

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: 8-14-14

Well information;

Operator Encana, Well Name and Number Gallo Canyon Unit P14 2306 # 2H

API# 30-039-31265, Section 14, 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 5.9 compliance
- ☒ 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
- ☒ 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.


NMOCD Approved by Signature

3-20-2015
Date

Form 3160-3
(August 2007)

MAR 04 2015

NMOC

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
APPLICATION FOR PERMIT TO DRILL OR REENTER

RECEIVED

AUG 15 2014

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

5. Lease Serial No.
NMNM 17009

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

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

8. Lease Name and Well No.
Gallo Canyon Unit P14-2306 02H

9. API Well No.

30-039-31265

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

11. Sec., T. R. M. or Blk. and Survey or Area
Section 14, T23N, R6W NMPM

12. County or Parish
Rio Arriba

13. State
NM

4. Location of Well (Report location clearly and in accordance with any State requirements.)
At surface 50' FSL and 645' FEL Section 14, T23N, R6W
At proposed prod. zone 40' FNL and 330' FEL Section 25, T23N, R6W

14. Distance in miles and direction from nearest town or post office*
+/- 57 miles southeast of the intersection of US Hwy 550 & US Hwy 64 in Bloomfield, 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 east lease line Section 25, T23N, R6W

16. No. of acres in lease
NMNM 17009 - 2,560 ac.

17. Spacing Unit dedicated to this well
5,120 acres - Sections 22-26 and 33-36

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.
Gallo Canyon Unit P14 01H is +/- 30' from SHL

19. Proposed Depth
5,545' TVD/13,073' MD

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

21. Elevations (Show whether DF, KDB, RT, GL, etc.)
6,856' GL, 6,872' KB

22. Approximate date work will start*
02/07/2015

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:

1. Well plat certified by a registered surveyor.
2. A Drilling Plan.
3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office).

4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
5. Operator certification
6. Such other site specific information and/or plans as may be required by the BLM.

25. Signature

Katie Wegner

Name (Printed/Typed)
Katie Wegner

Date

8/14/14

Title

Regulatory Analyst

Approved by (Signature)

AFM

Name (Printed/Typed)

Office

FFC

Date

2/27/15

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.

*(Instructions on page 2)

(Continued on page 2)
DRILLING OPERATIONS AUTHORIZED
ARE SUBJECT TO COMPLIANCE WITH
ATTACHED "GENERAL REQUIREMENTS"

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

NMOC

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
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

AUG 15 2014

Form C-102

Revised August 1, 2011

Submit one copy to

appropriate

District Office

AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-039-31265		² Pool Code 13379		³ Pool Name COUNSELORS GALLUP-DAKOTA	
⁴ Property Code 314241		⁶ Property Name GALLO CANYON UNIT P14-2306			⁵ Well Number 02H
⁷ OGRID No. 282327		⁸ Operator Name ENCANA OIL & GAS (USA) INC.			⁹ Elevation 6856

¹⁰ Surface Location

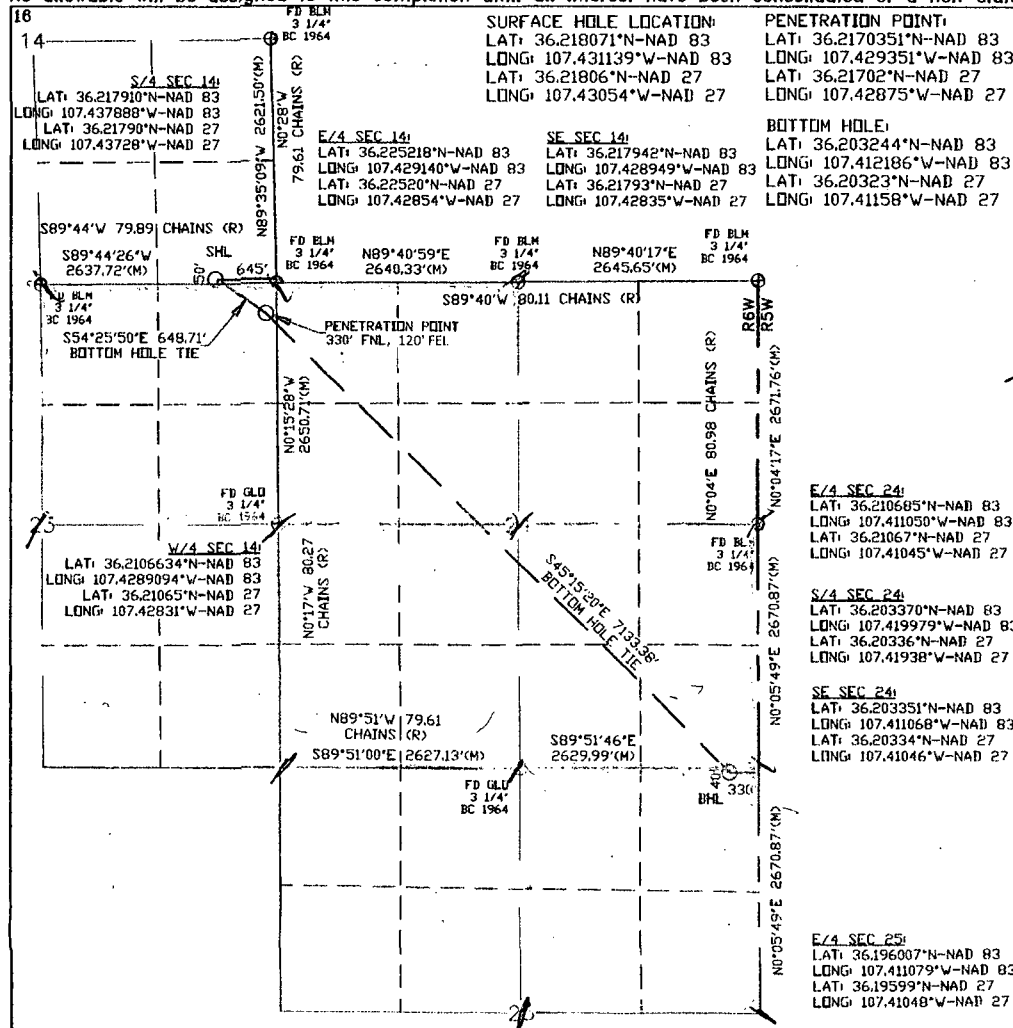
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
P	14	23-N	6-W		50'	SOUTH	645'	EAST	RIO ARriba

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
A	25	23-N	6-W		40'	NORTH	330'	EAST	SANDOVAL

¹² Dedicated Acres 5,120 Acres Sec. 22-26, 34-36 - Undivided Unit Penetrated Spacing Units: S2 & NW4 Sec 24; NE4 Sec 25; NW4 Sec 23 (800 acres)		¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ 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.



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.

Signature: *Katie Wegner* Date: *8/14/14*
Printed Name: Katie Wegner
E-mail Address: Katie.Wegner@encana.com

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.

