

State of New Mexico
Energy, Minerals and Natural Resources Department

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 3160-3 APD form.

Operator Signature Date: 3-14-14

Well information:

Operator Encana, Well Name and Number GCU 027-2300 # 1H

API# 30-043-21200, Section 27, Township 23 N S, Range 10 E W

Conditions of Approval:

(See the below checked and handwritten conditions)

- ☒ Notify Aztec OCD 24hrs prior to casing & cement.
- ☒ Hold C-104 for directional survey & "As Drilled" Plat
- ☐ Hold C-104 for NSL, NSP, DHC
- ☐ Spacing rule violation. Operator must follow up with change of status notification on other well to be shut in or abandoned
- ☐ Regarding the use of a pit, closed loop system or below grade tank, the operator must comply with the following as applicable:
 - A pit requires a complete C-144 be submitted and approved prior to the construction or use of the pit, pursuant to 19.15.17.8.A
 - A closed loop system requires notification prior to use, pursuant to 19.15.17.9.A
 - A below grade tank requires a registration be filed prior to the construction or use of the below grade tank, pursuant to 19.15.17.8.C
- ☐ Once the well is spud, to prevent ground water contamination through whole or partial conduits from the surface, the operator shall drill without interruption through the fresh water zone or zones and shall immediately set in cement the water protection string
- ☒ Oil base muds are not to be used until fresh water zones are cased and cemented providing isolation from the oil or diesel. This includes synthetic oils. Oil based mud, drilling fluids and solids must be contained in a steel closed loop system.

Charles R. ...
NMOCD Approved by Signature

5-25-14
Date

RECEIVED

MAR 18 2014

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.
NMNM 17009; NMNM 118128; VO 9212
6. If Indian, Allottee or Tribe Name
N/A

1a. Type of work: ☒ DRILL ☐ REENTER

7. If Unit or CA Agreement, Name and No.
NMNM 131017X

1b. Type of Well: ☒ Oil Well ☐ Gas Well ☐ Other ☒ Single Zone ☐ Multiple Zone

8. Lease Name and Well No.
Gallo Canyon Unit O27-2306 01H

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

9. API Well No.
30-043-21206

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

3b. Phone No. (include area code)
720-876-3533

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

4. Location of Well (Report location, clearly and in accordance with any State requirements.)

At surface 691' FSL and 1764' FEL Section 27, T23N, R6W SUSE

At proposed prod. zone 330' FSL and 2525' FWL Section 35, T23N, R6W SESW

11. Sec., T. R. M. or Blk. and Survey or Area
Section 27, T23N, R6W NMPM

BHL Sec 35, T23N, R6W

14. Distance in miles and direction from nearest town or post office*

+/- 55.0 miles southeast of the intersection of US Hwy 550 & US Hwy 64 in Bloomfield, NM

12. County or Parish
Sandoval

13. State
NM

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any)
BHL is 330' from south lease line Section 35, T23N, R6W

16. No. of acres in lease
NMNM 17009 - 2560 ac.
NMNM 118128 - 1920 ac.
VO 9212 - 640 ac

17. Spacing Unit dedicated to this well
5,120 acres - Sections 22-26, 28-36

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.
GCU M26-2306 01H is +/- 2000' SE of SHL

19. Proposed Depth
5441' TVD/12022' MD

20. BLM/BIA Bond No. on file
COB-000235

21. Elevations (Show whether DF, KDB, RT, GL, etc.)
6,984' GL, 7,000' KB

22. Approximate date work will start*
09/12/2014

23. Estimated duration
20 days

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, must be attached to this form:

- Well plat certified by a registered surveyor.
- A Drilling Plan.
- A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office).
- Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
- Operator certification
- Such other site specific information and/or plans as may be required by the BLM.

25. Signature *Katie Wegner*
Title Regulatory Analyst

Name (Printed/Typed)
Katie Wegner

Date 3/14/14

Approved by (Signature) *[Signature]*
Title AFN

Name (Printed/Typed)
Office FFO

Date 5/9/14

Application approval 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.
Conditions of approval, if any, are attached.

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.

BLM'S APPROVAL OR ACCEPTANCE OF THIS

(Continued on page 2)

ACTION DOES NOT RELIEVE THE LESSEE AND OPERATOR FROM OBTAINING ANY OTHER AUTHORIZATION REQUIRED FOR OPERATIONS ON FEDERAL AND INDIAN LANDS

*(Instructions on page 2)

This action is subject to technical and procedural review pursuant to 43 CFR 3165.3 and appeal pursuant to 43 CFR 3165.4

DRILLING OPERATIONS
AUTHORIZED ARE SUBJECT TO
COMPLIANCE WITH ATTACHED
"GENERAL REQUIREMENTS"

NMOC AV

District I
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720
District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

RECEIVED

MAR 18 2014

Farmington Field Office
Bureau of Land Management

Form C-102

Revised August 1, 2011
Submit one copy to
appropriate
District Office

AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number 30-043-21306	Pool Code 13379	Pool Name COUNSELORS GALLUP-DAKOTA
Property Code 3132100	Property Name GALLO CANYON UNIT 027-2306	Well Number 01H
GRID No. 282327	Operator Name ENCANA OIL & GAS (USA) INC.	Elevation 6984

