

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

David R. Catanach 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: 2-5-15

Well information:

Operator Encana, Well Name and Number Gallo Canyon Unit may 2306 #1 H

API# 30-043-21259, Section 24, Township 23 N/S, Range 6 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 NSI, 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
- ☒ Regarding Hydraulic Fracturing, review EPA Underground Injection Control Guidance 84
- ☒ 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.
- ☒ Well-bore communication is regulated under 19.15.29 NMAC. This requires well-bore Communication to be reported in accordance with 19.15.29.8.

** APD Held for
name change
see Sunday*



NMOCD Approved by Signature

8-12-2015

Date *jc*

JUN 15 2015

RECEIVED

Form 3160-3
(March 2012)

FEB 06 2015

FORM APPROVED
OMB No. 1004-0137
Expires October 31, 2014UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of work: ☒ DRILL ☐ REENTER		5. Lease Serial No. NMNM17009 Gallo Canyon Unit NMNM131017X	
1b. Type of Well: ☒ Oil Well ☐ Gas Well ☐ Other ☒ Single Zone ☐ Multiple Zone		6. If Indian, Allottee or Tribe Name N/A	
2. Name of Operator Encana Oil & Gas (USA) Inc.		7. If Unit or CA Agreement, Name and No. Gallo Canyon Unit NMNM 131017X	
3a. Address 370 17th Street, Suite 1700 Denver, CO 80202		8. Lease Name and Well No. Gallo Canyon Unit M24-2306 01H	
3b. Phone No. (include area code) 720-876-3740		9. API Well No. 30-043-21259	
4. Location of Well (Report location clearly and in accordance with any State requirements.)* At surface 140' FSL and 305' FWL, Section 24, T23N, R6W SW SW SHL At proposed prod. zone 180' FSL and 330' FEL, Section 25, T23N, R6W SE SE BHL Sec 25, T23N, R6W		10. Field and Pool, or Exploratory Counselors Gallup-Dakota	
11. Sec., T. R. M. or Blk. and Survey or Area Section 24, T23N, R6W NMPM		12. County or Parish Sandoval	
13. State NM		14. Distance in miles and direction from nearest town or post office* +/- 56.8 miles South from the intersection of US HWY 550 & US Hwy 64 in Bloomfield, NM	
15. Distance from proposed* location to nearest property or lease line, ft. BHL is 330' FEL Section 25, T23N, R6W (Also to nearest drig. unit line, if any)		16. No. of acres in lease NMNM13107X- 5,120 acres NMNM17009-25600	
17. Spacing Unit dedicated to this well 5,120 acres- Sections 22-26 and 34-36, T23, R6W		18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. SHL +/- 30' N Gallo Canyon Unit M24-2306 02H	
19. Proposed Depth 5,450' TVD; 12,402' MD		20. BLM/BIA Bond No. on file COB-000235	
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 6,879' GL; 6,895' KB		22. Approximate date work will start* 07/01/2015	
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 <i>Rosalie Thim</i>	Name (Printed/Typed) Rosalie Thim	Date 02/05/2015
Title Regulatory Analyst		
Approved by (Signature) <i>D. M. Minter</i>	Name (Printed/Typed) AFU	Date 6/11/15
Title Office FFU		

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.

(Continued 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

NMCCD

DRILLING OPERATIONS
AUTHORIZATION (Instructions on page 2)
COMPLIANCE WITH ATTACHED
"GENERAL REQUIREMENTS"

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

DISTRICT I
1825 N. French Dr., Hobbs, N.M. 88240
Phone: (575) 393-8181 Fax: (575) 393-0720

DISTRICT II
811 S. First St., Artesia, N.M. 88210
Phone: (575) 748-1283 Fax: (575) 748-9720

DISTRICT III
1000 Rio Brazos Rd., Aztec, N.M. 87410
Phone: (505) 334-6178 Fax: (505) 334-6170

DISTRICT IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3480 Fax: (505) 476-3482

State of New Mexico
Energy, Minerals & Natural Resources Department

Form C-102
Revised August 1, 2011

Submit one copy to appropriate
District Office

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

☐ AMENDED REPORT

WELL FLAG

LAT. 36.203767° N (NAD83)
LONG. 107.427837° W (NAD83)
LAT. 36.203753° N (NAD27)
LONG. 107.427233° W (NAD27)

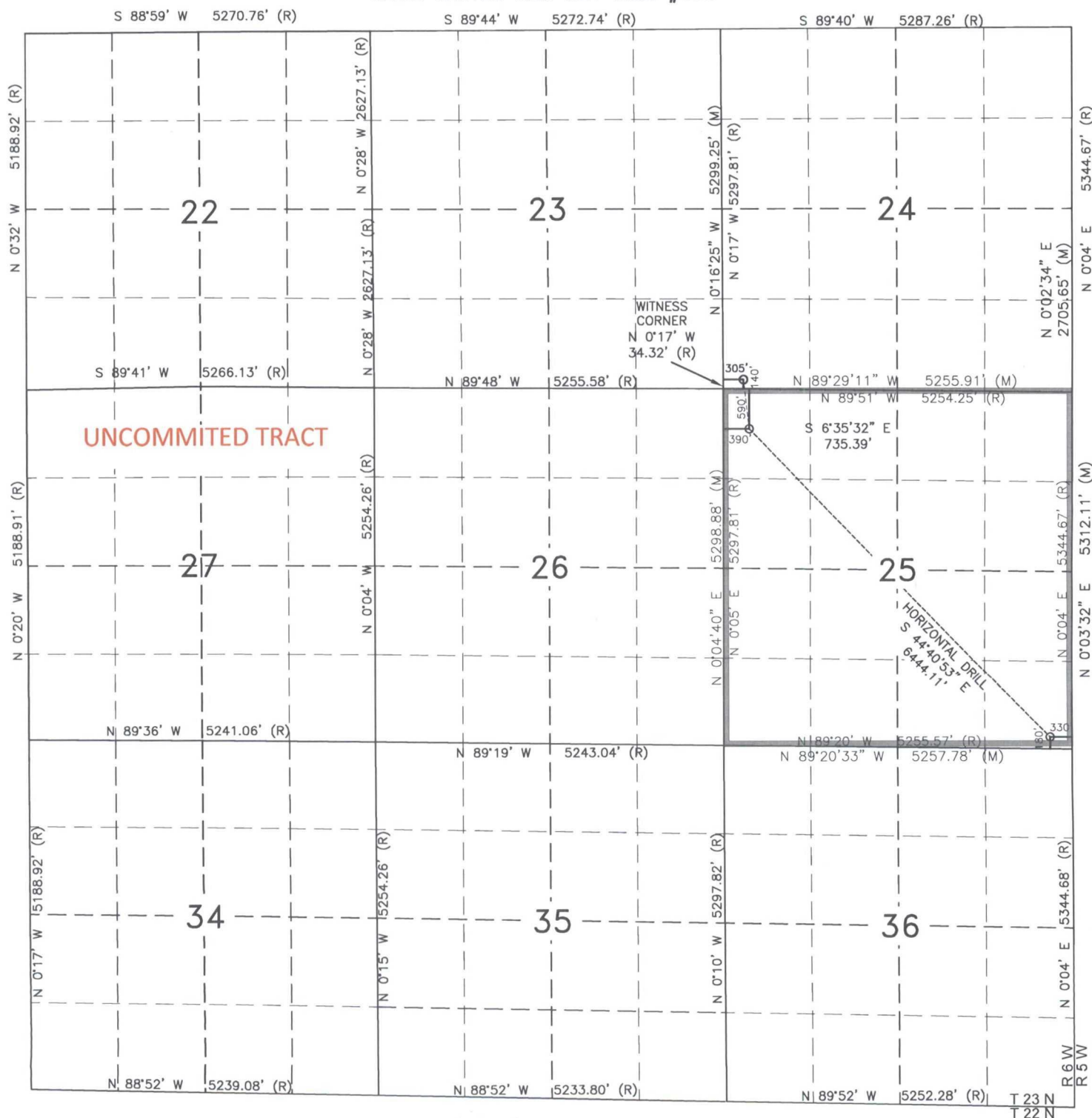
ENTRY POINT

LAT. 36.201761° N (NAD83)
LONG. 107.427551° W (NAD83)
LAT. 36.201747° N (NAD27)
LONG. 107.426947° W (NAD27)

BOTTOM HOLE

LAT. 36.189174° N (NAD83)
LONG. 107.412207° W (NAD83)
LAT. 36.189160° N (NAD27)
LONG. 107.411604° W (NAD27)

ENCANA OIL & GAS (USA) INC.
GALLO CANYON UNIT M24-2306 #01H



GCU M24-2306 01H

SHL: 140' FSL, 305' FWL Sec 24 T23N R06W

BHL: 180' FSL, 330' FEL Sec 25 T23N R06W

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
San Jose Fn.	n/a
Nacimiento Fn.	surface
Ojo Alamo Ss.	1,431
Kirtland Shale	1,539
Fruitland Coal	1,703
Pictured Cliffs Ss.	1,980
Lewis Shale	2,096
Cliffhouse Ss.	2,770
Menefee Fn.	3,492
Point Lookout Ss.	4,196
Mancos Shale	4,395
Mancos Silt	4,989
Gallup Fn.	5,230
Base Gallup	5,555

The referenced surface elevation is 6879', KB 6895'

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

Substance	Formation	Depth (TVD) units = feet
Water/Gas	Fruitland Coal	1,703
Oil/Gas	Pictured Cliffs Ss.	1,980
Oil/Gas	Cliffhouse Ss.	2,770
Gas	Menefee Fn.	3,492
Oil/Gas	Point Lookout Ss.	4,196
Oil/Gas	Mancos Shale	4,395
Oil/Gas	Mancos Silt	4,989
Oil/Gas	Gallup Fn.	5,230

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

GCU M24-2306 01H

SHL: 140' FSL, 305' FWL Sec 24 T23N R06W

BHL: 180' FSL, 330' FEL Sec 25 T23N R06W

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'-5507'	8 3/4"	7"	26#	J55, LTC New
Production Liner	5407'-12402'	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 M24-2306 01H

SHL: 140' FSL, 305' FWL Sec 24 T23N R06W

BHL: 180' FSL, 330' FEL Sec 25 T23N R06W

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'	276 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'-5507'	100% open hole excess Stage 1 Lead: 731 sks Stage 1 Tail: 553 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	5407'- 12402'	50% OH excess Stage 1 Blend Total: 391sks	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 4480'. Directional plans are attached.