OCT 7, 2013
Date of Survey
Signature and Seal of Professional Surveyor:
WILLIAM E. MAHNKE III
8466
REGISTERED SURVEYOR
Certificate Number: **ES100466**

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State of New Mexico
Energy, Minerals & Natural Resources Department
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

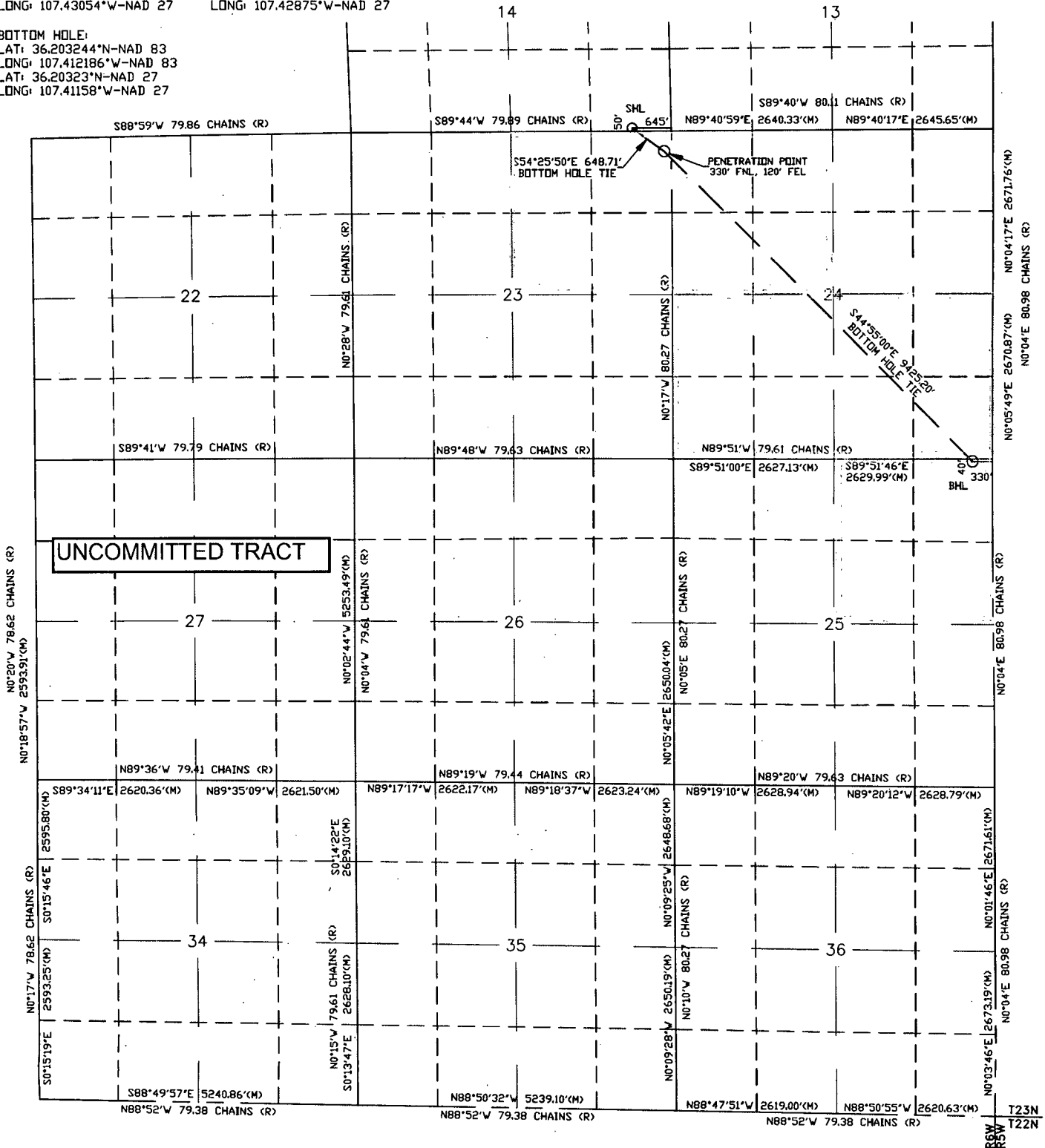
☐ AMENDED REPORT

SURFACE HOLE LOCATION:
LAT: 36.218071°N-NAD 83
LONG: 107.431139°W-NAD 83
LAT: 36.21806°N-NAD 27
LONG: 107.43054°W-NAD 27

PENETRATION POINT:
LAT: 36.2170351°N-NAD 83
LONG: 107.429351°W-NAD 83
LAT: 36.21702°N-NAD 27
LONG: 107.42875°W-NAD 27

ENCANA OIL & GAS (USA) INC.
GALLO CANYON UNIT P14-2306 02H

BOTTOM HOLE:
LAT: 36.203244°N-NAD 83
LONG: 107.412186°W-NAD 83
LAT: 36.20323°N-NAD 27
LONG: 107.41158°W-NAD 27



GCU P14-2306 02H

SHL: SE/4 SE/4 Sec 14 T23N R6W,
50' FSL, 645' FEL

BHL: NE/4 NE/4 Sec 25 T23N R6W,
40' FNL, 330' FEL

Rio Arriba, 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
Ojo Alamo	1,467
Kirtland Shale	1,648
Fruitland Coal	1,884
Pictured Cliffs Ss.	2,000
Lewis Shale	2,131
Cliffhouse Ss.	2,839
Menefee Fn.	3,551
Point Lookout Ss.	4,268
Mancos Shale	4,479
Mancos Silt	5,069
Gallup Fn.	5,307
Horizontal Target	5,558
Base Gallup	5,626

The referenced surface elevation is 6856', KB 6872'

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

Substance	Formation	Depth (TVD) units = feet
Water/Gas	Fruitland Coal	1,884
Oil/Gas	Pictured Cliffs Ss.	2,000
Oil/Gas	Cliffhouse Ss.	2,839
Gas	Menefee Fn.	3,551
Oil/Gas	Point Lookout Ss.	4,268
Oil/Gas	Mancos Shale	4,479
Oil/Gas	Mancos Silt	5,069
Oil/Gas	Gallup Fn.	5,307

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

3. PRESSURE CONTROL

- a) Pressure control equipment and configuration will be designed to meet 2M standards.
- b) Working pressure on rams and BOPE will be 3,000 psi.
- c) Function test and visual inspection of the BOP will be conducted daily and noted in the IADC Daily Drilling Report.
- d) The Annular BOP will be pressure tested to a minimum of 50 percent of its rated working pressure.

SHL: SE/4 SE/4 Sec 14 T23N R6W,
50' FSL, 645' FEL

BHL: NE/4 NE/4 Sec 25 T23N R6W,
40' FNL, 330' FEL

Rio Arriba, New Mexico

- 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
- 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'	30"	20"	94#	
Surface	0'-500'	12 1/4"	9 5/8"	36#	J55, STC New
Intermediate	0'-5942'	8 3/4"	7"	26#	J55, LTC New
Production Liner	5742'-13073'	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

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.

GCU P14-2306 02H

SHL: SE/4 SE/4 Sec 14 T23N R6W,
50' FSL, 645' FEL

BHL: NE/4 NE/4 Sec 25 T23N R6W,
40' FNL, 330' FEL

Rio Arriba, New Mexico

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'	247 sks	HALCEM™ SYSTEM + 2% CaCl ₂ + 0.125lbm/sk Poly-E- Flake. 15.8 ppg, 1.174 cuft/sk	Surface	1 per joint on bottom 3 joints
Intermediate	0'-5942'	100% open hole excess Stage 1 Lead: 700 sks Stage 1 Tail: 308 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	5742'- 13073'	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 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 2000'. Directional plans are attached.