10 Surface Location

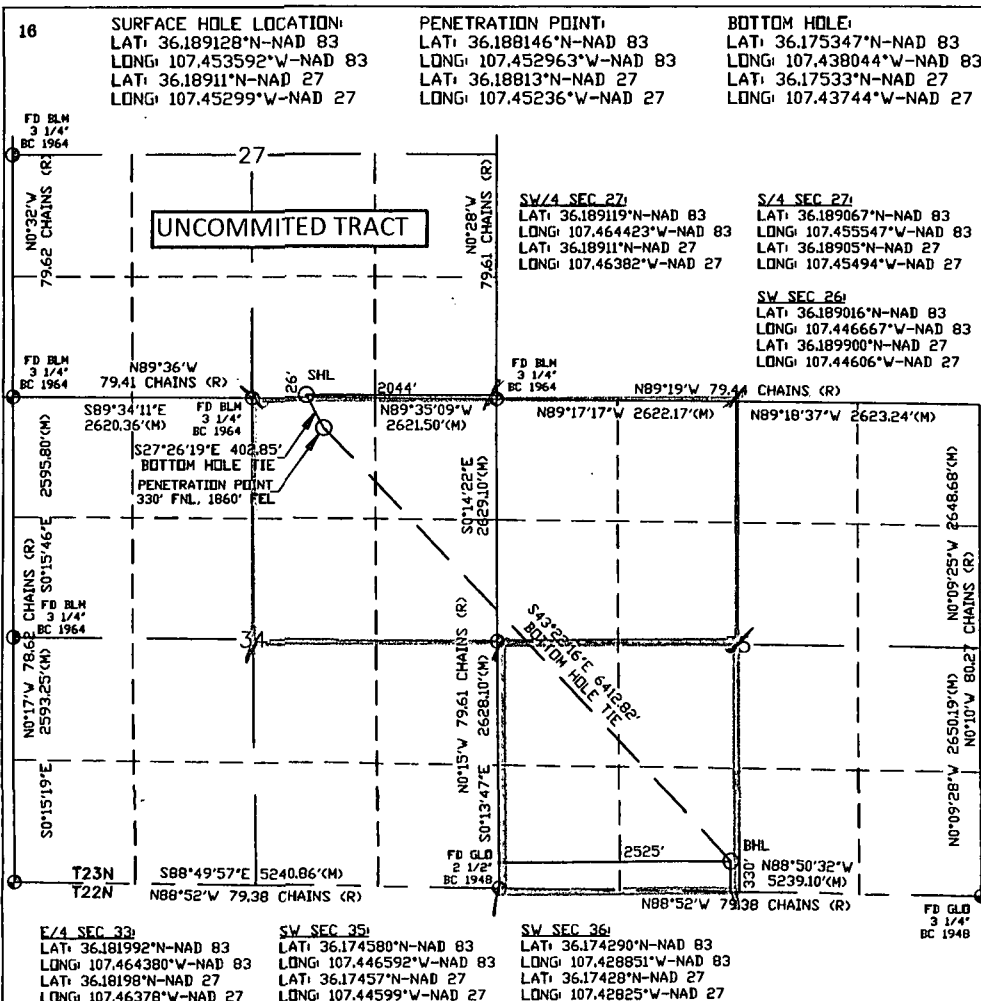
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
0	27	23-N	6-W		26'	SOUTH	2044'	EAST	SANDOVAL

11 Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
N	35	23-N	6-W		330'	SOUTH	2525'	WEST	SANDOVAL

Dedicated Acres 5,120 Acres Sec. 22-26, 34-36 - Undivided Unit Penetrated Spacing Units: w/ 35 Sec 22-26, 34-36 Sec 35: NE Sec 34	Joint or Infill 480 acres	Consolidation Code	Order No. R-13718-A (5,120 acres)
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No allowable will be assigned to this completion until all interest have been consolidated or a non-standard unit has been approved by the division.



17 OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Katie Wegner 3/14/14
Signature Date

Katie Wegner

Printed Name

Katie.Wegner@encana.com

E-mail Address

18 SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

AUG 31, 2013
Date of Survey

Signature and Seal of Professional Surveyor:

WILLIAM E. MAHNKE II
NEW MEXICO
8466
WILLIAM E. MAHNKE II
Certificate Number 8466