Description	Proposed Depth (TVD/MD)	Formation
Horizontal Lateral TD	5450'/12402'	Gallup

GCU M24-2306 01H**SHL: 140' FSL, 305' FWL Sec 24 T23N R06W****BHL: 180' FSL, 330' FEL Sec 25 T23N R06W****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'-5349'/5507'	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"	5349'/5507'- 5450'/12402'	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 +/- 2568 psi based on a 9.0 ppg at 5487' 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

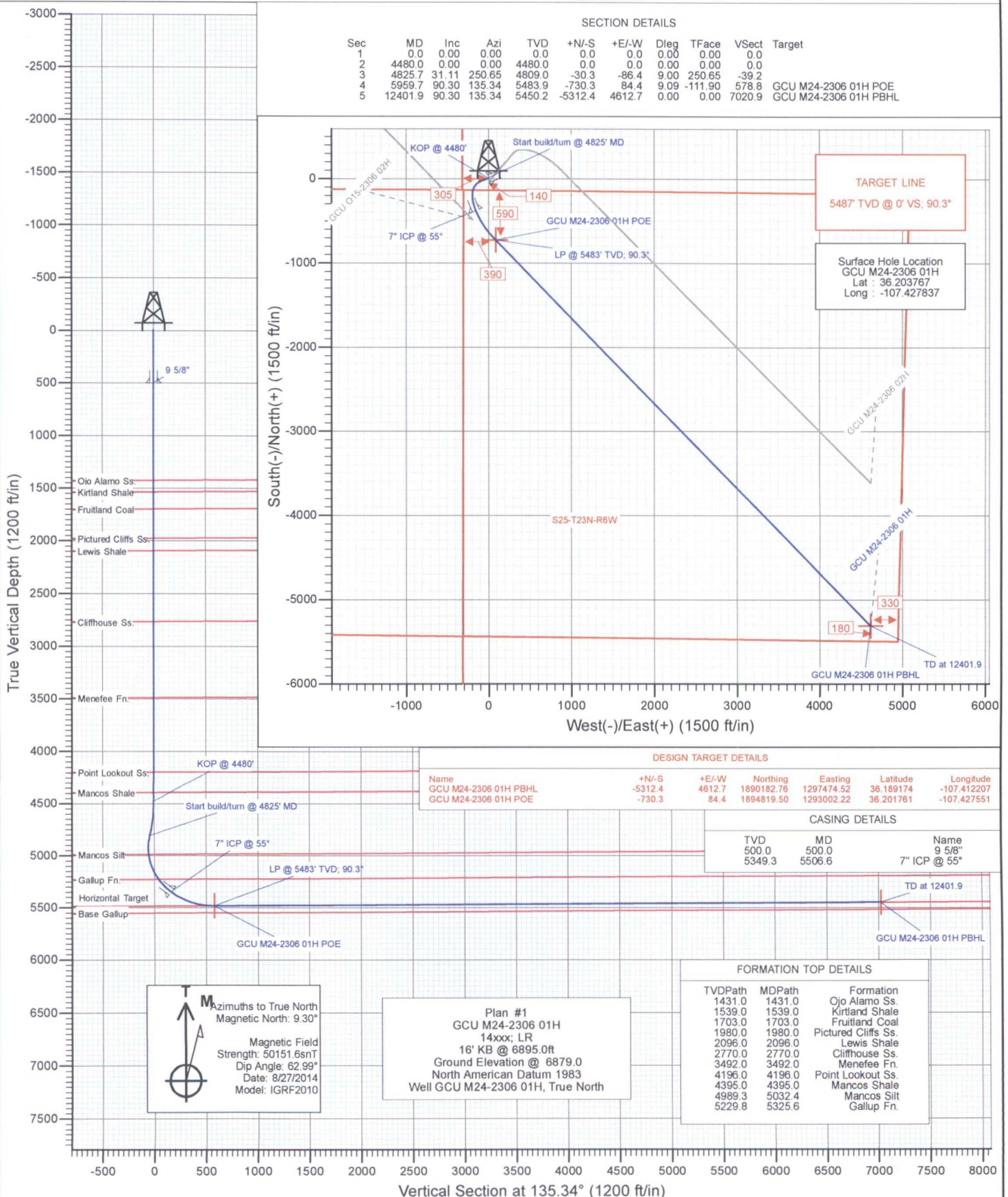
Drilling is estimated to commence on July 1, 2015. It is anticipated that completion operations will begin within 30 days after the well has been drilled depending on fracture treatment schedules with various pumping service companies.

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

LOC: 140° FSL, 305° FWL Sec 24 T23N R06W County: Sandoval WELL: GCU M24-2306 01H			Encana Natural Gas WELL SUMMARY			ENG: Michael Sanch 2-3-15 RIG: Aztec 950 GLE: 6879 RKBE: 6895		
MWD LWD	OPEN HOLE LOGGING	FORM	DEPTH		HOLE SIZE	CASING SPECS	MW MUD TYPE	DEVIATION INFORMATION
			TVD	MD				
			60	60'				
			0		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.						
		Nacimiento Fn.	surface		12 1/4	9 5/8" 36ppf J55 STC TOC Surface with 100% OH Excess: 276 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°
		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 Ss. Kirtland Shale Fruitland Coal Pictured Cliffs Ss. Lewis Shale Cliffhouse Ss. Menefee Fn. Point Lookout Ss. Mancos Shale	1,431 1,539 1,703 1,980 2,096 2,770 3,492 4,196 4,395		8 3/4	7" 26ppf J55 LTC TOC @ surface (100% OH excess - 70% Lead 30% Tail) Stage 1 Total: 1285sks Stage 1 Lead: 731 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: 553 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°
Surveys every 30' through the curve	Mud logger onsite	KOP	4,480	4,480				
		Mancos Silt	4,989					
		Gallup Fn.	5,230					
		7" Csg	5,349	5,507'				
Surveys every stand to TD unless directed otherwise by Geologist	No OH Logs	Horizontal Target TD	5,487 5,450	12,402	6 1/8	100' overlap at liner top		Horz Inc/TVD 90.3deg/5487ft
		Base Gallup	5,555			6895' Drilled Lateral		TD = 12401.9 MD
MWD Gamma Directional						4 1/2" 11.6ppf SB80 LTC TOC @ hanger (50% OH excess) Stage 1 Total: 391sks Stage 1 Blend: 391 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 4480', 8 3/4 inch holedsize
- 5) Start curve at 10deg/100' build rate
- 6) Drill to csg point of 5507' MD
- 7) R&C 7" csg, circ cmt to surface
- 8) Land at ~90 deg, drill lateral to 12402' run 4 1/2 inch cemented liner



Planning Report

Database: USA EDM 5000 Multi Users DB
 Company: EnCana Oil & Gas (USA) Inc
 Project: Sandoval County, NM
 Site: S24-T23N-R6W
 Well: GCU M24-2306 01H
 Wellbore: HZ
 Design: Plan #1

Local Co-ordinate Reference: Well GCU M24-2306 01H
 TVD Reference: 16' KB @ 6895.0ft
 MD Reference: 16' KB @ 6895.0ft
 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 S24-T23N-R6W

Site Position: Northing: 1,895,550.78 ft Latitude: 36.203767
 From: Lat/Long Easting: 1,292,926.71 ft Longitude: -107.427837
 Position Uncertainty: 0.0 ft Slot Radius: 13.200 in Grid Convergence: -0.70 °

Well GCU M24-2306 01H

Well Position +N/-S 0.0 ft Northing: 1,895,550.78 ft Latitude: 36.203767
 +E/-W 0.0 ft Easting: 1,292,926.71 ft Longitude: -107.427837
 Position Uncertainty 0.0 ft Wellhead Elevation: 0.0 ft Ground Level: 6,879.0 ft

Wellbore HZ

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	8/27/2014	9.30	62.99	50,152

Design Plan #1

Audit Notes:

Version: Phase: PLAN Tie On Depth: 0.0

Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	135.34

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	
4,480.0	0.00	0.00	4,480.0	0.0	0.0	0.00	0.00	0.00	0.00	
4,825.7	31.11	250.65	4,809.0	-30.3	-86.4	9.00	9.00	0.00	250.65	
5,959.7	90.30	135.34	5,483.9	-730.3	84.4	9.09	5.22	-10.17	-111.90	GCU M24-2306 01H I
12,401.9	90.30	135.34	5,450.2	-5,312.4	4,612.7	0.00	0.00	0.00	0.00	GCU M24-2306 01H I