Description	Proposed Depth (TVD/MD)	Formation
Horizontal Lateral TD	5545'/13073'	Gallup

6. DRILLING FLUIDS PROGRAM

a) Surface through Intermediate Casing Point:

GCU P14-2306 02H

SHL: SE/4 SE/4 Sec 14 T23N R6W,
50' FSL, 645' FEL

BHL: NE/4 NE/4 Sec 25 T23N R6W,
40' FNL, 330' FEL

Rio Arriba, New Mexico

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'-5607'/5942'	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"	5607'/5942'- 5545'/13073'	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 +/- 2601 psi based on a 9.0 ppg at 5558' 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

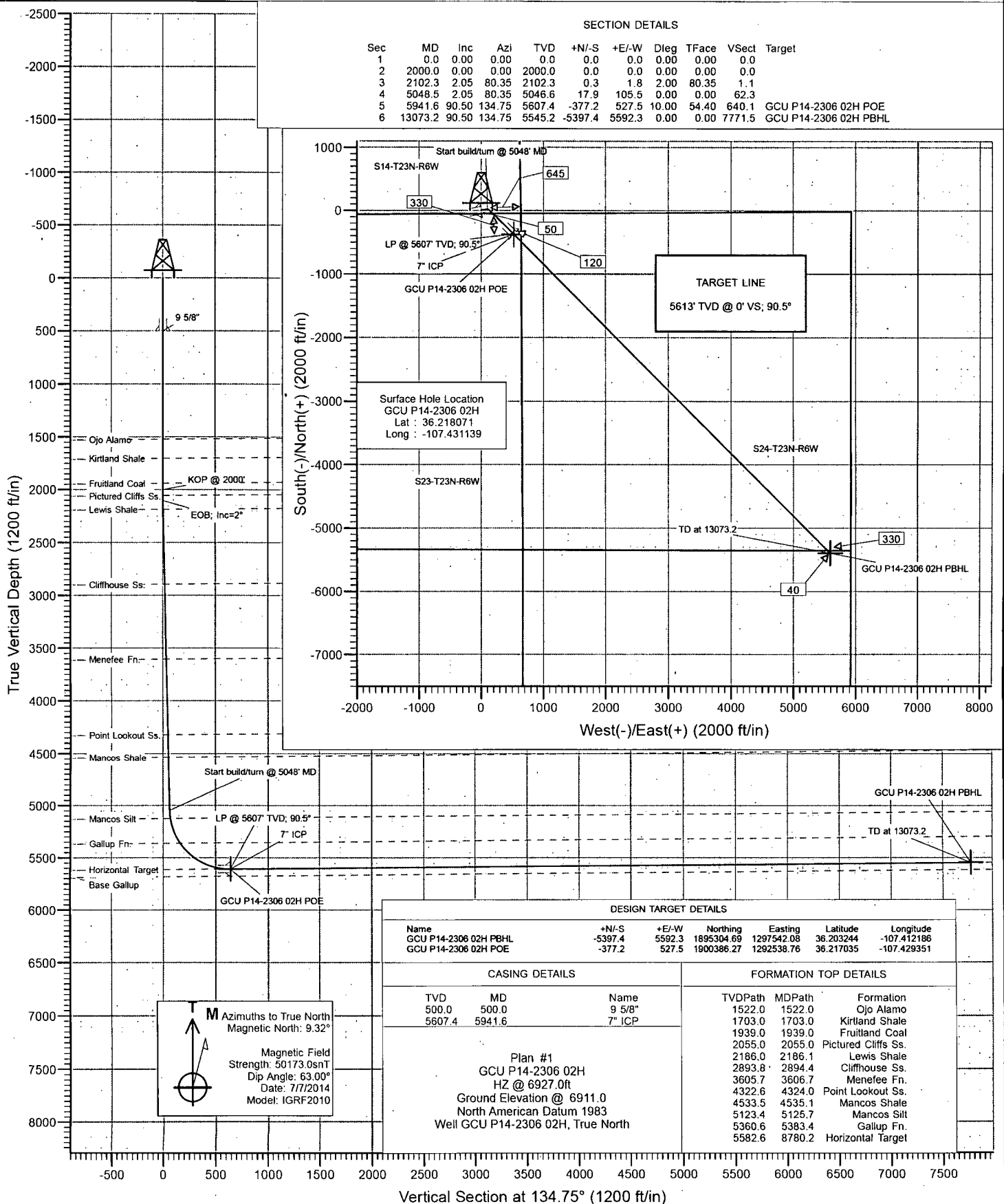
Drilling is estimated to commence on February 7, 2015. It is anticipated that completion operations will begin within 30 days after the well has been drilled depending on fracture treatment schedules with various pumping service companies.

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

LOC: SE/4 SE/4 Sec 14 T23N R6W, 50' FS			Encana Natural Gas						ENG: 0 RIG: Aztec 950 GLE: 6856 RKBE: 6872		8/12/14	
County: Rio Arriba			WELL SUMMARY									
WELL: GCU P14-2306 02H												
MWD	OPEN HOLE		DEPTH			HOLE	CASING	MW	DEVIATION			
LWD	LOGGING	FORM	TVD	MD		SIZE	SPECS	MUD TYPE	INFORMATION			
			60	60'		30	16" 42# 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	Nacimiento 9 5/8" Csg	0 500	500.00		12 1/4	9 5/8" 36ppf J55 STC TOC Surface - 247 sks of Type III Cement	Fresh wtr 8.3-10	Vertical .<1°			
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 Kirtland Shale Fruitland Coal Pictured Cliffs Ss. Lewis Shale Cliffhouse Ss. Menefee Fn. Point Lookout Ss. Mancos Shale	1,467 1,648 1,884 2,000 2,131 2,839 3,551 4,268 4,479			8 3/4	7" 26ppf J55 LTC TOC @ surface (100% OH excess - 70% Lead 30% Tail) Stage 1 Total: 1009sks Stage 1 Lead: 700 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: 308 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 Mancos Silt Gallup Fn. 7" Csg	2,000 5,069 5,307 5,607	2,000 5,942'		6 1/8	200' overlap at liner top 7132' Drilled Lateral				Horz Inc/TVD 90.5 degdeg/5558ft	
Surveys every stand to TD unless directed otherwise by Geologist	No OH Logs	Horizontal Target TD Base Gallup	5,558 5,545 5,626	13,073			4 1/2" 11.6ppf SB80 LTC Running external swellable csg packers for isolation of prod string	WBM 8.3-10			TD = 13073.2 MD	
MWD Gamma Directional												



Project: Rio Arriba County, NM
Site: S14-T23N-R6W
Well: GCU P14-2306 02H
Wellbore: HZ
Design: Plan #1



Planning Report

Database: USA EDM 5000 Multi Users DB
Company: EnCana Oil & Gas (USA) Inc
Project: Rio Arriba County, NM
Site: S14-T23N-R6W
Well: GCU P14-2306 02H
Wellbore: HZ
Design: Plan #1

Local Co-ordinate Reference: Well GCU P14-2306 02H
TVD Reference: HZ @ 6927.0ft
MD Reference: HZ @ 6927.0ft
North Reference: True
Survey Calculation Method: Minimum Curvature

Project	Rio Arriba 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	S14-T23N-R6W			
Site Position:		Northing:	1,900,796.67 ft	Latitude: 36.218032
From:	Lat/Long	Easting:	1,288,664.11 ft	Longitude: -107.442501
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence: -0.70 °

Well	GCU P14-2306 02H			
Well Position	+N/-S	0.0 ft	Northing:	1,900,769.84 ft
	+E/-W	0.0 ft	Easting:	1,292,015.91 ft
Position Uncertainty	0.0 ft	Wellhead Elevation:	0.0 ft	Ground Level: 6,911.0 ft

Wellbore	HZ				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	7/7/2014	9.32	63.00	50,173

Design	Plan #1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	134.75

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	
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.00	0.00	0.00	0.00	
2,102.3	2.05	80.35	2,102.3	0.3	1.8	2.00	2.00	0.00	80.35	
5,048.5	2.05	80.35	5,046.6	17.9	105.5	0.00	0.00	0.00	0.00	
5,941.6	90.50	134.75	5,607.4	-377.2	527.5	10.00	9.90	6.09	54.40	GCU P14-2306 02H F
13,073.2	90.50	134.75	5,545.2	-5,397.4	5,592.3	0.00	0.00	0.00	0.00	GCU P14-2306 02H F

Planning Report

Database: USA EDM 5000 Multi Users DB
Company: EnCana Oil & Gas (USA) Inc
Project: Rio Arriba County, NM
Site: S14-T23N-R6W
Well: GCU P14-2306 02H
Wellbore: HZ
Design: Plan #1