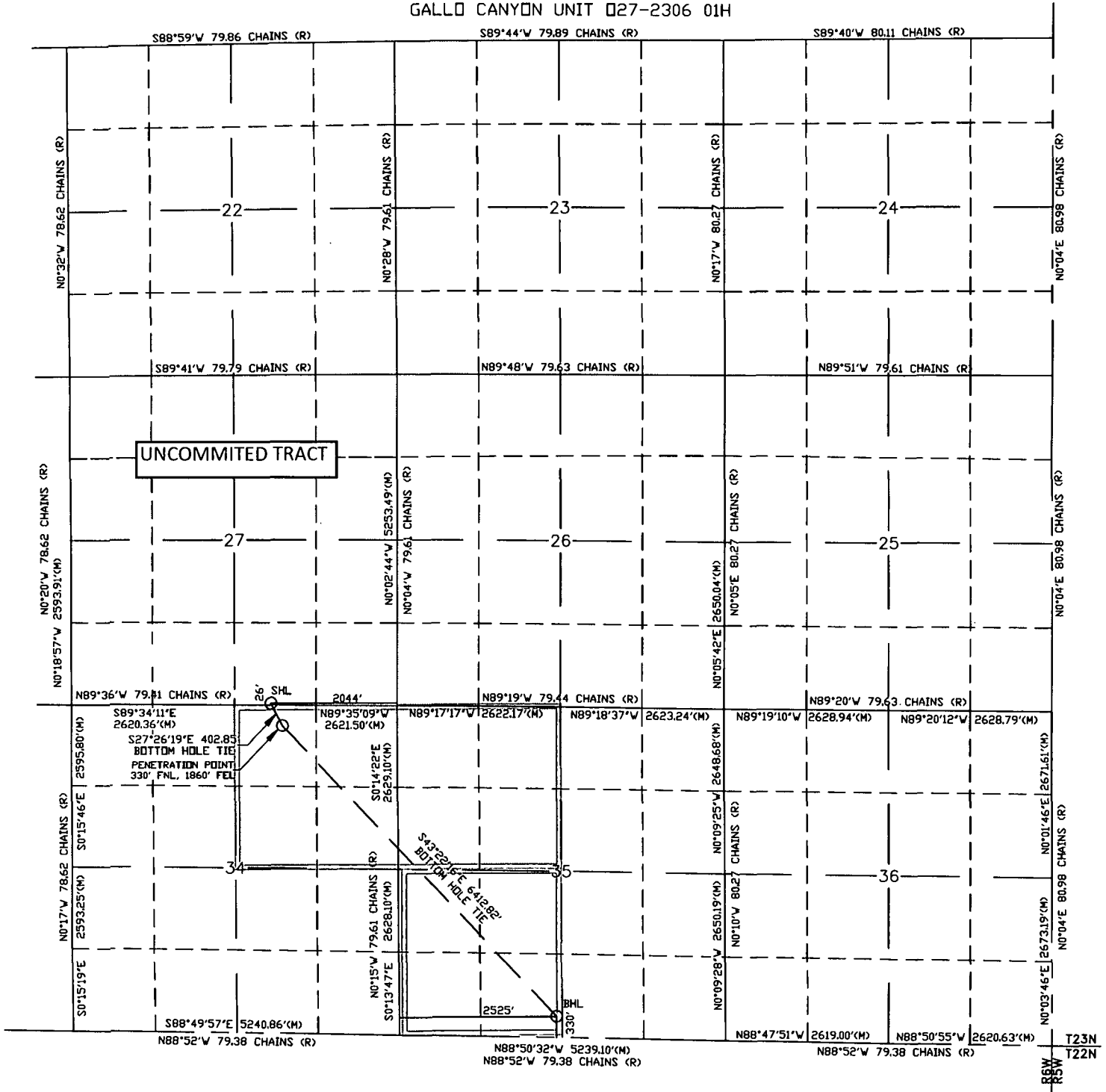
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OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-102
Revised August 1, 2011
Submit one copy to
appropriate
District Office

☐ AMENDED REPORT

ENCANA OIL & GAS (USA) INC.
GALLO CANYON UNIT 027-2306 01H



SURFACE HOLE LOCATION:
LAT: 36.189128°N-NAD 83
LONG: 107.453592°W-NAD 83
LAT: 36.18911°N-NAD 27
LONG: 107.45299°W-NAD 27

PENETRATION POINT:
LAT: 36.188146°N-NAD 83
LONG: 107.452963°W-NAD 83
LAT: 36.18813°N-NAD 27
LONG: 107.45236°W-NAD 27

BOTTOM HOLE:
LAT: 36.175347°N-NAD 83
LONG: 107.438044°W-NAD 83
LAT: 36.17533°N-NAD 27
LONG: 107.43744°W-NAD 27

Gallo Canyon Unit O27-2306 01H
 SHL: SWSE Section 27, T23N, R6W
 691 FSL and 1704 FEL
 BHL: SESW Section 35, T23N, R6W
 330 FSL and 2525 FWL
 Sandoval, New Mexico
 Lease Number: NMNM 117564 & NMNM 118128

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.	1,360
Kirtland Sh.	1,514
Fruitland Coal	1,754
Pictured Cliffs Ss.	1,893
Lewis Sh.	2,039
Cliffhouse Ss.	2,781
Menefee Fn.	3,440
Point Lookout Ss.	4,149
Mancos Sh.	4,277
Mancos Silt	4,939
Gallup Fn.	5,223

The referenced surface elevation is 6,982', KB 6,998'

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

Substance	Formation	Depth (TVD) units = feet
Water/Gas	Fruitland Coal	1,754
Oil/Gas	Pictured Cliffs Ss.	1,893
Oil/Gas	Cliffhouse Ss.	2,781
Gas	Menefee Fn.	3,440
Oil/Gas	Point Lookout Ss.	4,149
Oil/Gas	Mancos Sh.	4,277
Oil/Gas	Mancos Silt	4,939
Oil/Gas	Gallup Fn.	5,223

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.