Planning Report

Database: USA EDM 5000 Multi Users DB
Company: EnCana Oil & Gas (USA) Inc
Project: Sandoval County, NM
Site: S24-T23N-R6W
Well: GCU M24-2306 01H
Wellbore: HZ
Design: Plan #1

Local Co-ordinate Reference: Well GCU M24-2306 01H
TVD Reference: 16' KB @ 6895.0ft
MD Reference: 16' KB @ 6895.0ft
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	
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	
1,431.0	0.00	0.00	1,431.0	0.0	0.0	0.0	0.00	0.00	Ojo Alamo Ss.
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	
1,539.0	0.00	0.00	1,539.0	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	
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	
1,703.0	0.00	0.00	1,703.0	0.0	0.0	0.0	0.00	0.00	Fruitland Coal
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	
1,980.0	0.00	0.00	1,980.0	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	
2,096.0	0.00	0.00	2,096.0	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	
2,770.0	0.00	0.00	2,770.0	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	
3,492.0	0.00	0.00	3,492.0	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	
4,196.0	0.00	0.00	4,196.0	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 M24-2306 01H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	16' KB @ 6895.0ft
Project:	Sandoval County, NM	MD Reference:	16' KB @ 6895.0ft
Site:	S24-T23N-R6W	North Reference:	True
Well:	GCU M24-2306 01H	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #1		

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
4,395.0	0.00	0.00	4,395.0	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	
4,480.0	0.00	0.00	4,480.0	0.0	0.0	0.0	0.00	0.00	KOP @ 4480'
4,500.0	1.80	250.65	4,500.0	-0.1	-0.3	-0.1	9.00	9.00	
4,600.0	10.80	250.65	4,599.3	-3.7	-10.6	-4.8	9.00	9.00	
4,700.0	19.80	250.65	4,695.7	-12.5	-35.5	-16.1	9.00	9.00	
4,800.0	28.80	250.65	4,786.7	-26.1	-74.3	-33.7	9.00	9.00	
4,825.7	31.11	250.65	4,809.0	-30.3	-86.4	-39.2	9.00	9.00	Start build/turn @ 4825' MD
4,900.0	29.21	237.74	4,873.3	-46.4	-119.9	-51.3	9.08	-2.57	
5,000.0	28.81	218.96	4,960.9	-78.2	-155.7	-53.8	9.09	-0.40	
5,032.4	29.24	212.95	4,989.3	-91.0	-165.0	-51.3	9.09	1.32	Mancos Silt
5,100.0	30.95	201.17	5,047.8	-121.0	-180.2	-40.6	9.08	2.53	
5,200.0	35.16	186.36	5,131.7	-173.7	-192.7	-11.9	9.09	4.22	
5,300.0	40.81	174.75	5,210.6	-235.0	-192.9	31.6	9.09	5.65	
5,325.6	42.42	172.22	5,229.8	-251.9	-191.0	45.0	9.09	6.29	Gallup Fn.
5,400.0	47.37	165.69	5,282.5	-303.4	-180.8	88.7	9.08	6.65	
5,500.0	54.51	158.43	5,345.5	-377.0	-156.7	158.0	9.09	7.13	
5,506.6	54.99	158.00	5,349.3	-382.0	-154.7	163.0	9.10	7.37	7" ICP @ 55°
5,600.0	62.00	152.39	5,398.1	-454.2	-121.2	237.8	9.08	7.51	
5,700.0	69.73	147.14	5,439.0	-532.9	-75.2	326.2	9.09	7.73	
5,800.0	77.60	142.40	5,467.1	-611.1	-19.9	420.7	9.09	7.87	
5,900.0	85.54	137.94	5,481.7	-687.0	43.5	519.2	9.09	7.94	
5,959.7	90.30	135.34	5,483.9	-730.3	84.4	578.8	9.09	7.97	LP @ 5483' TVD; 90.3°
6,000.0	90.30	135.34	5,483.7	-759.0	112.7	619.1	0.00	0.00	
6,100.0	90.30	135.34	5,483.2	-830.1	183.0	719.1	0.00	0.00	
6,200.0	90.30	135.34	5,482.6	-901.3	253.3	819.1	0.00	0.00	
6,300.0	90.30	135.34	5,482.1	-972.4	323.6	919.1	0.00	0.00	
6,400.0	90.30	135.34	5,481.6	-1,043.5	393.9	1,019.1	0.00	0.00	
6,500.0	90.30	135.34	5,481.1	-1,114.6	464.2	1,119.1	0.00	0.00	
6,600.0	90.30	135.34	5,480.6	-1,185.8	534.5	1,219.1	0.00	0.00	
6,700.0	90.30	135.34	5,480.0	-1,256.9	604.8	1,319.1	0.00	0.00	
6,800.0	90.30	135.34	5,479.5	-1,328.0	675.1	1,419.1	0.00	0.00	
6,900.0	90.30	135.34	5,479.0	-1,399.1	745.4	1,519.1	0.00	0.00	
7,000.0	90.30	135.34	5,478.5	-1,470.3	815.6	1,619.1	0.00	0.00	
7,100.0	90.30	135.34	5,477.9	-1,541.4	885.9	1,719.1	0.00	0.00	
7,200.0	90.30	135.34	5,477.4	-1,612.5	956.2	1,819.1	0.00	0.00	
7,300.0	90.30	135.34	5,476.9	-1,683.6	1,026.5	1,919.1	0.00	0.00	
7,400.0	90.30	135.34	5,476.4	-1,754.8	1,096.8	2,019.1	0.00	0.00	
7,500.0	90.30	135.34	5,475.8	-1,825.9	1,167.1	2,119.1	0.00	0.00	
7,600.0	90.30	135.34	5,475.3	-1,897.0	1,237.4	2,219.1	0.00	0.00	
7,700.0	90.30	135.34	5,474.8	-1,968.1	1,307.7	2,319.1	0.00	0.00	
7,800.0	90.30	135.34	5,474.3	-2,039.3	1,378.0	2,419.1	0.00	0.00	
7,900.0	90.30	135.34	5,473.7	-2,110.4	1,448.3	2,519.1	0.00	0.00	
8,000.0	90.30	135.34	5,473.2	-2,181.5	1,518.6	2,619.1	0.00	0.00	
8,100.0	90.30	135.34	5,472.7	-2,252.7	1,588.9	2,719.1	0.00	0.00	
8,200.0	90.30	135.34	5,472.2	-2,323.8	1,659.1	2,819.1	0.00	0.00	
8,300.0	90.30	135.34	5,471.7	-2,394.9	1,729.4	2,919.1	0.00	0.00	
8,400.0	90.30	135.34	5,471.1	-2,466.0	1,799.7	3,019.1	0.00	0.00	
8,500.0	90.30	135.34	5,470.6	-2,537.2	1,870.0	3,119.1	0.00	0.00	
8,600.0	90.30	135.34	5,470.1	-2,608.3	1,940.3	3,219.1	0.00	0.00	
8,700.0	90.30	135.34	5,469.6	-2,679.4	2,010.6	3,319.1	0.00	0.00	
8,800.0	90.30	135.34	5,469.0	-2,750.5	2,080.9	3,419.1	0.00	0.00	

Planning Report

Database: USA EDM 5000 Multi Users DB
 Company: EnCana Oil & Gas (USA) Inc
 Project: Sandoval County, NM
 Site: S24-T23N-R6W
 Well: GCU M24-2306 01H
 Wellbore: HZ
 Design: Plan #1

Local Co-ordinate Reference:
 TVD Reference:
 MD Reference:
 North Reference:
 Survey Calculation Method:

Well GCU M24-2306 01H
 16' KB @ 6895.0ft
 16' KB @ 6895.0ft
 True
 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
8,900.0	90.30	135.34	5,468.5	-2,821.7	2,151.2	3,519.1	0.00	0.00	
9,000.0	90.30	135.34	5,468.0	-2,892.8	2,221.5	3,619.1	0.00	0.00	
9,100.0	90.30	135.34	5,467.5	-2,963.9	2,291.8	3,719.1	0.00	0.00	
9,200.0	90.30	135.34	5,466.9	-3,035.0	2,362.1	3,819.1	0.00	0.00	
9,300.0	90.30	135.34	5,466.4	-3,106.2	2,432.3	3,919.1	0.00	0.00	
9,400.0	90.30	135.34	5,465.9	-3,177.3	2,502.6	4,019.1	0.00	0.00	
9,500.0	90.30	135.34	5,465.4	-3,248.4	2,572.9	4,119.1	0.00	0.00	
9,600.0	90.30	135.34	5,464.9	-3,319.5	2,643.2	4,219.1	0.00	0.00	
9,700.0	90.30	135.34	5,464.3	-3,390.7	2,713.5	4,319.1	0.00	0.00	
9,800.0	90.30	135.34	5,463.8	-3,461.8	2,783.8	4,419.1	0.00	0.00	
9,900.0	90.30	135.34	5,463.3	-3,532.9	2,854.1	4,519.1	0.00	0.00	
10,000.0	90.30	135.34	5,462.8	-3,604.1	2,924.4	4,619.1	0.00	0.00	
10,100.0	90.30	135.34	5,462.2	-3,675.2	2,994.7	4,719.1	0.00	0.00	
10,200.0	90.30	135.34	5,461.7	-3,746.3	3,065.0	4,819.1	0.00	0.00	
10,300.0	90.30	135.34	5,461.2	-3,817.4	3,135.3	4,919.1	0.00	0.00	
10,400.0	90.30	135.34	5,460.7	-3,888.6	3,205.5	5,019.1	0.00	0.00	
10,500.0	90.30	135.34	5,460.1	-3,959.7	3,275.8	5,119.1	0.00	0.00	
10,600.0	90.30	135.34	5,459.6	-4,030.8	3,346.1	5,219.1	0.00	0.00	
10,700.0	90.30	135.34	5,459.1	-4,101.9	3,416.4	5,319.1	0.00	0.00	
10,800.0	90.30	135.34	5,458.6	-4,173.1	3,486.7	5,419.1	0.00	0.00	
10,900.0	90.30	135.34	5,458.1	-4,244.2	3,557.0	5,519.1	0.00	0.00	
11,000.0	90.30	135.34	5,457.5	-4,315.3	3,627.3	5,619.1	0.00	0.00	
11,100.0	90.30	135.34	5,457.0	-4,386.4	3,697.6	5,719.1	0.00	0.00	
11,200.0	90.30	135.34	5,456.5	-4,457.6	3,767.9	5,819.1	0.00	0.00	
11,300.0	90.30	135.34	5,456.0	-4,528.7	3,838.2	5,919.1	0.00	0.00	
11,400.0	90.30	135.34	5,455.4	-4,599.8	3,908.5	6,019.1	0.00	0.00	
11,500.0	90.30	135.34	5,454.9	-4,670.9	3,978.7	6,119.0	0.00	0.00	
11,600.0	90.30	135.34	5,454.4	-4,742.1	4,049.0	6,219.0	0.00	0.00	
11,700.0	90.30	135.34	5,453.9	-4,813.2	4,119.3	6,319.0	0.00	0.00	
11,800.0	90.30	135.34	5,453.3	-4,884.3	4,189.6	6,419.0	0.00	0.00	
11,900.0	90.30	135.34	5,452.8	-4,955.4	4,259.9	6,519.0	0.00	0.00	
12,000.0	90.30	135.34	5,452.3	-5,026.6	4,330.2	6,619.0	0.00	0.00	
12,100.0	90.30	135.34	5,451.8	-5,097.7	4,400.5	6,719.0	0.00	0.00	
12,200.0	90.30	135.34	5,451.3	-5,168.8	4,470.8	6,819.0	0.00	0.00	
12,300.0	90.30	135.34	5,450.7	-5,240.0	4,541.1	6,919.0	0.00	0.00	
12,400.0	90.30	135.34	5,450.2	-5,311.1	4,611.4	7,019.0	0.00	0.00	
12,401.9	90.30	135.34	5,450.2	-5,312.4	4,612.7	7,020.9	0.00	0.00	TD at 12401.9

Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- hit/miss target									
- Shape									
GCU M24-2306 01H PB	0.00	0.00	5,450.2	-5,312.4	4,612.7	1,890,182.76	1,297,474.52	36.189174	-107.412207
- plan hits target center									
- Point									
GCU M24-2306 01H PO	0.00	0.00	5,483.9	-730.3	84.4	1,894,819.50	1,293,002.22	36.201761	-107.427551
- plan hits target center									
- Point									

Planning Report

Database: USA EDM 5000 Multi Users DB
Company: EnCana Oil & Gas (USA) Inc
Project: Sandoval County, NM
Site: S24-T23N-R6W
Well: GCU M24-2306 01H
Wellbore: HZ
Design: Plan #1

Local Co-ordinate Reference: Well GCU M24-2306 01H
TVD Reference: 16' KB @ 6895.0ft
MD Reference: 16' KB @ 6895.0ft
North Reference: True
Survey Calculation Method: Minimum Curvature

500.0	500.0	9 5/8"	0.000	0.000
5,506.6	5,349.3	7" ICP @ 55°	0.000	0.000

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,431.0	1,431.0	Ojo Alamo Ss.		-0.30	135.34
1,539.0	1,539.0	Kirtland Shale		-0.30	135.34
1,703.0	1,703.0	Fruitland Coal		-0.30	135.34
1,980.0	1,980.0	Pictured Cliffs Ss.		-0.30	135.34
2,096.0	2,096.0	Lewis Shale		-0.30	135.34
2,770.0	2,770.0	Cliffhouse Ss.		-0.30	135.34
3,492.0	3,492.0	Menefee Fn.		-0.30	135.34
4,196.0	4,196.0	Point Lookout Ss.		-0.30	135.34
4,395.0	4,395.0	Mancos Shale		-0.30	135.34
5,032.4	4,989.0	Mancos Silt		-0.30	135.34
5,325.6	5,230.0	Gallup Fn.		-0.30	135.34

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
4,480.0	4,480.0	0.0	0.0	KOP @ 4480'
4,825.7	4,809.0	-30.3	-86.4	Start build/turn @ 4825' MD
5,959.7	5,483.9	-730.3	84.4	LP @ 5483' TVD; 90.3°
12,401.9	5,450.2	-5,312.4	4,612.7	TD at 12401.9

EnCana Oil & Gas (USA) Inc

Sandoval County, NM

S24-T23N-R6W

GCU M24-2306 01H

HZ

Plan #1

Anticollision Report

29 August, 2014

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well GCU M24-2306 01H
Project:	Sandoval County, NM	TVD Reference:	16' KB @ 6895.0ft
Reference Site:	S24-T23N-R6W	MD Reference:	16' KB @ 6895.0ft
Site Error:	0.0ft	North Reference:	True
Reference Well:	GCU M24-2306 01H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Reference	Plan #1		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD Interval 100.0ft	Error Model:	Systematic Ellipse
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 1,428.7ft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma		

Survey Tool Program	Date 8/29/2014			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	12,401.9	Plan #1 (HZ)	Geolink MWD	Geolink MWD

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
S15-T23N-R6W						
GCU O15-2306 02H - HZ - Plan #1	5,614.9	13,914.8	91.3	-61.2	0.599	Level 1, CC, ES, SF
GCU O15-2306 02H - HZ - Plan #2	5,621.1	13,928.6	99.8	-36.5	0.732	Level 1, CC, ES, SF
S24-T23N-R6W						
GCU M24-2306 02H - HZ - Plan #1	3,730.1	3,730.4	28.1	15.1	2.166	CC, ES, SF

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well GCU M24-2306 01H
Project:	Sandoval County, NM	TVD Reference:	16' KB @ 6895.0ft
Reference Site:	S24-T23N-R6W	MD Reference:	16' KB @ 6895.0ft
Site Error:	0.0ft	North Reference:	True
Reference Well:	GCU M24-2306 01H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design S15-T23N-R6W - GCU O15-2306 02H - HZ - Plan #1													Offset Site Error: 0.0 ft	
Survey Program: 0-Geolink MWD													Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
4,200.0	4,200.0	13,719.5	5,546.1	7.3	199.7	-136.13	-343.9	-330.6	1,339.0	1,249.7	89.24	15.004		
4,300.0	4,300.0	13,718.6	5,546.1	7.5	199.7	-136.02	-343.2	-331.2	1,246.0	1,156.3	89.73	13.886		
4,400.0	4,400.0	13,717.8	5,546.1	7.7	199.7	-135.92	-342.6	-331.8	1,154.3	1,064.1	90.22	12.794		
4,500.0	4,500.0	13,716.8	5,546.1	7.8	199.7	-28.17	-341.9	-332.5	1,063.9	856.7	207.18	5.135		
4,600.0	4,599.3	13,711.2	5,546.2	8.0	199.6	-39.55	-337.9	-336.5	971.4	768.4	203.01	4.785		
4,700.0	4,695.6	13,699.0	5,546.3	8.2	199.3	-59.08	-329.3	-345.1	875.9	696.7	179.16	4.889		
4,800.0	4,786.7	13,680.5	5,546.4	8.5	198.9	-90.44	-316.2	-358.1	778.8	667.5	111.30	6.998		
4,900.0	4,873.3	13,662.1	5,546.6	8.9	198.5	-74.64	-303.1	-371.1	680.8	567.3	113.53	5.997		
5,000.0	4,960.9	13,658.6	5,546.6	9.3	198.4	40.10	-300.6	-373.5	581.1	437.6	143.58	4.047		
5,100.0	5,047.8	13,670.9	5,546.5	9.8	198.7	89.90	-309.4	-364.8	482.3	406.8	75.49	6.388		
5,200.0	5,131.7	13,698.8	5,546.3	10.3	199.3	108.13	-329.2	-345.2	386.7	312.0	74.72	5.175		
5,300.0	5,210.6	13,741.4	5,545.9	10.8	200.2	118.34	-359.4	-315.2	296.9	210.4	86.53	3.431		
5,400.0	5,282.4	13,797.8	5,545.4	11.4	201.4	123.51	-399.4	-275.4	215.4	111.0	104.38	2.063		
5,500.0	5,345.5	13,866.5	5,544.8	12.2	202.9	123.93	-448.1	-227.0	144.5	16.0	128.56	1.124 Level 2		
5,600.0	5,398.1	13,914.8	5,544.4	13.1	203.9	122.68	-482.4	-193.0	92.6	-58.4	151.03	0.613 Level 1		
5,614.9	5,404.9	13,914.8	5,544.4	13.2	203.9	123.11	-482.4	-193.0	91.3	-61.2	152.42	0.599 Level 1, CC, ES, SF		
5,700.0	5,439.0	13,914.8	5,544.4	14.1	203.9	123.09	-482.4	-193.0	128.5	-35.7	164.27	0.782 Level 1		
5,800.0	5,467.1	13,914.8	5,544.4	15.3	203.9	114.99	-482.4	-193.0	216.4	26.7	189.70	1.141 Level 2		
5,900.0	5,481.7	13,914.8	5,544.4	16.6	203.9	78.08	-482.4	-193.0	314.3	101.9	212.44	1.480 Level 3		
6,000.0	5,483.7	13,914.8	5,544.4	18.1	203.9	32.27	-482.4	-193.0	413.7	293.0	120.74	3.426		
6,100.0	5,483.2	13,914.8	5,544.4	19.6	203.9	32.27	-482.4	-193.0	513.3	391.6	121.63	4.220		
6,200.0	5,482.6	13,914.8	5,544.4	21.3	203.9	32.27	-482.4	-193.0	613.0	490.4	122.57	5.001		
6,300.0	5,482.1	13,914.8	5,544.4	23.0	203.9	32.27	-482.4	-193.0	712.7	589.2	123.54	5.770		
6,400.0	5,481.6	13,914.8	5,544.4	24.8	203.9	32.27	-482.4	-193.0	812.6	688.1	124.53	6.525		
6,500.0	5,481.1	13,914.8	5,544.4	26.7	203.9	32.27	-482.4	-193.0	912.5	786.9	125.55	7.268		
6,600.0	5,480.6	13,914.8	5,544.4	28.6	203.9	32.27	-482.4	-193.0	1,012.4	885.8	126.59	7.997		
6,700.0	5,480.0	13,914.8	5,544.4	30.5	203.9	32.27	-482.4	-193.0	1,112.3	984.6	127.64	8.714		
6,800.0	5,479.5	13,914.8	5,544.4	32.5	203.9	32.27	-482.4	-193.0	1,212.2	1,083.5	128.70	9.419		
6,900.0	5,479.0	13,914.8	5,544.4	34.5	203.9	32.27	-482.4	-193.0	1,312.1	1,182.4	129.77	10.111		
7,000.0	5,478.5	13,914.8	5,544.4	36.5	203.9	32.27	-482.4	-193.0	1,412.1	1,281.2	130.86	10.791		

