	244.63	4,802.5	-3.6	-7.5	-2.6	9.00	9.00	
4,840.0	8.83	223.46	4,839.1	-6.9	-12.2	-3.3	9.00	-1.16	
4,900.0	10.59	192.71	4,898.3	-15.6	-16.5	0.0	9.00	2.93	Start build/turn @ 4973' MD
4,962.2	14.44	173.68	4,959.0	-28.9	-16.9	9.4	9.00	6.20	
4,973.7	15.28	171.25	4,970.2	-31.9	-16.6	11.8	9.00	7.21	
5,000.0	17.25	166.61	4,995.4	-39.1	-15.1	18.0	9.00	7.52	
5,100.0	25.38	155.73	5,088.5	-73.1	-2.9	51.2	9.00	8.12	Gallup Fn.
5,200.0	33.92	149.98	5,175.3	-116.9	20.0	98.7	9.00	8.55	
5,258.7	39.03	147.68	5,222.5	-146.7	38.0	132.8	9.00	8.70	
5,300.0	42.64	146.34	5,253.8	-169.4	52.8	159.3	9.00	8.75	
5,400.0	51.44	143.75	5,321.9	-229.2	94.7	231.7	9.00	8.80	ICP @ 55°
5,440.3	55.00	142.88	5,346.0	-255.1	114.0	263.7	9.00	8.84	
5,500.0	60.29	141.73	5,377.9	-295.0	144.9	313.9	9.00	8.85	
5,600.0	69.16	140.03	5,420.6	-365.0	201.9	404.0	9.00	8.87	
5,700.0	78.04	138.53	5,448.8	-437.6	264.4	499.7	9.00	8.88	GCU O27-2306 01H POE P2 - GCU O27-2306
5,800.0	86.93	137.12	5,461.9	-511.0	330.9	598.7	9.00	8.89	
5,802.7	87.17	137.09	5,462.0	-513.0	332.7	601.4	9.04	8.93	
5,836.7	90.20	136.62	5,462.8	-537.8	356.0	635.4	9.00	8.89	
5,900.0	90.20	136.62	5,462.6	-583.8	399.5	698.7	0.00	0.00	LP @ 5463' TVD; 90.2°
6,000.0	90.20	136.62	5,462.2	-656.5	468.2	798.7	0.00	0.00	
6,100.0	90.20	136.62	5,461.9	-729.1	536.9	898.7	0.00	0.00	
6,200.0	90.20	136.62	5,461.5	-801.8	605.6	998.7	0.00	0.00	
6,300.0	90.20	136.62	5,461.2	-874.5	674.2	1,098.7	0.00	0.00	Horizontal Target
6,400.0	90.20	136.62	5,460.8	-947.2	742.9	1,198.7	0.00	0.00	
6,500.0	90.20	136.62	5,460.5	-1,019.8	811.6	1,298.7	0.00	0.00	
6,600.0	90.20	136.62	5,460.1	-1,092.5	880.3	1,398.7	0.00	0.00	
6,700.0	90.20	136.62	5,459.8	-1,165.2	949.0	1,498.7	0.00	0.00	Horizontal Target
6,800.0	90.20	136.62	5,459.4	-1,237.9	1,017.7	1,598.7	0.00	0.00	
6,895.8	90.20	136.62	5,459.1	-1,307.5	1,083.5	1,694.4	0.00	0.00	
6,900.0	90.20	136.62	5,459.1	-1,310.5	1,086.4	1,698.7	0.00	0.00	
7,000.0	90.20	136.62	5,458.7	-1,383.2	1,155.1	1,798.7	0.00	0.00	Horizontal Target
7,100.0	90.20	136.62	5,458.4	-1,455.9	1,223.8	1,898.7	0.00	0.00	
7,200.0	90.20	136.62	5,458.0	-1,528.6	1,292.4	1,998.7	0.00	0.00	
7,300.0	90.20	136.62	5,457.7	-1,601.2	1,361.1	2,098.7	0.00	0.00	
7,400.0	90.20	136.62	5,457.3	-1,673.9	1,429.8	2,198.7	0.00	0.00	Horizontal Target
7,500.0	90.20	136.62	5,457.0	-1,746.6	1,498.5	2,298.7	0.00	0.00	
7,600.0	90.20	136.62	5,456.6	-1,819.3	1,567.2	2,398.7	0.00	0.00	
7,700.0	90.20	136.62	5,456.3	-1,892.0	1,635.9	2,498.7	0.00	0.00	
7,800.0	90.20	136.62	5,455.9	-1,964.6	1,704.6	2,598.7	0.00	0.00	Horizontal Target
7,900.0	90.20	136.62	5,455.6	-2,037.3	1,773.3	2,698.7	0.00	0.00	
8,000.0	90.20	136.62	5,455.2	-2,110.0	1,842.0	2,798.7	0.00	0.00	
8,100.0	90.20	136.62	5,454.9	-2,182.7	1,910.6	2,898.7	0.00	0.00	
8,200.0	90.20	136.62	5,454.5	-2,255.3	1,979.3	2,998.7	0.00	0.00	Horizontal Target
8,300.0	90.20	136.62	5,454.2	-2,328.0	2,048.0	3,098.7	0.00	0.00	
8,400.0	90.20	136.62	5,453.8	-2,400.7	2,116.7	3,198.7	0.00	0.00	
8,500.0	90.20	136.62	5,453.5	-2,473.4	2,185.4	3,298.7	0.00	0.00	