Gallo Canyon Unit O27-2306 01H

SHL: SWSE Section 27, T23N, R6W
691 FSL and 1704 FEL

BHL: SESW Section 35, T23N, R6W
330 FSL and 2525 FWL

Sandoval, New Mexico

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- 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	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'-6140'MD	8 3/4"	7"	26#	J55, LTC New
Production Liner	5940'-12671'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.

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 330 FSL and 2525 FWL
 Sandoval, New Mexico
 Lease Number: NMNM 117564 & NMNM 118128

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.

Casing	Depth	Cement Volume (sacks)	Cement Type&Yield	Designed TOC	Centralizers
Conductor	60'	100sk	Type I Neat 16 ppg	Surface	None
Surface	500'	178sk	Type III Cement + 1% CaCl + 0.25lb/sk Cello Flake + 0.2% FL, 16ppg, 1.38cuf/sk	Surface	1 per joint on bottom 3 joints
Intermediate	6140'MD	30% open hole excess Stage 1 Lead: 270sks Stage 1 Tail: 184sks Stage 2 Lead: 172sks	Lead (Stages 1 and 2): PremLite + 3% CaCl + 0.25lb/sk CelloFlake + 5lb/sk LCM, 12.1ppg 2.13cuf/sk Tail (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*	5940'-12671'	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 4761'. Directional plans are attached.

Gallo Canyon Unit O27-2306 01H
 SHL: SWSE Section 27, T23N, R6W
 691 FSL and 1704 FEL
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 330 FSL and 2525 FWL
 Sandoval, New Mexico
 Lease Number: NMNM 117564 & NMNM 118128

Description	Proposed Depth (TVD/MD)	Formation
Horizontal Lateral TD	5439'/12671'	Gallup

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- 5458'TVD/6140'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"	6140'-12671'	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 +/- 2540 psi based on a 9.0 ppg at 5462' TVD of the landing point of the horizontal lateral. No abnormal pressure or temperatures are anticipated.

Gallo Canyon Unit O27-2306 01H

**SHL: SWSE Section 27, T23N, R6W
691 FSL and 1704 FEL**

**BHL: SESW Section 35, T23N, R6W
330 FSL and 2525 FWL**

Sandoval, New Mexico

Lease Number: NMNM 117564 & NMNM 118128

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 January 26, 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 25 days.

LOC: Sec 27-T23N-R6W	Encana Natural Gas	engana	ENG: 3/19/14
ounty: Sandoval	WELL SUMMARY		RIG:
WELL: Gall Canyon Unit O27-2306 01H			GLE: 6982
			RKBE: 6998

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 16ppg cmt	Fresh wtr 8.3-9.2	
Surveys flter csg is run	None					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 Mud logger onsite	Ojo Alamo Kirtland Fruitland Coal Pictured Cliffs Ss Lewis Shale Cliffhouse Ss Menefee Fn Point Lookout Ss Mancos Sh KICK OFF PT Mancos Silt Gallup Top 7" csg	1360 1514 1754 1893 2039 2781 3440 4149 4277 4761 4939 5223 5458	500 6140		8 3/4	7" 26ppf J55 LTC TOC @ surface 30% OH excess: 626 sks Total. Stage 1 Lead: 270sks Stage 1 Tail: 184sks. Stage 2 Lead: 172sks	Fresh Wtr 8.5-8.8	Vertical <1° KOP 4761 10 deg/100'
		horz target Base Gallup	5462 5544	6260		6 1/8	200' overlap at liner top 6411' Lateral	8.6-9.0 OBM	.25deg updip 5439'TVD TD = 12671' MD
Surveys every 500' Gyro at CP MWD Gamma Directional	No OH Logs						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	Switch to OBM 8.6-9.0	

NOTES:
 Drill with 30" bit to 60', set 20" 94# conductor pipe
 Drill surface to 500', R&C 9 5/8" casing
 N/U BOP and surface equipment
 Drill to KOP of 4761', 8 3/4" hole size,
 PU directional tools and start curve at 10deg/100' build rate
 Drill to casing point of 6140' MD
 R&C 7" casing, circ cmt to surface, switch to OBM
 Land at 90deg, drill 6411' lateral to 12671', run 4 1/2" liner with external swellable csg packers

Directions from the Intersection of US Hwy 550 & US Hwy 64

in Bloomfield, NM to Encana Oil & Gas (USA) Inc. Gallo Canyon Unit O27-2306 01H

26" FSL and 2044' FEL, Section 27, T23N, R6W, N.M.P.M., Sandoval County, NM

Latitude: 36.189128N Longitude: 107.453592 Datum NAD1983

From the intersection of US Hwy 64 and US Hwy 550 in Bloomfield, NM travel south 53.6 miles on US Hwy 550.

Turn right at MP 197.7.

Travel South on BIA road 474 1.3 miles to staked access road on left.