Anticollision Report

Company: EnCana Oil & Gas (USA) Inc
Project: Sandoval County, NM
Reference Site: S24-T23N-R6W
Site Error: 0.0ft
Reference Well: GCU M24-2306 01H
Well Error: 0.0ft
Reference Wellbore: HZ
Reference Design: Plan #1

Local Co-ordinate Reference: Well GCU M24-2306 01H
TVD Reference: 16' KB @ 6895.0ft
MD Reference: 16' KB @ 6895.0ft
North Reference: True
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: USA EDM 5000 Multi Users DB
Offset TVD Reference: Offset Datum

Offset Design S15-T23N-R6W - GCU O15-2306 02H - HZ - Plan #2													Offset Site Error:	0.0 ft
Survey Program: 0-Geolink MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
4,200.0	4,200.0	13,733.4	5,562.1	7.3	199.7	-136.14	-344.0	-330.5	1,353.9	1,264.7	89.17	15.183		
4,300.0	4,300.0	13,732.6	5,562.1	7.5	199.7	-136.04	-343.3	-331.1	1,260.8	1,171.1	89.66	14.062		
4,400.0	4,400.0	13,731.7	5,562.1	7.7	199.7	-135.93	-342.7	-331.7	1,168.8	1,078.7	90.15	12.965		
4,500.0	4,500.0	13,730.7	5,562.1	7.8	199.6	-28.22	-342.0	-332.4	1,078.2	871.0	207.16	5.205		
4,600.0	4,599.3	13,725.1	5,562.1	8.0	199.5	-39.91	-338.0	-336.4	985.4	782.6	202.80	4.859		
4,700.0	4,695.6	13,712.9	5,562.3	8.2	199.3	-60.29	-329.4	-345.0	889.7	712.4	177.33	5.017		
4,800.0	4,786.7	13,694.5	5,562.4	8.5	198.9	-92.91	-316.3	-358.0	792.5	687.6	104.87	7.557		
4,900.0	4,873.3	13,676.0	5,562.6	8.9	198.5	-79.79	-303.2	-371.0	694.4	593.8	100.66	6.899		
5,000.0	4,960.9	13,672.5	5,562.6	9.3	198.4	47.02	-300.7	-373.4	594.7	465.0	129.64	4.587		
5,100.0	5,047.8	13,684.9	5,562.5	9.8	198.7	94.39	-309.5	-364.7	495.7	432.1	63.60	7.794		
5,200.0	5,131.7	13,712.7	5,562.3	10.3	199.3	111.59	-329.3	-345.1	400.0	334.5	65.53	6.104		
5,300.0	5,210.6	13,755.4	5,561.9	10.8	200.2	121.70	-359.5	-315.1	310.0	232.5	77.50	4.000		
5,400.0	5,282.4	13,811.8	5,561.4	11.4	201.4	127.37	-399.5	-275.3	228.0	134.0	94.02	2.426		
5,500.0	5,345.5	13,880.4	5,560.8	12.2	202.8	129.17	-448.2	-226.9	156.4	41.4	115.00	1.360 Level 3		
5,600.0	5,398.1	13,928.6	5,560.4	13.1	203.9	129.54	-482.4	-193.0	102.3	-32.0	134.29	0.762 Level 1		
5,621.1	5,407.7	13,928.6	5,560.4	13.3	203.9	130.14	-482.4	-193.0	99.8	-36.5	136.30	0.732 Level 1, CC, ES, SF		
5,700.0	5,439.0	13,928.6	5,560.4	14.1	203.9	130.73	-482.4	-193.0	130.8	-15.5	146.32	0.894 Level 1		
5,800.0	5,467.1	13,928.6	5,560.4	15.3	203.9	126.21	-482.4	-193.0	215.7	47.9	167.84	1.285 Level 3		
5,900.0	5,481.7	13,928.6	5,560.4	16.6	203.9	101.45	-482.4	-193.0	313.1	101.1	211.93	1.477 Level 3		
6,000.0	5,483.7	13,928.6	5,560.4	18.1	203.9	48.34	-482.4	-193.0	412.7	247.3	165.41	2.495		
6,100.0	5,483.2	13,928.6	5,560.4	19.6	203.9	48.34	-482.4	-193.0	512.5	345.8	166.69	3.074		
6,200.0	5,482.6	13,928.6	5,560.4	21.3	203.9	48.34	-482.4	-193.0	612.3	444.3	168.02	3.644		
6,300.0	5,482.1	13,928.6	5,560.4	23.0	203.9	48.34	-482.4	-193.0	712.2	542.8	169.40	4.204		
6,400.0	5,481.6	13,928.6	5,560.4	24.8	203.9	48.34	-482.4	-193.0	812.1	641.3	170.82	4.754		
6,500.0	5,481.1	13,928.6	5,560.4	26.7	203.9	48.34	-482.4	-193.0	912.0	739.8	172.26	5.294		
6,600.0	5,480.6	13,928.6	5,560.4	28.6	203.9	48.34	-482.4	-193.0	1,012.0	838.3	173.73	5.825		
6,700.0	5,480.0	13,928.6	5,560.4	30.5	203.9	48.34	-482.4	-193.0	1,112.0	936.7	175.22	6.346		
6,800.0	5,479.5	13,928.6	5,560.4	32.5	203.9	48.34	-482.4	-193.0	1,211.9	1,035.2	176.72	6.858		
6,900.0	5,479.0	13,928.6	5,560.4	34.5	203.9	48.34	-482.4	-193.0	1,311.9	1,133.7	178.23	7.360		
7,000.0	5,478.5	13,928.6	5,560.4	36.5	203.9	48.34	-482.4	-193.0	1,411.9	1,232.1	179.76	7.854		

Anticollision Report

Company: EnCana Oil & Gas (USA) Inc
Project: Sandoval County, NM
Reference Site: S24-T23N-R6W
Site Error: 0.0ft
Reference Well: GCU M24-2306 01H
Well Error: 0.0ft
Reference Wellbore: HZ
Reference Design: Plan #1

Local Co-ordinate Reference: Well GCU M24-2306 01H
TVD Reference: 16' KB @ 6895.0ft
MD Reference: 16' KB @ 6895.0ft
North Reference: True
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: USA EDM 5000 Multi Users DB
Offset TVD Reference: Offset Datum