Local Co-ordinate Reference: Well GCU P14-2306 02H
TVD Reference: HZ @ 6927.0ft
MD Reference: HZ @ 6927.0ft
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	
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	
1,522.0	0.00	0.00	1,522.0	0.0	0.0	0.0	0.00	0.00	Ojo Alamo
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	Kirtland Shale
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	
1,939.0	0.00	0.00	1,939.0	0.0	0.0	0.0	0.00	0.00	Fruitland Coal
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	KOP @ 2000'
2,055.0	1.10	80.35	2,055.0	0.1	0.5	0.3	2.00	2.00	Pictured Cliffs Ss.
2,100.0	2.00	80.35	2,100.0	0.3	1.7	1.0	2.00	2.00	
2,102.3	2.05	80.35	2,102.3	0.3	1.8	1.1	2.00	2.00	EOB; Inc=2°
2,186.1	2.05	80.35	2,186.0	0.8	4.7	2.8	0.00	0.00	Lewis Shale
2,200.0	2.05	80.35	2,199.9	0.9	5.2	3.1	0.00	0.00	
2,300.0	2.05	80.35	2,299.9	1.5	8.8	5.2	0.00	0.00	
2,400.0	2.05	80.35	2,399.8	2.1	12.3	7.3	0.00	0.00	
2,500.0	2.05	80.35	2,499.7	2.7	15.8	9.3	0.00	0.00	
2,600.0	2.05	80.35	2,599.7	3.3	19.3	11.4	0.00	0.00	
2,700.0	2.05	80.35	2,699.6	3.9	22.8	13.5	0.00	0.00	
2,800.0	2.05	80.35	2,799.5	4.5	26.4	15.6	0.00	0.00	
2,894.4	2.05	80.35	2,893.8	5.0	29.7	17.5	0.00	0.00	Cliffhouse Ss.
2,900.0	2.05	80.35	2,899.5	5.1	29.9	17.6	0.00	0.00	
3,000.0	2.05	80.35	2,999.4	5.7	33.4	19.7	0.00	0.00	
3,100.0	2.05	80.35	3,099.3	6.3	36.9	21.8	0.00	0.00	
3,200.0	2.05	80.35	3,199.3	6.9	40.4	23.9	0.00	0.00	
3,300.0	2.05	80.35	3,299.2	7.5	44.0	26.0	0.00	0.00	
3,400.0	2.05	80.35	3,399.2	8.1	47.5	28.0	0.00	0.00	
3,500.0	2.05	80.35	3,499.1	8.7	51.0	30.1	0.00	0.00	
3,600.0	2.05	80.35	3,599.0	9.3	54.5	32.2	0.00	0.00	
3,606.7	2.05	80.35	3,605.7	9.3	54.8	32.3	0.00	0.00	Menefee Fn.
3,700.0	2.05	80.35	3,699.0	9.9	58.0	34.3	0.00	0.00	
3,800.0	2.05	80.35	3,798.9	10.5	61.6	36.4	0.00	0.00	
3,900.0	2.05	80.35	3,898.8	11.1	65.1	38.4	0.00	0.00	
4,000.0	2.05	80.35	3,998.8	11.7	68.6	40.5	0.00	0.00	
4,100.0	2.05	80.35	4,098.7	12.3	72.1	42.6	0.00	0.00	
4,200.0	2.05	80.35	4,198.6	12.9	75.6	44.7	0.00	0.00	
4,300.0	2.05	80.35	4,298.6	13.5	79.2	46.8	0.00	0.00	

Planning Report

Database: USA EDM 5000 Multi Users DB
 Company: EnCana Oil & Gas (USA) Inc
 Project: Rio Arriba County, NM
 Site: S14-T23N-R6W
 Well: GCU P14-2306 02H
 Wellbore: HZ
 Design: Plan #1

Local Co-ordinate Reference: Well GCU P14-2306 02H
 TVD Reference: HZ @ 6927.0ft
 MD Reference: HZ @ 6927.0ft
 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
4,324.0	2.05	80.35	4,322.6	13.6	80.0	47.3	0.00	0.00	Point Lookout Ss.
4,400.0	2.05	80.35	4,398.5	14.1	82.7	48.8	0.00	0.00	
4,500.0	2.05	80.35	4,498.4	14.7	86.2	50.9	0.00	0.00	
4,535.1	2.05	80.35	4,533.5	14.9	87.4	51.6	0.00	0.00	Mancos Shale
4,600.0	2.05	80.35	4,598.4	15.3	89.7	53.0	0.00	0.00	
4,700.0	2.05	80.35	4,698.3	15.9	93.3	55.1	0.00	0.00	
4,800.0	2.05	80.35	4,798.3	16.4	96.8	57.1	0.00	0.00	
4,900.0	2.05	80.35	4,898.2	17.0	100.3	59.2	0.00	0.00	
5,000.0	2.05	80.35	4,998.1	17.6	103.8	61.3	0.00	0.00	
5,048.5	2.05	80.35	5,046.6	17.9	105.5	62.3	0.00	0.00	Start build/turn @ 5048' MD
5,100.0	6.55	120.09	5,097.9	16.6	109.0	65.7	10.00	8.76	
5,125.7	9.06	124.24	5,123.4	14.7	111.9	69.1	10.00	9.76	Mancos Silt
5,200.0	16.42	129.08	5,195.8	4.8	124.9	85.3	10.00	9.90	
5,300.0	26.39	131.38	5,288.8	-18.8	152.6	121.7	10.00	9.97	
5,383.4	34.71	132.33	5,360.6	-47.1	184.2	164.0	10.00	9.98	Gallup Fn.
5,400.0	36.37	132.47	5,374.1	-53.6	191.3	173.6	10.00	9.99	
5,500.0	46.36	133.15	5,449.0	-98.5	239.7	239.6	10.00	9.99	
5,600.0	56.36	133.62	5,511.4	-152.1	296.4	317.6	10.00	9.99	
5,700.0	66.35	134.00	5,559.3	-212.8	359.6	405.2	10.00	9.99	
5,800.0	76.35	134.33	5,591.2	-278.8	427.5	499.8	10.00	10.00	
5,900.0	86.34	134.63	5,606.3	-347.9	497.9	598.6	10.00	10.00	
5,941.6	90.50	134.75	5,607.4	-377.2	527.5	640.1	10.00	10.00	LP @ 5607' TVD; 90.5° - 7" ICP
6,000.0	90.50	134.75	5,606.9	-418.3	569.0	698.5	0.00	0.00	
6,100.0	90.50	134.75	5,606.0	-488.7	640.0	798.5	0.00	0.00	
6,200.0	90.50	134.75	5,605.1	-559.1	711.0	898.5	0.00	0.00	
6,300.0	90.50	134.75	5,604.3	-629.5	782.0	998.5	0.00	0.00	
6,400.0	90.50	134.75	5,603.4	-699.9	853.0	1,098.5	0.00	0.00	
6,500.0	90.50	134.75	5,602.5	-770.3	924.1	1,198.5	0.00	0.00	
6,600.0	90.50	134.75	5,601.7	-840.6	995.1	1,298.5	0.00	0.00	
6,700.0	90.50	134.75	5,600.8	-911.0	1,066.1	1,398.5	0.00	0.00	
6,800.0	90.50	134.75	5,599.9	-981.4	1,137.1	1,498.5	0.00	0.00	
6,900.0	90.50	134.75	5,599.0	-1,051.8	1,208.1	1,598.5	0.00	0.00	
7,000.0	90.50	134.75	5,598.2	-1,122.2	1,279.2	1,698.5	0.00	0.00	
7,100.0	90.50	134.75	5,597.3	-1,192.6	1,350.2	1,798.5	0.00	0.00	
7,200.0	90.50	134.75	5,596.4	-1,263.0	1,421.2	1,898.5	0.00	0.00	
7,300.0	90.50	134.75	5,595.6	-1,333.4	1,492.2	1,998.5	0.00	0.00	
7,400.0	90.50	134.75	5,594.7	-1,403.8	1,563.2	2,098.5	0.00	0.00	
7,500.0	90.50	134.75	5,593.8	-1,474.2	1,634.3	2,198.5	0.00	0.00	
7,600.0	90.50	134.75	5,592.9	-1,544.6	1,705.3	2,298.5	0.00	0.00	
7,700.0	90.50	134.75	5,592.1	-1,615.0	1,776.3	2,398.5	0.00	0.00	
7,800.0	90.50	134.75	5,591.2	-1,685.4	1,847.3	2,498.5	0.00	0.00	
7,900.0	90.50	134.75	5,590.3	-1,755.8	1,918.3	2,598.5	0.00	0.00	
8,000.0	90.50	134.75	5,589.4	-1,826.2	1,989.4	2,698.5	0.00	0.00	
8,100.0	90.50	134.75	5,588.6	-1,896.6	2,060.4	2,798.5	0.00	0.00	
8,200.0	90.50	134.75	5,587.7	-1,967.0	2,131.4	2,898.5	0.00	0.00	
8,300.0	90.50	134.75	5,586.8	-2,037.4	2,202.4	2,998.5	0.00	0.00	
8,400.0	90.50	134.75	5,586.0	-2,107.7	2,273.4	3,098.4	0.00	0.00	
8,500.0	90.50	134.75	5,585.1	-2,178.1	2,344.5	3,198.4	0.00	0.00	
8,600.0	90.50	134.75	5,584.2	-2,248.5	2,415.5	3,298.4	0.00	0.00	
8,700.0	90.50	134.75	5,583.3	-2,318.9	2,486.5	3,398.4	0.00	0.00	
8,780.2	90.50	134.75	5,582.6	-2,375.4	2,543.4	3,478.6	0.00	0.00	Horizontal Target
8,800.0	90.50	134.75	5,582.5	-2,389.3	2,557.5	3,498.4	0.00	0.00	