Planning Report

Database: USA EDM 5000 Multi Users DB
Company: EnCana Oil & Gas (USA) Inc
Project: Sandoval County, NM
Site: S27-T23N-R6W
Well: GCU O27-2306 01H
Wellbore: Hz
Design: Plan #3

Local Co-ordinate Reference: Well GCU O27-2306 01H
TVD Reference: KB @ 7000.0ft (Aztec)
MD Reference: KB @ 7000.0ft (Aztec)
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
8,600.0	90.20	136.62	5,453.1	-2,546.0	2,254.1	3,398.7	0.00	0.00	
8,700.0	90.20	136.62	5,452.8	-2,618.7	2,322.8	3,498.7	0.00	0.00	
8,800.0	90.20	136.62	5,452.4	-2,691.4	2,391.5	3,598.7	0.00	0.00	
8,900.0	90.20	136.62	5,452.1	-2,764.1	2,460.2	3,698.7	0.00	0.00	
9,000.0	90.20	136.62	5,451.8	-2,836.7	2,528.8	3,798.7	0.00	0.00	
9,100.0	90.20	136.62	5,451.4	-2,909.4	2,597.5	3,898.7	0.00	0.00	
9,200.0	90.20	136.62	5,451.1	-2,982.1	2,666.2	3,998.7	0.00	0.00	
9,300.0	90.20	136.62	5,450.7	-3,054.8	2,734.9	4,098.7	0.00	0.00	
9,400.0	90.20	136.62	5,450.4	-3,127.4	2,803.6	4,198.7	0.00	0.00	
9,500.0	90.20	136.62	5,450.0	-3,200.1	2,872.3	4,298.7	0.00	0.00	
9,600.0	90.20	136.62	5,449.7	-3,272.8	2,941.0	4,398.7	0.00	0.00	
9,700.0	90.20	136.62	5,449.3	-3,345.5	3,009.7	4,498.7	0.00	0.00	
9,800.0	90.20	136.62	5,449.0	-3,418.1	3,078.4	4,598.7	0.00	0.00	
9,900.0	90.20	136.62	5,448.6	-3,490.8	3,147.0	4,698.7	0.00	0.00	
10,000.0	90.20	136.62	5,448.3	-3,563.5	3,215.7	4,798.7	0.00	0.00	
10,100.0	90.20	136.62	5,447.9	-3,636.2	3,284.4	4,898.7	0.00	0.00	
10,200.0	90.20	136.62	5,447.6	-3,708.8	3,353.1	4,998.7	0.00	0.00	
10,300.0	90.20	136.62	5,447.2	-3,781.5	3,421.8	5,098.7	0.00	0.00	
10,400.0	90.20	136.62	5,446.9	-3,854.2	3,490.5	5,198.7	0.00	0.00	
10,500.0	90.20	136.62	5,446.5	-3,926.9	3,559.2	5,298.7	0.00	0.00	
10,600.0	90.20	136.62	5,446.2	-3,999.6	3,627.9	5,398.7	0.00	0.00	
10,700.0	90.20	136.62	5,445.8	-4,072.2	3,696.5	5,498.7	0.00	0.00	
10,800.0	90.20	136.62	5,445.5	-4,144.9	3,765.2	5,598.7	0.00	0.00	
10,900.0	90.20	136.62	5,445.1	-4,217.6	3,833.9	5,698.7	0.00	0.00	
11,000.0	90.20	136.62	5,444.8	-4,290.3	3,902.6	5,798.7	0.00	0.00	
11,100.0	90.20	136.62	5,444.4	-4,362.9	3,971.3	5,898.7	0.00	0.00	
11,200.0	90.20	136.62	5,444.1	-4,435.6	4,040.0	5,998.7	0.00	0.00	
11,300.0	90.20	136.62	5,443.7	-4,508.3	4,108.7	6,098.7	0.00	0.00	
11,400.0	90.20	136.62	5,443.4	-4,581.0	4,177.4	6,198.7	0.00	0.00	
11,500.0	90.20	136.62	5,443.0	-4,653.6	4,246.1	6,298.7	0.00	0.00	
11,600.0	90.20	136.62	5,442.7	-4,726.3	4,314.7	6,398.7	0.00	0.00	
11,700.0	90.20	136.62	5,442.3	-4,799.0	4,383.4	6,498.7	0.00	0.00	
11,800.0	90.20	136.62	5,442.0	-4,871.7	4,452.1	6,598.7	0.00	0.00	
11,900.0	90.20	136.62	5,441.6	-4,944.3	4,520.8	6,698.7	0.00	0.00	
11,999.7	90.20	136.62	5,441.3	-5,016.8	4,589.3	6,798.4	0.00	0.00	GCU O27-2306 01H PBHL P2 - GCU O27-2306