Offset Design S24-T23N-R6W - GCU M24-2306 02H - HZ - Plan #1													Offset Site Error:	0.0 ft
Survey Program: 0-Geolink MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning	
0.0	0.0	0.0	0.0	0.0	0.0	150.28	-25.8	14.8	29.8					
100.0	100.0	100.0	100.0	0.1	0.1	150.28	-25.8	14.8	29.8	29.5	0.29	101.504		
200.0	200.0	200.0	200.0	0.3	0.3	150.28	-25.8	14.8	29.8	29.1	0.64	46.339		
300.0	300.0	300.0	300.0	0.5	0.5	150.28	-25.8	14.8	29.8	28.8	0.99	30.022		
400.0	400.0	400.0	400.0	0.7	0.7	150.28	-25.8	14.8	29.8	28.4	1.34	22.204		
500.0	500.0	500.0	500.0	0.8	0.8	150.28	-25.8	14.8	29.8	28.1	1.69	17.616		
600.0	600.0	600.0	600.0	1.0	1.0	150.28	-25.8	14.8	29.8	27.7	2.04	14.600		
700.0	700.0	700.0	700.0	1.2	1.2	150.28	-25.8	14.8	29.8	27.4	2.39	12.465		
800.0	800.0	800.0	800.0	1.4	1.4	150.28	-25.8	14.8	29.8	27.0	2.74	10.875		
900.0	900.0	900.0	900.0	1.5	1.5	150.28	-25.8	14.8	29.8	26.7	3.09	9.645		
1,000.0	1,000.0	1,000.0	1,000.0	1.7	1.7	150.28	-25.8	14.8	29.8	26.3	3.43	8.665		
1,100.0	1,100.0	1,100.0	1,100.0	1.9	1.9	150.28	-25.8	14.8	29.8	26.0	3.78	7.866		
1,200.0	1,200.0	1,200.0	1,200.0	2.1	2.1	150.28	-25.8	14.8	29.8	25.6	4.13	7.201		
1,300.0	1,300.0	1,300.0	1,300.0	2.2	2.2	150.28	-25.8	14.8	29.8	25.3	4.48	6.640		
1,400.0	1,400.0	1,400.0	1,400.0	2.4	2.4	150.28	-25.8	14.8	29.8	24.9	4.83	6.161		
1,500.0	1,500.0	1,500.0	1,500.0	2.6	2.6	150.28	-25.8	14.8	29.8	24.6	5.18	5.745		
1,600.0	1,600.0	1,600.0	1,600.0	2.8	2.8	150.28	-25.8	14.8	29.8	24.2	5.53	5.383		
1,700.0	1,700.0	1,700.0	1,700.0	2.9	2.9	150.28	-25.8	14.8	29.8	23.9	5.88	5.063		
1,800.0	1,800.0	1,800.0	1,800.0	3.1	3.1	150.28	-25.8	14.8	29.8	23.5	6.23	4.779		
1,900.0	1,900.0	1,900.0	1,900.0	3.3	3.3	150.28	-25.8	14.8	29.8	23.2	6.58	4.526		
2,000.0	2,000.0	2,000.0	2,000.0	3.5	3.5	150.28	-25.8	14.8	29.8	22.8	6.93	4.298		
2,100.0	2,100.0	2,100.0	2,100.0	3.6	3.6	150.28	-25.8	14.8	29.8	22.5	7.27	4.091		
2,200.0	2,200.0	2,200.0	2,200.0	3.8	3.8	150.28	-25.8	14.8	29.8	22.1	7.62	3.904		
2,300.0	2,300.0	2,300.0	2,300.0	4.0	4.0	150.28	-25.8	14.8	29.8	21.8	7.97	3.733		
2,400.0	2,400.0	2,400.0	2,400.0	4.2	4.2	150.28	-25.8	14.8	29.8	21.4	8.32	3.576		
2,500.0	2,500.0	2,500.0	2,500.0	4.3	4.3	150.28	-25.8	14.8	29.8	21.1	8.67	3.432		
2,600.0	2,600.0	2,600.0	2,600.0	4.5	4.5	150.28	-25.8	14.8	29.8	20.7	9.02	3.300		
2,700.0	2,700.0	2,700.0	2,700.0	4.7	4.7	150.28	-25.8	14.8	29.8	20.4	9.37	3.177		
2,800.0	2,800.0	2,800.0	2,800.0	4.9	4.9	150.28	-25.8	14.8	29.8	20.0	9.72	3.063		
2,900.0	2,900.0	2,900.0	2,900.0	5.0	5.0	150.28	-25.8	14.8	29.8	19.7	10.07	2.956		
3,000.0	3,000.0	3,000.0	3,000.0	5.2	5.2	150.28	-25.8	14.8	29.8	19.3	10.42	2.857		
3,100.0	3,100.0	3,100.0	3,100.0	5.4	5.4	150.28	-25.8	14.8	29.8	19.0	10.77	2.765		
3,200.0	3,200.0	3,200.0	3,200.0	5.6	5.6	150.28	-25.8	14.8	29.8	18.6	11.11	2.678		
3,300.0	3,300.0	3,300.0	3,300.0	5.7	5.7	150.28	-25.8	14.8	29.8	18.3	11.46	2.596		
3,400.0	3,400.0	3,400.0	3,400.0	5.9	5.9	150.28	-25.8	14.8	29.8	18.0	11.81	2.520		
3,500.0	3,500.0	3,500.0	3,500.0	6.1	6.1	150.28	-25.8	14.8	29.8	17.6	12.16	2.447		
3,600.0	3,600.0	3,600.3	3,600.3	6.3	6.3	146.82	-24.4	16.0	29.2	16.7	12.51	2.334		
3,700.0	3,700.0	3,700.4	3,700.2	6.4	6.4	135.85	-20.2	19.6	28.2	15.3	12.86	2.192		
3,730.1	3,730.1	3,730.4	3,730.1	6.5	6.5	130.97	-18.4	21.2	28.1	15.1	12.97	2.166 CC, ES, SF		
3,800.0	3,800.0	3,799.9	3,799.2	6.6	6.6	117.31	-13.3	25.7	28.9	15.7	13.21	2.189		
3,900.0	3,900.0	3,898.5	3,897.1	6.8	6.8	96.09	-3.6	34.0	34.4	20.8	13.56	2.535		
4,000.0	4,000.0	3,996.1	3,993.3	7.0	7.0	79.16	8.5	44.6	45.9	32.0	13.92	3.299		
4,100.0	4,100.0	4,092.5	4,087.7	7.1	7.2	68.01	23.1	57.3	63.0	48.7	14.30	4.405		
4,200.0	4,200.0	4,187.3	4,179.8	7.3	7.5	60.93	40.0	71.9	84.7	70.0	14.71	5.760		
4,300.0	4,300.0	4,280.4	4,269.5	7.5	7.8	56.31	58.9	88.3	110.5	95.3	15.14	7.294		
4,400.0	4,400.0	4,371.6	4,356.4	7.7	8.1	53.17	79.7	106.4	139.9	124.3	15.61	8.961		
4,500.0	4,500.0	4,460.7	4,440.4	7.8	8.4	160.10	102.1	125.9	173.0	157.4	15.59	11.091		
4,600.0	4,599.3	4,543.8	4,517.8	8.0	8.8	157.91	124.9	145.7	218.2	202.5	15.72	13.880		
4,700.0	4,695.6	4,616.9	4,585.2	8.2	9.2	156.17	146.5	164.4	278.2	262.6	15.62	17.810		
4,800.0	4,786.7	4,678.0	4,640.8	8.5	9.5	153.90	165.5	180.9	350.9	335.5	15.37	22.832		
4,900.0	4,873.3	4,729.3	4,687.1	8.9	9.8	174.25	182.2	195.5	431.7	416.4	15.38	28.076		
5,000.0	4,960.9	4,777.9	4,730.5	9.3	10.1	-158.47	198.7	209.8	513.2	497.2	16.03	32.017		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well GCU M24-2306 01H
Project:	Sandoval County, NM	TVD Reference:	16' KB @ 6895.0ft
Reference Site:	S24-T23N-R6W	MD Reference:	16' KB @ 6895.0ft
Site Error:	0.0ft	North Reference:	True
Reference Well:	GCU M24-2306 01H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design S24-T23N-R6W - GCU M24-2306 02H - HZ - Plan #1														Offset Site Error:	0.0 ft
Survey Program: 0-Geolink MWD														Offset Well Error:	0.0 ft
Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N-S (ft)	Offset Wellbore Centre +E-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning	
5,100.0	5,047.8	4,828.5	4,775.4	9.8	10.4	-134.90		216.4	225.1	593.6	576.6	17.03	34.848		
5,200.0	5,131.7	4,880.6	4,821.5	10.3	10.7	-116.51		234.6	240.9	671.6	653.5	18.11	37.094		
5,300.0	5,210.6	4,929.0	4,864.4	10.8	11.1	-102.56		251.6	255.6	746.9	727.8	19.11	39.073		
5,400.0	5,282.4	4,972.4	4,902.9	11.4	11.4	-91.95		266.8	268.8	819.3	799.3	20.00	40.960		
5,500.0	5,345.5	5,009.8	4,936.0	12.2	11.6	-83.66		279.8	280.2	888.9	868.1	20.73	42.872		
5,600.0	5,398.1	5,040.2	4,962.9	13.1	11.8	-76.99		290.5	289.5	955.3	934.0	21.29	44.878		
5,700.0	5,439.0	5,063.8	4,983.8	14.1	12.0	-71.54		298.8	296.6	1,018.3	996.7	21.67	47.000		
5,800.0	5,467.1	5,116.5	5,030.6	15.3	12.4	-69.37		315.4	314.5	1,077.4	1,055.2	22.15	48.635		
5,900.0	5,481.7	5,253.3	5,149.5	16.6	13.3	-72.83		342.0	376.0	1,131.2	1,108.0	23.28	48.589		
6,000.0	5,483.7	6,022.7	5,504.9	18.1	21.4	-91.05		59.4	926.6	1,154.3	1,121.4	32.92	35.066		
6,100.0	5,483.2	6,122.7	5,504.2	19.6	22.8	-91.04		-11.1	997.5	1,155.2	1,118.8	36.45	31.692		
6,200.0	5,482.6	6,222.7	5,503.5	21.3	24.4	-91.03		-81.6	1,068.4	1,156.1	1,115.9	40.18	28.773		
6,300.0	5,482.1	6,322.7	5,502.8	23.0	26.0	-91.02		-152.1	1,139.3	1,157.0	1,113.0	44.00	26.293		
6,400.0	5,481.6	6,422.7	5,502.1	24.8	27.8	-91.01		-222.6	1,210.2	1,157.8	1,109.9	47.90	24.171		
6,500.0	5,481.1	6,522.7	5,501.4	26.7	29.5	-91.00		-293.1	1,281.1	1,158.7	1,106.9	51.86	22.342		
6,600.0	5,480.6	6,622.7	5,500.7	28.6	31.3	-90.99		-363.6	1,352.0	1,159.6	1,103.7	55.87	20.755		
6,700.0	5,480.0	6,722.7	5,500.0	30.5	33.2	-90.98		-434.2	1,422.9	1,160.5	1,100.6	59.92	19.368		
6,800.0	5,479.5	6,822.7	5,499.3	32.5	35.1	-90.97		-504.7	1,493.9	1,161.3	1,097.4	64.00	18.147		
6,900.0	5,479.0	6,922.7	5,498.6	34.5	37.0	-90.97		-575.2	1,564.8	1,162.2	1,094.1	68.10	17.066		
7,000.0	5,478.5	7,022.7	5,497.9	36.5	39.0	-90.96		-645.7	1,635.7	1,163.1	1,090.9	72.22	16.104		
7,100.0	5,477.9	7,122.7	5,497.2	38.5	40.9	-90.95		-716.2	1,706.6	1,164.0	1,087.6	76.37	15.242		
7,200.0	5,477.4	7,222.7	5,496.5	40.5	42.9	-90.94		-786.7	1,777.5	1,164.9	1,084.3	80.53	14.466		
7,300.0	5,476.9	7,322.7	5,495.8	42.6	44.9	-90.93		-857.2	1,848.4	1,165.7	1,081.0	84.70	13.764		
7,400.0	5,476.4	7,422.7	5,495.1	44.6	46.9	-90.92		-927.7	1,919.3	1,166.6	1,077.7	88.88	13.126		
7,500.0	5,475.8	7,522.7	5,494.4	46.7	49.0	-90.91		-998.2	1,990.2	1,167.5	1,074.4	93.07	12.544		
7,600.0	5,475.3	7,622.7	5,493.7	48.7	51.0	-90.90		-1,068.7	2,061.1	1,168.4	1,071.1	97.27	12.012		
7,700.0	5,474.8	7,722.7	5,493.0	50.8	53.0	-90.89		-1,139.2	2,132.0	1,169.2	1,067.8	101.48	11.522		
7,800.0	5,474.3	7,822.7	5,492.3	52.9	55.1	-90.88		-1,209.7	2,203.0	1,170.1	1,064.4	105.69	11.071		
7,900.0	5,473.7	7,922.7	5,491.6	54.9	57.1	-90.87		-1,280.2	2,273.9	1,171.0	1,061.1	109.91	10.654		
8,000.0	5,473.2	8,022.7	5,490.9	57.0	59.2	-90.86		-1,350.7	2,344.8	1,171.9	1,057.7	114.13	10.268		
8,100.0	5,472.7	8,122.7	5,490.2	59.1	61.3	-90.85		-1,421.2	2,415.7	1,172.7	1,054.4	118.36	9.908		
8,200.0	5,472.2	8,222.6	5,489.5	61.2	63.3	-90.84		-1,491.7	2,486.6	1,173.6	1,051.0	122.59	9.573		
8,300.0	5,471.7	8,322.6	5,488.8	63.3	65.4	-90.84		-1,562.2	2,557.5	1,174.5	1,047.7	126.83	9.260		
8,400.0	5,471.1	8,422.6	5,488.1	65.4	67.5	-90.83		-1,632.7	2,628.4	1,175.4	1,044.3	131.07	8.968		
8,500.0	5,470.6	8,522.6	5,487.4	67.5	69.6	-90.82		-1,703.2	2,699.3	1,176.3	1,040.9	135.31	8.693		
8,600.0	5,470.1	8,622.6	5,486.7	69.6	71.7	-90.81		-1,773.7	2,770.2	1,177.1	1,037.6	139.56	8.435		
8,700.0	5,469.6	8,722.6	5,486.1	71.7	73.8	-90.80		-1,844.2	2,841.1	1,178.0	1,034.2	143.81	8.192		
8,800.0	5,469.0	8,822.6	5,485.4	73.8	75.9	-90.79		-1,914.7	2,912.1	1,178.9	1,030.8	148.06	7.962		
8,900.0	5,468.5	8,922.6	5,484.7	75.9	78.0	-90.78		-1,985.2	2,983.0	1,179.8	1,027.5	152.31	7.746		
9,000.0	5,468.0	9,022.6	5,484.0	78.1	80.1	-90.77		-2,055.7	3,053.9	1,180.6	1,024.1	156.56	7.541		
9,100.0	5,467.5	9,122.6	5,483.3	80.2	82.2	-90.76		-2,126.2	3,124.8	1,181.5	1,020.7	160.82	7.347		
9,200.0	5,466.9	9,222.6	5,482.6	82.3	84.3	-90.75		-2,196.7	3,195.7	1,182.4	1,017.3	165.08	7.163		
9,300.0	5,466.4	9,322.6	5,481.9	84.4	86.4	-90.74		-2,267.2	3,266.6	1,183.3	1,013.9	169.33	6.988		
9,400.0	5,465.9	9,422.6	5,481.2	86.5	88.5	-90.74		-2,337.7	3,337.5	1,184.1	1,010.5	173.59	6.821		
9,500.0	5,465.4	9,522.6	5,480.5	88.6	90.6	-90.73		-2,408.2	3,408.4	1,185.0	1,007.2	177.86	6.663		
9,600.0	5,464.9	9,622.6	5,479.8	90.8	92.7	-90.72		-2,478.7	3,479.3	1,185.9	1,003.8	182.12	6.512		
9,700.0	5,464.3	9,722.6	5,479.1	92.9	94.9	-90.71		-2,549.2	3,550.3	1,186.8	1,000.4	186.38	6.367		
9,800.0	5,463.8	9,822.6	5,478.4	95.0	97.0	-90.70		-2,619.7	3,621.2	1,187.7	997.0	190.65	6.230		
9,900.0	5,463.3	9,922.6	5,477.7	97.1	99.1	-90.69		-2,690.2	3,692.1	1,188.5	993.6	194.91	6.098		
10,000.0	5,462.8	10,022.6	5,477.0	99.2	101.2	-90.68		-2,760.7	3,763.0	1,189.4	990.2	199.18	5.971		
10,100.0	5,462.2	10,122.6	5,476.3	101.4	103.3	-90.67		-2,831.2	3,833.9	1,190.3	986.8	203.45	5.851		
10,200.0	5,461.7	10,222.6	5,475.6	103.5	105.4	-90.66		-2,901.7	3,904.8	1,191.2	983.4	207.72	5.735		