Planning Report

Database: USA EDM 5000 Multi Users DB
Company: EnCana Oil & Gas (USA) Inc
Project: Rio Arriba County, NM
Site: S14-T23N-R6W
Well: GCU P14-2306 02H
Wellbore: HZ
Design: Plan #1

Local Co-ordinate Reference: Well GCU P14-2306 02H
TVD Reference: HZ @ 6927.0ft
MD Reference: HZ @ 6927.0ft
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
8,900.0	90.50	134.75	5,581.6	-2,459.7	2,628.5	3,598.4	0.00	0.00	
9,000.0	90.50	134.75	5,580.7	-2,530.1	2,699.6	3,698.4	0.00	0.00	
9,100.0	90.50	134.75	5,579.9	-2,600.5	2,770.6	3,798.4	0.00	0.00	
9,200.0	90.50	134.75	5,579.0	-2,670.9	2,841.6	3,898.4	0.00	0.00	
9,300.0	90.50	134.75	5,578.1	-2,741.3	2,912.6	3,998.4	0.00	0.00	
9,400.0	90.50	134.75	5,577.2	-2,811.7	2,983.6	4,098.4	0.00	0.00	
9,500.0	90.50	134.75	5,576.4	-2,882.1	3,054.7	4,198.4	0.00	0.00	
9,600.0	90.50	134.75	5,575.5	-2,952.5	3,125.7	4,298.4	0.00	0.00	
9,700.0	90.50	134.75	5,574.6	-3,022.9	3,196.7	4,398.4	0.00	0.00	
9,800.0	90.50	134.75	5,573.7	-3,093.3	3,267.7	4,498.4	0.00	0.00	
9,900.0	90.50	134.75	5,572.9	-3,163.7	3,338.7	4,598.4	0.00	0.00	
10,000.0	90.50	134.75	5,572.0	-3,234.1	3,409.8	4,698.4	0.00	0.00	
10,100.0	90.50	134.75	5,571.1	-3,304.5	3,480.8	4,798.4	0.00	0.00	
10,200.0	90.50	134.75	5,570.3	-3,374.9	3,551.8	4,898.4	0.00	0.00	
10,300.0	90.50	134.75	5,569.4	-3,445.2	3,622.8	4,998.4	0.00	0.00	
10,400.0	90.50	134.75	5,568.5	-3,515.6	3,693.8	5,098.4	0.00	0.00	
10,500.0	90.50	134.75	5,567.6	-3,586.0	3,764.9	5,198.4	0.00	0.00	
10,600.0	90.50	134.75	5,566.8	-3,656.4	3,835.9	5,298.4	0.00	0.00	
10,700.0	90.50	134.75	5,565.9	-3,726.8	3,906.9	5,398.4	0.00	0.00	
10,800.0	90.50	134.75	5,565.0	-3,797.2	3,977.9	5,498.4	0.00	0.00	
10,900.0	90.50	134.75	5,564.2	-3,867.6	4,048.9	5,598.4	0.00	0.00	
11,000.0	90.50	134.75	5,563.3	-3,938.0	4,120.0	5,698.3	0.00	0.00	
11,100.0	90.50	134.75	5,562.4	-4,008.4	4,191.0	5,798.3	0.00	0.00	
11,200.0	90.50	134.75	5,561.5	-4,078.8	4,262.0	5,898.3	0.00	0.00	
11,300.0	90.50	134.75	5,560.7	-4,149.2	4,333.0	5,998.3	0.00	0.00	
11,400.0	90.50	134.75	5,559.8	-4,219.6	4,404.0	6,098.3	0.00	0.00	
11,500.0	90.50	134.75	5,558.9	-4,290.0	4,475.1	6,198.3	0.00	0.00	
11,600.0	90.50	134.75	5,558.0	-4,360.4	4,546.1	6,298.3	0.00	0.00	
11,700.0	90.50	134.75	5,557.2	-4,430.8	4,617.1	6,398.3	0.00	0.00	
11,800.0	90.50	134.75	5,556.3	-4,501.2	4,688.1	6,498.3	0.00	0.00	
11,900.0	90.50	134.75	5,555.4	-4,571.6	4,759.1	6,598.3	0.00	0.00	
12,000.0	90.50	134.75	5,554.6	-4,642.0	4,830.2	6,698.3	0.00	0.00	
12,100.0	90.50	134.75	5,553.7	-4,712.4	4,901.2	6,798.3	0.00	0.00	
12,200.0	90.50	134.75	5,552.8	-4,782.7	4,972.2	6,898.3	0.00	0.00	
12,300.0	90.50	134.75	5,551.9	-4,853.1	5,043.2	6,998.3	0.00	0.00	
12,400.0	90.50	134.75	5,551.1	-4,923.5	5,114.2	7,098.3	0.00	0.00	
12,500.0	90.50	134.75	5,550.2	-4,993.9	5,185.3	7,198.3	0.00	0.00	
12,600.0	90.50	134.75	5,549.3	-5,064.3	5,256.3	7,298.3	0.00	0.00	
12,700.0	90.50	134.75	5,548.5	-5,134.7	5,327.3	7,398.3	0.00	0.00	
12,800.0	90.50	134.75	5,547.6	-5,205.1	5,398.3	7,498.3	0.00	0.00	
12,900.0	90.50	134.75	5,546.7	-5,275.5	5,469.3	7,598.3	0.00	0.00	
13,000.0	90.50	134.75	5,545.8	-5,345.9	5,540.4	7,698.3	0.00	0.00	
13,073.2	90.50	134.75	5,545.2	-5,397.4	5,592.3	7,771.5	0.00	0.00	TD at 13073.2

Planning Report

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Project: Rio Arriba County, NM
Site: S14-T23N-R6W
Well: GCU P14-2306 02H
Wellbore: HZ
Design: Plan #1