Turn left and travel West to the new well pad.

encana

SANDOVAL COUNTY,
NEW MEXICO

- ⊘ Abandoned
 - ⊘ Abandoned Gas
 - ⊘ Abandoned Oil
 - ⊘ Dry Hole
 - ⊘ GAS
 - ⊘ Injection
 - OIL
- 1 inch = 2,333 feet

Basin Mancos
Gas Pool

GCU
O15-2306
01H

BUDDY 1
○
GCU P15-2306 01H

GCU
N14-2306
01H

GCU
P14-2306
01H

GCU
M13-2306
01H

GCU
N13-2306
01H

ABSOLUT 1
○

CHADWELL 1
⊘

GULF FEDERAL 24-1
○

22

23

24

**COUNSELORS
GALLUP
DAKOTA POOL**

23N
6W

25

28

27

26

Lybrook E27-2306 01H
Lybrook E27-2306 03H
Lybrook E27-2306 04H

DOME-FEDERAL
28-23 2
⊘

DOME-FEDERAL 28-1
DOME-FEDERAL 28-23 1
⊘

Lybrook M28-2306 01H
Lybrook M28-2306 02H
Lybrook M28-2306 03H
Lybrook M28-2306 04H

PINON TANK
ABZ FED 1
⊘

33

DOME ET AL FED-33 1
⊘

Lybrook
H03-2206 01H

MADDOX
F-A 1
○

34

35

36

GCU O27-2306 01H

GCU O27-2306 02H

GCU O26-2306 01H

GCU M26-2306 01H

GCU M25-2306 01H

WARNER
GOVT 1
⊘

4

22N
6W

3

2

1

Lybrook
A03-2206 01H

Lybrook
H03-2206 01H

Lybrook
P03-2206 01H

Lybrook
P03-2206 02H

Lybrook N02-2206 02H
Lybrook N02-2206 01H

0 0.125 0.25 0.5 Miles



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
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

encana.