Planning Report

Database: USA EDM 5000 Multi Users DB
 Company: EnCana Oil & Gas (USA) Inc
 Project: Sandoval County, NM
 Site: S27-T23N-R6W
 Well: GCU O27-2306 01H
 Wellbore: Hz
 Design: Plan #3

Local Co-ordinate Reference: Well GCU O27-2306 01H
 TVD Reference: KB @ 7000.0ft (Aztec)
 MD Reference: KB @ 7000.0ft (Aztec)
 North Reference: True
 Survey Calculation Method: Minimum Curvature

Targets

Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)		
- Shape									
GCU O27-2306 01H PO	0.00	0.00	5,463.6	-357.5	185.6	1,889,955.12	1,285,443.02	36.188146	-107.452963
- plan misses target center by 46.6ft at 5600.0ft MD (5420.6 TVD, -365.0 N, 201.9 E)									
- Point									
GCU O27-2306 01H PO	0.00	0.00	5,463.8	-357.5	185.6	1,889,955.12	1,285,443.02	36.188146	-107.452963
- plan misses target center by 46.8ft at 5600.0ft MD (5420.6 TVD, -365.0 N, 201.9 E)									
- Point									
GCU O27-2306 01H PBI	0.00	0.00	5,441.3	-5,016.8	4,589.3	1,885,241.56	1,289,788.55	36.175347	-107.438044
- plan hits target center									
- Point									
GCU O27-2306 01H PBI	0.00	0.00	5,441.4	-5,016.8	4,589.3	1,885,241.56	1,289,788.55	36.175347	-107.438044
- plan misses target center by 0.1ft at 11999.7ft MD (5441.3 TVD, -5016.8 N, 4589.3 E)									
- Point									

500.0	500.0	9 5/8"	0.000	0.000
5,440.3	5,346.0	ICP @ 55°	0.000	0.000

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,366.0	1,366.0	Ojo Alamo		-0.20	136.62
1,515.0	1,515.0	Kirtland Shale		-0.20	136.62
1,678.0	1,678.0	Fruitland Coal		-0.20	136.62
1,920.0	1,920.0	Pictured Cliffs Ss.		-0.20	136.62
2,048.0	2,048.0	Lewis Shale		-0.20	136.62
2,739.0	2,739.0	Cliffhouse Ss.		-0.20	136.62
3,470.0	3,470.0	Menefee Fn.		-0.20	136.62
4,184.0	4,184.0	Point Lookout Ss.		-0.20	136.62
4,352.0	4,352.0	Mancos Shale		-0.20	136.62
4,962.2	4,959.0	Mancos Silt		-0.20	136.62
5,258.7	5,223.0	Gallup Fn.		-0.20	136.62
6,895.8	5,465.0	Horizontal Target		-0.20	136.62

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
4,840.0	4,840.0	0.0	0.0	KOP @ 4840'
4,973.7	4,972.5	-15.1	-3.6	Start build/turn @ 4973' MD
5,802.7	5,463.0	-496.7	317.2	LP @ 5463' TVD; 90.2°
12,022.2	5,441.3	-5,016.8	4,589.3	TD at 12022.2