Local Co-ordinate Reference: Well GCU P14-2306 02H
TVD Reference: HZ @ 6927.0ft
MD Reference: HZ @ 6927.0ft
North Reference: True
Survey Calculation Method: Minimum Curvature

Targets

Target Name

- hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
GCU P14-2306 02H PO - plan hits target center - Point	0.00	0.00	5,607.4	-377.2	527.5	1,900,386.27	1,292,538.76	36.217035	-107.429351
GCU P14-2306 02H PBI - plan hits target center - Point	0.00	0.00	5,545.2	-5,397.4	5,592.3	1,895,304.69	1,297,542.08	36.203244	-107.412186

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)
500.0	500.0	9 5/8"	9.625	12.250
5,941.6	5,607.4	7" ICP	5.500	6.000

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,522.0	1,522.0	Ojo Alamo		-0.50	134.75
1,703.0	1,703.0	Kirtland Shale		-0.50	134.75
1,939.0	1,939.0	Fruitland Coal		-0.50	134.75
2,055.0	2,055.0	Pictured Cliffs Ss.		-0.50	134.75
2,186.1	2,186.0	Lewis Shale		-0.50	134.75
2,894.4	2,894.0	Cliffhouse Ss.		-0.50	134.75
3,606.7	3,606.0	Menefee Fn.		-0.50	134.75
4,324.0	4,323.0	Point Lookout Ss.		-0.50	134.75
4,535.1	4,534.0	Mancos Shale		-0.50	134.75
5,125.7	5,124.0	Mancos Silt		-0.50	134.75
5,383.4	5,362.0	Gallup Fn.		-0.50	134.75
8,780.2	5,613.0	Horizontal Target		-0.50	134.75

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
2,000.0	2,000.0	0.0	0.0	KOP @ 2000'
2,102.3	2,102.3	0.3	1.8	EOB; Inc=2°
5,048.5	5,046.6	17.9	105.5	Start build/turn @ 5048' MD
5,941.6	5,607.4	-377.2	527.5	LP @ 5607' TVD; 90.5°
13,073.2	5,545.2	-5,397.4	5,592.3	TD at 13073.2

EnCana Oil & Gas (USA) Inc

Rio Arriba County, NM

S14-T23N-R6W

GCU P14-2306 02H

HZ

Plan #1

Anticollision Report

08 July, 2014

Anticollision Report

Company: EnCana Oil & Gas (USA) Inc
Project: Rio Arriba County, NM
Reference Site: S14-T23N-R6W
Site Error: 0.0ft
Reference Well: GCU P14-2306 02H
Well Error: 0.0ft
Reference Wellbore: HZ
Reference Design: Plan #1

Local Co-ordinate Reference: Well GCU P14-2306 02H
TVD Reference: HZ @ 6927.0ft
MD Reference: HZ @ 6927.0ft
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	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 1,000.0ft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma		

Survey Tool Program	Date 7/8/2014		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name
0.0	13,073.2	Plan #1 (HZ)	Geolink MWD
			Description
			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						
S14-T23N-R6W						
GCU M14-2306 01H - HZ - Plan #1						Out of range
GCU P14-2306 01H - HZ - Plan #1	1,900.0	1,900.0	30.1	23.5	4.577	CC, ES, SF
GCU P14-2306 03H - HZ - Plan #1	1,800.0	1,800.0	30.1	23.9	4.833	CC, ES, SF

Anticollision Report

Company: EnCana Oil & Gas (USA) Inc
 Project: Rio Arriba County, NM
 Reference Site: S14-T23N-R6W
 Site Error: 0.0ft
 Reference Well: GCU P14-2306 02H
 Well Error: 0.0ft
 Reference Wellbore: HZ
 Reference Design: Plan #1

Local Co-ordinate Reference: Well GCU P14-2306 02H
 TVD Reference: HZ @ 6927.0ft
 MD Reference: HZ @ 6927.0ft
 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 S14-T23N-R6W - GCU P14-2306 01H - 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			Total			Separation		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)	Uncertainty Axis	Factor	
0.0	0.0	0.0	0.0	0.0	0.0	-91.39	-0.7	-30.1	30.1				
100.0	100.0	100.0	100.0	0.1	0.1	-91.39	-0.7	-30.1	30.1	29.8	0.29	102.653	
200.0	200.0	200.0	200.0	0.3	0.3	-91.39	-0.7	-30.1	30.1	29.5	0.64	46.864	
300.0	300.0	300.0	300.0	0.5	0.5	-91.39	-0.7	-30.1	30.1	29.1	0.99	30.362	
400.0	400.0	400.0	400.0	0.7	0.7	-91.39	-0.7	-30.1	30.1	28.8	1.34	22.455	
500.0	500.0	500.0	500.0	0.8	0.8	-91.39	-0.7	-30.1	30.1	28.4	1.69	17.816	
600.0	600.0	600.0	600.0	1.0	1.0	-91.39	-0.7	-30.1	30.1	28.1	2.04	14.765	
700.0	700.0	700.0	700.0	1.2	1.2	-91.39	-0.7	-30.1	30.1	27.7	2.39	12.607	
800.0	800.0	800.0	800.0	1.4	1.4	-91.39	-0.7	-30.1	30.1	27.4	2.74	10.999	
900.0	900.0	900.0	900.0	1.5	1.5	-91.39	-0.7	-30.1	30.1	27.0	3.09	9.754	
1,000.0	1,000.0	1,000.0	1,000.0	1.7	1.7	-91.39	-0.7	-30.1	30.1	26.7	3.43	8.763	
1,100.0	1,100.0	1,100.0	1,100.0	1.9	1.9	-91.39	-0.7	-30.1	30.1	26.3	3.78	7.955	
1,200.0	1,200.0	1,200.0	1,200.0	2.1	2.1	-91.39	-0.7	-30.1	30.1	26.0	4.13	7.283	
1,300.0	1,300.0	1,300.0	1,300.0	2.2	2.2	-91.39	-0.7	-30.1	30.1	25.6	4.48	6.716	
1,400.0	1,400.0	1,400.0	1,400.0	2.4	2.4	-91.39	-0.7	-30.1	30.1	25.3	4.83	6.230	
1,500.0	1,500.0	1,500.0	1,500.0	2.6	2.6	-91.39	-0.7	-30.1	30.1	24.9	5.18	5.811	
1,600.0	1,600.0	1,600.0	1,600.0	2.8	2.8	-91.39	-0.7	-30.1	30.1	24.6	5.53	5.444	
1,700.0	1,700.0	1,700.0	1,700.0	2.9	2.9	-91.39	-0.7	-30.1	30.1	24.2	5.88	5.120	
1,800.0	1,800.0	1,800.0	1,800.0	3.1	3.1	-91.39	-0.7	-30.1	30.1	23.9	6.23	4.833	
1,900.0	1,900.0	1,900.0	1,900.0	3.3	3.3	-91.39	-0.7	-30.1	30.1	23.5	6.58	4.577 CC, ES, SF	
2,000.0	2,000.0	1,998.9	1,998.9	3.5	3.5	-90.88	-0.5	-31.8	31.8	24.9	6.92	4.593	
2,100.0	2,100.0	2,097.5	2,097.3	3.6	3.6	-170.41	0.2	-36.8	38.6	31.4	7.27	5.317	
2,200.0	2,199.9	2,195.3	2,194.7	3.8	3.8	-169.70	1.4	-45.1	50.6	43.0	7.61	6.653	
2,300.0	2,299.9	2,292.1	2,290.9	4.0	4.0	-168.91	3.1	-56.6	66.0	58.0	7.96	8.296	
2,400.0	2,399.8	2,387.9	2,385.5	4.2	4.2	-168.17	5.1	-71.1	84.7	76.4	8.30	10.204	
2,500.0	2,499.7	2,482.3	2,478.3	4.3	4.5	-167.54	7.6	-88.5	106.6	97.9	8.64	12.339	
2,600.0	2,599.7	2,575.3	2,569.0	4.5	4.8	-167.00	10.5	-108.5	131.6	122.7	8.97	14.671	
2,700.0	2,699.6	2,666.6	2,657.5	4.7	5.1	-166.56	13.7	-131.0	159.8	150.5	9.31	17.173	
2,800.0	2,799.5	2,756.1	2,743.4	4.9	5.4	-166.18	17.3	-155.8	191.0	181.4	9.64	19.821	
2,900.0	2,899.5	2,843.8	2,826.8	5.1	5.8	-165.86	21.1	-182.6	225.1	215.2	9.96	22.596	
3,000.0	2,999.4	2,929.4	2,907.4	5.2	6.2	-165.59	25.2	-211.2	262.1	251.8	10.29	25.477	
3,100.0	3,099.3	3,013.0	2,985.2	5.4	6.7	-165.36	29.5	-241.4	301.7	291.1	10.61	28.452	
3,200.0	3,199.3	3,094.4	3,060.1	5.6	7.2	-165.16	34.1	-273.0	344.0	333.1	10.92	31.504	
3,300.0	3,299.2	3,173.7	3,132.2	5.8	7.8	-164.98	38.7	-305.8	388.9	377.6	11.23	34.622	
3,400.0	3,399.2	3,250.8	3,201.3	6.0	8.3	-164.83	43.6	-339.5	436.1	424.6	11.54	37.796	
3,500.0	3,499.1	3,325.6	3,267.5	6.2	8.9	-164.70	48.5	-374.0	485.7	473.8	11.84	41.016	
3,600.0	3,599.0	3,403.2	3,335.3	6.3	9.6	-164.57	53.9	-411.5	537.3	525.2	12.15	44.229	
3,700.0	3,699.0	3,488.8	3,409.7	6.5	10.3	-164.45	59.8	-453.0	589.4	576.9	12.47	47.270	
3,800.0	3,798.9	3,574.0	3,484.0	6.7	11.1	-164.35	65.8	-494.5	641.4	628.6	12.79	50.160	
3,900.0	3,898.8	3,659.4	3,558.4	6.9	11.8	-164.27	71.7	-536.0	693.5	680.4	13.11	52.910	
4,000.0	3,998.8	3,744.7	3,632.7	7.1	12.6	-164.20	77.7	-577.5	745.5	732.1	13.43	55.530	
4,100.0	4,098.7	3,830.1	3,707.1	7.2	13.4	-164.14	83.6	-619.1	797.6	783.9	13.74	58.029	
4,200.0	4,198.6	3,915.5	3,781.5	7.4	14.2	-164.08	89.5	-660.6	849.7	835.6	14.06	60.416	
4,300.0	4,298.6	4,000.9	3,855.8	7.6	14.9	-164.03	95.5	-702.1	901.7	887.4	14.38	62.698	
4,400.0	4,398.5	4,086.3	3,930.2	7.8	15.7	-163.99	101.4	-743.6	953.8	939.1	14.70	64.882	