natural gas

Project: Sandoval County, NM

Site: GCU

Well: GCU O27-2306 01H

Wellbore: Hz

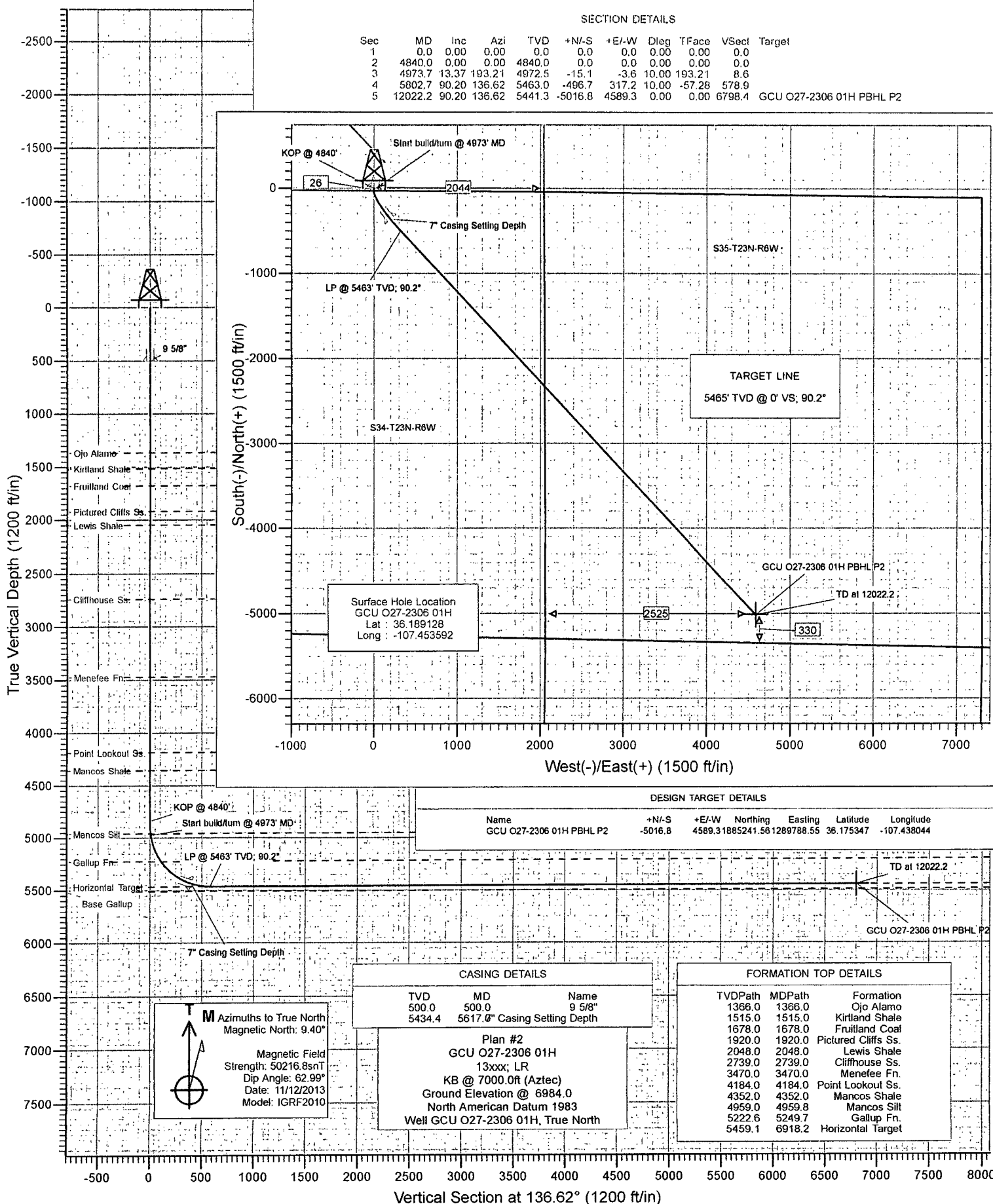
Design: Plan #2



CATHEDRAL

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	4840.0	0.00	0.00	4840.0	0.0	0.0	0.00	0.00	0.0	
3	4973.7	13.37	193.21	4972.5	-15.1	-3.6	10.00	193.21	8.6	
4	5802.7	90.20	136.62	5463.0	-496.7	317.2	10.00	-57.28	578.9	
5	12022.2	90.20	136.62	5441.3	-5016.8	4589.3	0.00	0.00	6798.4	GCU O27-2306 01H PBHL P2



Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well GCU O27-2306 01H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KB @ 7000.0ft (Aztec)
Project:	Sandoval County, NM	MD Reference:	KB @ 7000.0ft (Aztec)
Site:	GCU	North Reference:	True
Well:	GCU O27-2306 01H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Hz		
Design:	Plan #2		

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:		GCU	
Site Position:		Northing:	1,888,889.10 ft
From:	Lat/Long	Easting:	1,281,990.06 ft
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in
		Latitude:	36.185100
		Longitude:	-107.464617
		Grid Convergence:	-0.72 "

Well: GCU 027-2306 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 #2				
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	
4,840.0	0.00	0.00	4,840.0	0.0	0.0	0.00	0.00	0.00	0.00	
4,973.7	13.37	193.21	4,972.5	-15.1	-3.6	10.00	10.00	0.00	193.21	
5,802.7	90.20	136.62	5,463.0	-496.7	317.2	10.00	9.27	-6.83	-57.28	
12,022.2	90.20	136.62	5,441.3	-5,016.8	4,589.3	0.00	0.00	0.00	0.00	GCU 027-2306 01H 1

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well GCU O27-2306 01H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KB @ 7000.0ft (Aztec)
Project:	Sandoval County, NM	MD Reference:	KB @ 7000.0ft (Aztec)
Site:	GCU	North Reference:	True
Well:	GCU O27-2306 01H	Survey Calculation Method:	Minimum Curvature
Wellbore:	H2		
Design:	Plan #2		

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	Menefes 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	Local Co-ordinate Reference:	Well GCU O27-2306 01H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KB @ 7000.0ft (Aztec)
Project:	Sandoval County, NM	MD Reference:	KB @ 7000.0ft (Aztec)
Site:	GCU	North Reference:	True
Well:	GCU O27-2306 01H	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #2		