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well GCU M24-2306 01H
Project:	Sandoval County, NM	TVD Reference:	16' KB @ 6895.0ft
Reference Site:	S24-T23N-R6W	MD Reference:	16' KB @ 6895.0ft
Site Error:	0.0ft	North Reference:	True
Reference Well:	GCU M24-2306 01H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design S24-T23N-R6W - GCU M24-2306 02H - HZ - Plan #1													Offset Site Error:	0.0 ft
Survey Program: 0-Geolink MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Total Uncertainty Axis	Separation Factor	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		+N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)				
10,300.0	5,461.2	10,322.6	5,474.9	105.6	107.6	-90.66	-2,972.2	3,975.7	1,192.0	980.1	211.99	5.623		
10,400.0	5,460.7	10,422.6	5,474.2	107.7	109.7	-90.65	-3,042.7	4,046.6	1,192.9	976.7	216.26	5.516		
10,500.0	5,460.1	10,522.6	5,473.5	109.9	111.8	-90.64	-3,113.2	4,117.5	1,193.8	973.3	220.53	5.413		
10,600.0	5,459.6	10,622.6	5,472.8	112.0	113.9	-90.63	-3,183.7	4,188.4	1,194.7	969.9	224.80	5.314		
10,700.0	5,459.1	10,722.5	5,472.1	114.1	116.1	-90.62	-3,254.2	4,259.4	1,195.5	966.5	229.07	5.219		
10,800.0	5,458.6	10,822.5	5,471.4	116.2	118.2	-90.61	-3,324.7	4,330.3	1,196.4	963.1	233.34	5.127		
10,900.0	5,458.1	10,922.5	5,470.7	118.4	120.3	-90.60	-3,395.2	4,401.2	1,197.3	959.7	237.62	5.039		
11,000.0	5,457.5	11,022.5	5,470.0	120.5	122.5	-90.59	-3,465.7	4,472.1	1,198.2	956.3	241.89	4.953		
11,100.0	5,457.0	11,122.5	5,469.3	122.6	124.6	-90.58	-3,536.2	4,543.0	1,199.1	952.9	246.16	4.871		
11,200.0	5,456.5	11,222.5	5,468.6	124.8	126.7	-90.58	-3,606.7	4,613.9	1,199.9	949.5	250.44	4.791		
11,300.0	5,456.0	11,224.1	5,468.6	126.9	126.7	-90.58	-3,607.9	4,615.0	1,204.8	952.2	252.61	4.770		
11,400.0	5,455.4	11,224.1	5,468.6	129.0	126.7	-90.58	-3,607.9	4,615.0	1,218.0	963.2	254.74	4.781		
11,500.0	5,454.9	11,224.1	5,468.6	131.2	126.7	-90.58	-3,607.9	4,615.0	1,239.0	982.2	256.87	4.823		
11,600.0	5,454.4	11,224.1	5,468.6	133.3	126.7	-90.58	-3,607.9	4,615.0	1,267.7	1,008.7	259.01	4.894		
11,700.0	5,453.9	11,224.1	5,468.6	135.4	126.7	-90.58	-3,607.9	4,615.0	1,303.4	1,042.2	261.14	4.991		
11,800.0	5,453.3	11,224.1	5,468.6	137.5	126.7	-90.58	-3,607.9	4,615.0	1,345.6	1,082.3	263.28	5.111		
11,900.0	5,452.8	11,224.1	5,468.6	139.7	126.7	-90.58	-3,607.9	4,615.0	1,393.7	1,128.3	265.41	5.251		