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

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Well Error: 0.0ft
Reference Wellbore: HZ
Reference Design: Plan #1

Local Co-ordinate Reference: Well GCU P14-2306 02H
TVD Reference: HZ @ 6927.0ft
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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 S14-T23N-R6W - GCU P14-2306 03H - 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)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	88.61	0.7	30.1	30.1					
100.0	100.0	100.0	100.0	0.1	0.1	88.61	0.7	30.1	30.1	29.8	0.29	102.653		
200.0	200.0	200.0	200.0	0.3	0.3	88.61	0.7	30.1	30.1	29.5	0.64	46.864		
300.0	300.0	300.0	300.0	0.5	0.5	88.61	0.7	30.1	30.1	29.1	0.99	30.362		
400.0	400.0	400.0	400.0	0.7	0.7	88.61	0.7	30.1	30.1	28.8	1.34	22.455		
500.0	500.0	500.0	500.0	0.8	0.8	88.61	0.7	30.1	30.1	28.4	1.69	17.816		
600.0	600.0	600.0	600.0	1.0	1.0	88.61	0.7	30.1	30.1	28.1	2.04	14.765		
700.0	700.0	700.0	700.0	1.2	1.2	88.61	0.7	30.1	30.1	27.7	2.39	12.607		
800.0	800.0	800.0	800.0	1.4	1.4	88.61	0.7	30.1	30.1	27.4	2.74	10.999		
900.0	900.0	900.0	900.0	1.5	1.5	88.61	0.7	30.1	30.1	27.0	3.09	9.754		
1,000.0	1,000.0	1,000.0	1,000.0	1.7	1.7	88.61	0.7	30.1	30.1	26.7	3.43	8.763		
1,100.0	1,100.0	1,100.0	1,100.0	1.9	1.9	88.61	0.7	30.1	30.1	26.3	3.78	7.955		
1,200.0	1,200.0	1,200.0	1,200.0	2.1	2.1	88.61	0.7	30.1	30.1	26.0	4.13	7.283		
1,300.0	1,300.0	1,300.0	1,300.0	2.2	2.2	88.61	0.7	30.1	30.1	25.6	4.48	6.716		
1,400.0	1,400.0	1,400.0	1,400.0	2.4	2.4	88.61	0.7	30.1	30.1	25.3	4.83	6.230		
1,500.0	1,500.0	1,500.0	1,500.0	2.6	2.6	88.61	0.7	30.1	30.1	24.9	5.18	5.811		
1,600.0	1,600.0	1,600.0	1,600.0	2.8	2.8	88.61	0.7	30.1	30.1	24.6	5.53	5.444		
1,700.0	1,700.0	1,700.0	1,700.0	2.9	2.9	88.61	0.7	30.1	30.1	24.2	5.88	5.120		
1,800.0	1,800.0	1,800.0	1,800.0	3.1	3.1	88.61	0.7	30.1	30.1	23.9	6.23	4.833 CC, ES, SF		
1,900.0	1,900.0	1,898.9	1,898.9	3.3	3.3	88.94	0.6	31.8	31.8	25.2	6.58	4.839		
2,000.0	2,000.0	1,997.6	1,997.5	3.5	3.5	89.74	0.2	36.9	37.0	30.0	6.93	5.338		
2,100.0	2,100.0	2,096.0	2,095.5	3.6	3.6	10.70	-0.5	45.3	43.8	36.6	7.27	6.034		
2,200.0	2,199.9	2,194.0	2,192.7	3.8	3.8	12.24	-1.5	57.0	52.4	44.7	7.61	6.879		
2,300.0	2,299.9	2,291.3	2,288.9	4.0	4.1	13.39	-2.7	72.0	64.3	56.3	7.96	8.081		
2,400.0	2,399.8	2,387.7	2,383.6	4.2	4.3	14.19	-4.2	90.0	79.6	71.3	8.30	9.590		
2,500.0	2,499.7	2,483.0	2,476.5	4.3	4.6	14.72	-5.9	110.8	98.2	89.6	8.64	11.365		
2,600.0	2,599.7	2,577.0	2,567.5	4.5	4.9	15.06	-7.9	134.5	120.1	111.1	8.98	13.369		
2,700.0	2,699.6	2,669.5	2,656.2	4.7	5.3	15.27	-10.1	160.6	145.1	135.8	9.32	15.571		
2,800.0	2,799.5	2,760.5	2,742.6	4.9	5.7	15.40	-12.4	189.0	173.2	163.5	9.65	17.945		
2,900.0	2,899.5	2,849.6	2,826.3	5.1	6.2	15.47	-14.9	219.6	204.3	194.3	9.98	20.466		
3,000.0	2,999.4	2,936.9	2,907.3	5.2	6.7	15.51	-17.6	252.0	238.3	228.0	10.31	23.116		
3,100.0	3,099.3	3,022.2	2,985.5	5.4	7.3	15.53	-20.4	286.0	275.2	264.5	10.63	25.877		
3,200.0	3,199.3	3,105.5	3,060.8	5.6	7.9	15.53	-23.4	321.5	314.7	303.8	10.95	28.732		
3,300.0	3,299.2	3,186.7	3,133.2	5.8	8.5	15.52	-26.4	358.1	356.9	345.6	11.27	31.669		
3,400.0	3,399.2	3,265.7	3,202.6	6.0	9.2	15.51	-29.5	395.7	401.6	390.0	11.58	34.675		
3,500.0	3,499.1	3,353.6	3,279.2	6.2	9.9	15.49	-33.1	438.7	447.7	435.8	11.91	37.592		
3,600.0	3,599.0	3,442.4	3,356.5	6.3	10.7	15.48	-36.6	482.2	493.8	481.6	12.24	40.351		
3,700.0	3,699.0	3,531.1	3,433.8	6.5	11.5	15.46	-40.2	525.6	539.9	527.3	12.57	42.966		
3,800.0	3,798.9	3,619.9	3,511.1	6.7	12.3	15.45	-43.8	569.1	586.0	573.1	12.89	45.449		
3,900.0	3,898.8	3,708.6	3,588.4	6.9	13.1	15.45	-47.4	612.5	632.1	618.9	13.22	47.809		
4,000.0	3,998.8	3,797.3	3,665.6	7.1	13.9	15.44	-51.0	656.0	678.2	664.6	13.55	50.056		
4,100.0	4,098.7	3,886.1	3,742.9	7.2	14.7	15.43	-54.6	699.4	724.3	710.4	13.88	52.198		
4,200.0	4,198.6	3,974.8	3,820.2	7.4	15.6	15.43	-58.2	742.9	770.4	756.2	14.20	54.241		
4,300.0	4,298.6	4,063.6	3,897.5	7.6	16.4	15.42	-61.8	786.3	816.5	801.9	14.53	56.194		
4,400.0	4,398.5	4,152.3	3,974.8	7.8	17.2	15.42	-65.4	829.8	862.6	847.7	14.86	58.060		
4,500.0	4,498.4	4,241.1	4,052.1	8.0	18.1	15.41	-69.0	873.3	908.6	893.5	15.18	59.848		
4,600.0	4,598.4	4,329.8	4,129.4	8.2	18.9	15.41	-72.6	916.7	954.7	939.2	15.51	61.560		
4,700.0	4,698.3	4,571.0	4,210.5	23.5	30.7	-66.03	-122.8	1,524.4	981.3	937.0	44.29	22.156		
4,800.0	4,603.4	4,507.8	4,242.6	25.5	31.1	-68.06	-124.3	1,542.5	967.9	920.9	46.96	20.610		
4,900.0	4,502.5	4,644.7	4,274.7	27.5	31.5	-70.10	-125.8	1,560.5	963.3	913.6	49.66	19.396		
4,501.4	4,502.5	4,645.2	4,275.1	27.5	31.5	-70.13	-125.8	1,560.8	963.3	913.6	49.70	19.381		
4,600.0	4,501.7	4,680.7	4,305.9	29.5	31.8	-72.08	-127.4	1,578.3	967.7	915.3	52.38	18.473		