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	
4,800.0	0.00	0.00	4,800.0	0.0	0.0	0.0	0.00	0.00	
4,840.0	0.00	0.00	4,840.0	0.0	0.0	0.0	0.00	0.00	KOP @ 4840'
4,900.0	6.00	193.21	4,899.9	-3.1	-0.7	1.7	10.00	10.00	
4,959.8	11.98	193.21	4,959.0	-12.2	-2.9	6.9	10.00	10.00	Mancos Silt
4,973.7	13.37	193.21	4,972.5	-15.1	-3.6	8.6	10.00	10.00	Start build/turn @ 4973' MD
5,000.0	14.95	184.62	4,998.0	-21.5	-4.5	12.5	10.00	6.02	
5,100.0	22.77	164.85	5,092.6	-53.1	-0.5	38.2	10.00	7.82	
5,200.0	31.80	155.32	5,181.5	-95.8	15.6	80.4	10.00	9.02	
5,249.7	36.46	152.23	5,222.6	-120.8	28.0	107.0	10.00	9.37	Gallup Fn.
5,300.0	41.23	149.74	5,261.8	-148.4	43.3	137.6	10.00	9.50	
5,400.0	50.86	145.95	5,331.1	-209.1	81.7	208.1	10.00	9.62	
5,500.0	60.57	143.08	5,387.4	-276.2	129.7	289.8	10.00	9.72	
5,600.0	70.34	140.72	5,428.9	-347.7	185.8	380.3	10.00	9.77	
5,617.0	72.00	140.35	5,434.4	-360.1	196.0	396.4	10.00	9.78	7" Casing Setting Depth
5,700.0	80.13	138.63	5,454.3	-421.3	248.3	476.7	10.00	9.79	
5,800.0	89.94	136.67	5,463.0	-494.8	315.4	576.2	10.00	9.81	
5,802.7	90.20	136.62	5,463.0	-496.7	317.2	578.9	10.00	9.81	LP @ 5463' TVD; 90.2°
5,900.0	90.20	136.62	5,462.6	-567.5	384.1	676.2	0.00	0.00	
6,000.0	90.20	136.62	5,462.3	-640.1	452.8	776.2	0.00	0.00	
6,100.0	90.20	136.62	5,461.9	-712.8	521.4	876.2	0.00	0.00	
6,200.0	90.20	136.62	5,461.6	-785.5	590.1	976.2	0.00	0.00	
6,300.0	90.20	136.62	5,461.2	-858.2	658.8	1,076.2	0.00	0.00	
6,400.0	90.20	136.62	5,460.9	-930.8	727.5	1,176.2	0.00	0.00	
6,500.0	90.20	136.62	5,460.5	-1,003.5	796.2	1,276.2	0.00	0.00	
6,600.0	90.20	136.62	5,460.2	-1,076.2	864.9	1,376.2	0.00	0.00	
6,700.0	90.20	136.62	5,459.8	-1,148.9	933.6	1,476.2	0.00	0.00	
6,800.0	90.20	136.62	5,459.5	-1,221.5	1,002.3	1,576.2	0.00	0.00	
6,900.0	90.20	136.62	5,459.1	-1,294.2	1,071.0	1,676.2	0.00	0.00	
6,918.2	90.20	136.62	5,459.1	-1,307.5	1,083.5	1,694.4	0.00	0.00	Horizontal Target
7,000.0	90.20	136.62	5,458.8	-1,366.9	1,139.6	1,776.2	0.00	0.00	
7,100.0	90.20	136.62	5,458.5	-1,439.6	1,208.3	1,876.2	0.00	0.00	
7,200.0	90.20	136.62	5,458.1	-1,512.2	1,277.0	1,976.2	0.00	0.00	
7,300.0	90.20	136.62	5,457.8	-1,584.9	1,345.7	2,076.2	0.00	0.00	
7,400.0	90.20	136.62	5,457.4	-1,657.6	1,414.4	2,176.2	0.00	0.00	
7,500.0	90.20	136.62	5,457.1	-1,730.3	1,483.1	2,276.2	0.00	0.00	
7,600.0	90.20	136.62	5,456.7	-1,803.0	1,551.8	2,376.2	0.00	0.00	
7,700.0	90.20	136.62	5,456.4	-1,875.6	1,620.5	2,476.2	0.00	0.00	
7,800.0	90.20	136.62	5,456.0	-1,948.3	1,689.1	2,576.2	0.00	0.00	
7,900.0	90.20	136.62	5,455.7	-2,021.0	1,757.8	2,676.2	0.00	0.00	
8,000.0	90.20	136.62	5,455.3	-2,093.7	1,826.5	2,776.2	0.00	0.00	
8,100.0	90.20	136.62	5,455.0	-2,166.3	1,895.2	2,876.2	0.00	0.00	
8,200.0	90.20	136.62	5,454.6	-2,239.0	1,963.9	2,976.2	0.00	0.00	
8,300.0	90.20	136.62	5,454.3	-2,311.7	2,032.6	3,076.2	0.00	0.00	
8,400.0	90.20	136.62	5,453.9	-2,384.4	2,101.3	3,176.2	0.00	0.00	
8,500.0	90.20	136.62	5,453.6	-2,457.0	2,170.0	3,276.2	0.00	0.00	
8,600.0	90.20	136.62	5,453.2	-2,529.7	2,238.7	3,376.2	0.00	0.00	
8,700.0	90.20	136.62	5,452.9	-2,602.4	2,307.3	3,476.2	0.00	0.00	

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well GCU O27-2306 01H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KB @ 7000.0ft (Aztec)
Project:	Sandoval County, NM	MD Reference:	KB @ 7000.0ft (Aztec)
Site:	GCU	North Reference:	True
Well:	GCU O27-2306 01H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Hz		
Design:	Plan #2		