Anticollision Report

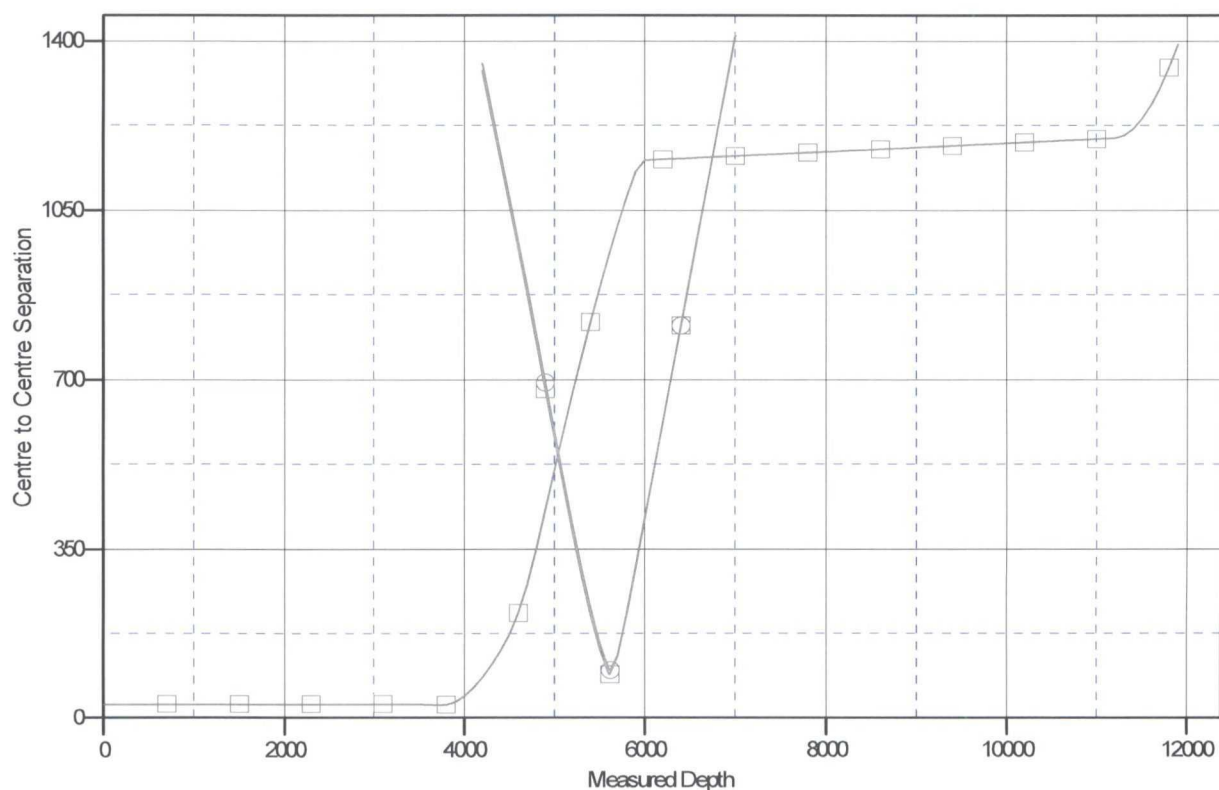
Company: EnCana Oil & Gas (USA) Inc
Project: Sandoval County, NM
Reference Site: S24-T23N-R6W
Site Error: 0.0ft
Reference Well: GCU M24-2306 01H
Well Error: 0.0ft
Reference Wellbore: HZ
Reference Design: Plan #1

Local Co-ordinate Reference: Well GCU M24-2306 01H
TVD Reference: 16' KB @ 6895.0ft
MD Reference: 16' KB @ 6895.0ft
North Reference: True
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: USA EDM 5000 Multi Users DB
Offset TVD Reference: Offset Datum

Reference Depths are relative to 16' KB @ 6895.0ft
 Offset Depths are relative to Offset Datum
 Central Meridian is -106.250000 °

Coordinates are relative to: GCU M24-2306 01H
 Coordinate System is US State Plane 1983, New Mexico Central Zone
 Grid Convergence at Surface is: -0.70°

Ladder Plot



LEGEND

GCU O15-2306 02H, HZ, Plan #1 V0
 GCU O15-2306 02H, HZ, Plan #2 V0
 GCU M24-2306 02H, HZ, Plan #1 V0

Gallo Canyon Unit M24-2306 01H
SHL: SWSW Section 24, T23N, R6W
140 FSL and 305 FWL
BHL: SESE Section 25, T23N, R6W
180 FSL and 330 FEL
Sandoval County, New Mexico
Lease Number: NMNM 131017X

2. A 30' x 50' silt trap will be installed at STA 2+04.58 to STA 2+54.64 for erosion control.

7. METHODS FOR HANDLING WASTE



A. Cuttings

1. A closed-loop system will be used. Cuttings will be moved through a shaker system on the drill rig that separates drilling fluids from the cuttings. Cuttings will be stored onsite in above-ground storage tanks. Cuttings will be pulled from the storage tanks, mixed with saw dust or similar absorbent material, and disposed of at the Envirotech, Inc. and/or Industrial Ecosystem, Inc. waste disposal facilities.
2. The closed-loop system storage tanks will be adequately sized to ensure confinement of all fluids and will provide sufficient freeboard to prevent uncontrolled releases.
3. A 20-mil liner will be installed under tanks, pumps, ancillary facilities, and truck loading/unloading areas associated with the closed-loop system.

B. Drilling Fluids

1. A closed-loop system will be used. Drilling fluids will be stored onsite in above-ground storage tanks. Upon termination of drilling operations, the drilling fluids will be recycled and transferred to other permitted closed-loop systems or returned to the vendor for reuse, as practical. Residual fluids will be vacuumed from the storage tanks and disposed of at Basin Disposal, Inc. and/or Industrial Ecosystem, Inc. waste disposal facilities.
2. The closed-loop system storage tanks will be adequately sized to ensure confinement of all fluids and will provide sufficient freeboard to prevent uncontrolled releases.
3. The closed-loop system storage tanks will be placed in bermed secondary containment sized to accommodate a minimum of 110 percent of the volume of the largest storage tank.
4. A 20-mil liner will be installed under tanks, pumps, ancillary facilities, and truck loading/unloading areas associated with the closed-loop system.

C. Flowback Water

1. The water-based solution that flows back to the surface during and after completion operations will be placed in storage tanks on the location.
2. Flowback water will be confined to a storage tank for a period not to exceed 90 days after initial production and will be disposed of at Basin Disposal, Inc. and/or Industrial Ecosystem, Inc. waste disposal facilities.

D. Spills – any spills of non-freshwater fluids will be immediately cleaned up and removed to an approved disposal site. Encana will also notify the BLM within 24 hours of any spill.

E. Sewage – self-contained, chemical toilets will be provided for human waste disposal. The toilet holding tanks will be pumped, as needed, and the contents thereof disposed of in an approved sewage disposal facility. The toilets will be onsite during all operations.

F. Garbage and other waste material – garbage, trash and other waste materials will be collected in a portable, self-contained and fully-enclosed trash container during drilling and completion

ENCANA OIL & GAS (USA) INC.

GALLO CANYON UNIT M24-2306 #01H

140' FSL & 305' FWL

LOCATED IN THE SW/4 SW/4 OF SECTION 24, T23N, R6W, N.M.P.M.,
SANDOVAL COUNTY, NEW MEXICO

DIRECTIONS

- 1) FROM THE INTERSECTION OF HWY 64 & HWY 550 IN BLOOMFIELD, GO SOUTH ON HWY 550, 56.5 MILES (M.P. 95.1) .
- 2) TURN LEFT ONTO DIRT ROAD AND GO 0.3 MILES TO WHERE ACCESS IS STAKED ON LEFT SIDE OF ROAD.

WELL FLAG LOCATED AT LAT. 36.203767° N, LONG. 107.427837° W (NAD 83).



WELLHEAD BLOWOUT CONTROL SYSTEM

encana

Well Name and Number:
GCU M24-2306 01H