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	90.20	136.62	5,452.5	-2,675.1	2,376.0	3,576.2	0.00	0.00	
8,900.0	90.20	136.62	5,452.2	-2,747.7	2,444.7	3,676.2	0.00	0.00	
9,000.0	90.20	136.62	5,451.8	-2,820.4	2,513.4	3,776.2	0.00	0.00	
9,100.0	90.20	136.62	5,451.5	-2,893.1	2,582.1	3,876.2	0.00	0.00	
9,200.0	90.20	136.62	5,451.1	-2,965.8	2,650.8	3,976.2	0.00	0.00	
9,300.0	90.20	136.62	5,450.8	-3,038.4	2,719.5	4,076.2	0.00	0.00	
9,400.0	90.20	136.62	5,450.4	-3,111.1	2,788.2	4,176.2	0.00	0.00	
9,500.0	90.20	136.62	5,450.1	-3,183.8	2,856.9	4,276.2	0.00	0.00	
9,600.0	90.20	136.62	5,449.7	-3,256.5	2,925.5	4,376.2	0.00	0.00	
9,700.0	90.20	136.62	5,449.4	-3,329.1	2,994.2	4,476.2	0.00	0.00	
9,800.0	90.20	136.62	5,449.0	-3,401.8	3,062.9	4,576.2	0.00	0.00	
9,900.0	90.20	136.62	5,448.7	-3,474.5	3,131.6	4,676.2	0.00	0.00	
10,000.0	90.20	136.62	5,448.3	-3,547.2	3,200.3	4,776.2	0.00	0.00	
10,100.0	90.20	136.62	5,448.0	-3,619.8	3,269.0	4,876.2	0.00	0.00	
10,200.0	90.20	136.62	5,447.6	-3,692.5	3,337.7	4,976.2	0.00	0.00	
10,300.0	90.20	136.62	5,447.3	-3,765.2	3,406.4	5,076.2	0.00	0.00	
10,400.0	90.20	136.62	5,447.0	-3,837.9	3,475.1	5,176.2	0.00	0.00	
10,500.0	90.20	136.62	5,446.6	-3,910.5	3,543.7	5,276.2	0.00	0.00	
10,600.0	90.20	136.62	5,446.3	-3,983.2	3,612.4	5,376.2	0.00	0.00	
10,700.0	90.20	136.62	5,445.9	-4,055.9	3,681.1	5,476.2	0.00	0.00	
10,800.0	90.20	136.62	5,445.6	-4,128.6	3,749.8	5,576.2	0.00	0.00	
10,900.0	90.20	136.62	5,445.2	-4,201.3	3,818.5	5,676.2	0.00	0.00	
11,000.0	90.20	136.62	5,444.9	-4,273.9	3,887.2	5,776.2	0.00	0.00	
11,100.0	90.20	136.62	5,444.5	-4,346.6	3,955.9	5,876.2	0.00	0.00	
11,200.0	90.20	136.62	5,444.2	-4,419.3	4,024.6	5,976.2	0.00	0.00	
11,300.0	90.20	136.62	5,443.8	-4,492.0	4,093.2	6,076.2	0.00	0.00	
11,400.0	90.20	136.62	5,443.5	-4,564.6	4,161.9	6,176.2	0.00	0.00	
11,500.0	90.20	136.62	5,443.1	-4,637.3	4,230.6	6,276.2	0.00	0.00	
11,600.0	90.20	136.62	5,442.8	-4,710.0	4,299.3	6,376.2	0.00	0.00	
11,700.0	90.20	136.62	5,442.4	-4,782.7	4,368.0	6,476.2	0.00	0.00	
11,800.0	90.20	136.62	5,442.1	-4,855.3	4,436.7	6,576.2	0.00	0.00	
11,900.0	90.20	136.62	5,441.7	-4,928.0	4,505.4	6,676.2	0.00	0.00	
12,000.0	90.20	136.62	5,441.4	-5,000.7	4,574.1	6,776.2	0.00	0.00	
12,022.2	90.20	136.62	5,441.3	-5,016.8	4,589.3	6,798.4	0.00	0.00	TD at 12022.2

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well GCU O27-2306 01H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KB @ 7000.0ft (Aztec)
Project:	Sandoval County, NM	MD Reference:	KB @ 7000.0ft (Aztec)
Site:	GCU	North Reference:	True
Well:	GCU O27-2306 01H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Hz		
Design:	Plan #2		

Targets									
Target Name	- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	
- Shape	- Shape	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)	Latitude Longitude
GCU O27-2306 01H PO	- plan misses target center by 31.1ft at 5617.0ft MD (5434.4 TVD, -360.1 N, 196.0 E)	0.00	0.00	5,463.6	-357.5	185.6	1,889,955.12	1,285,443.02	36.188146 -107.452963
- Point									
GCU O27-2306 01H PO	- plan misses target center by 31.3ft at 5617.0ft MD (5434.4 TVD, -360.1 N, 196.0 E)	0.00	0.00	5,463.8	-357.5	185.6	1,889,955.12	1,285,443.02	36.188146 -107.452963
- Point									
GCU O27-2306 01H PBI	- plan hits target center	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
- Point									
GCU O27-2306 01H PBI	- plan misses target center by 0.1ft at 12022.2ft MD (5441.3 TVD, -5016.8 N, 4589.3 E)	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
- Point									

Casing Points					
Measured Depth	Vertical Depth	Name	Casing Diameter	Hole Diameter	
(ft)	(ft)		(in)	(in)	
5,617.0	5,434.4	7" Casing Setting Depth	0.000	0.000	
500.0	500.0	9 5/8"	0.000	0.000	

Formations						
Measured Depth	Vertical Depth	Name	Lithology	Dip	Dip Direction	
(ft)	(ft)			(°)	(°)	
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	
4,959.8	4,959.0	Mancos Silt		-0.20	136.62	
5,249.7	5,223.0	Gallup Fn.		-0.20	136.62	
6,918.2	5,465.0	Horizontal Target		-0.20	136.62	

Plan Annotations					
Measured Depth	Vertical Depth	Local Coordinates		Comment	
(ft)	(ft)	+N/-S	+E/-W		
(ft)	(ft)	(ft)	(ft)		
4,840.0	4,840.0	0.0	0.0	KOP @ 4840'	
4,973.7	4,972.5	-15.2	-3.1	Start build/turn @ 4973' MD	
5,802.7	5,461.0	-498.2	318.6	LP @ 5463' TVD; 90.2°	
12,022.2				TD at 12022.2	

WELLHEAD BLOWOUT CONTROL SYSTEM

encana

Well name and number:

Gallo Canyon Unit O27-2306 01H