Anticollision Report

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Well Error: 0.0ft
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Offset Design S14-T23N-R6W - GCU P14-2306 03H - 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		
6,700.0	5,600.8	5,724.7	5,343.0	31.6	32.3	-74.44	-131.1	1,601.7	980.6	925.3	55.32	17.726			

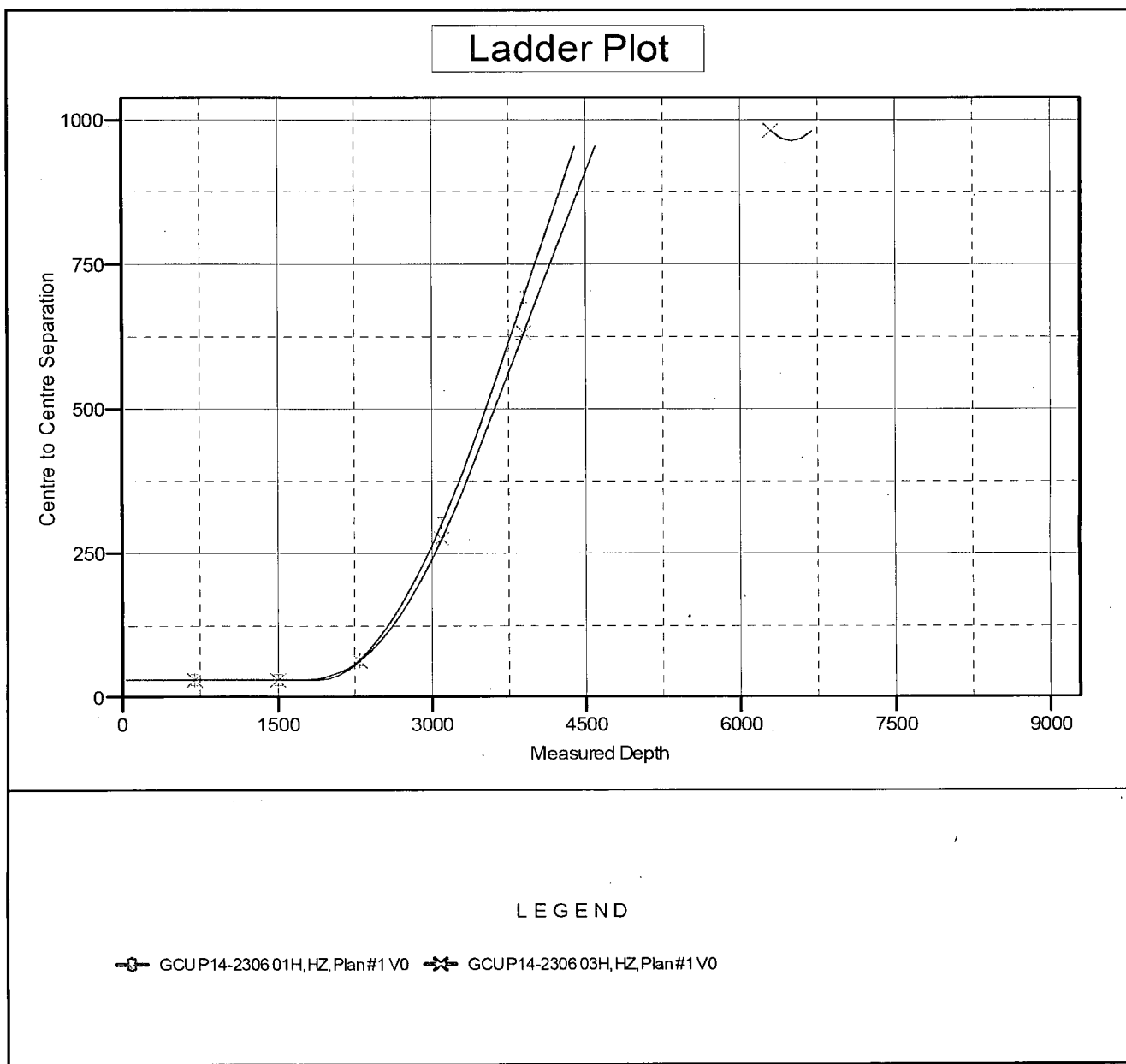
Anticollision Report

Company: EnCana Oil & Gas (USA) Inc
Project: Rio Arriba County, NM
Reference Site: S14-T23N-R6W
Site Error: 0.0ft
Reference Well: GCU P14-2306 02H
Well Error: 0.0ft
Reference Wellbore: HZ
Reference Design: Plan #1

Local Co-ordinate Reference: Well GCU P14-2306 02H
TVD Reference: HZ @ 6927.0ft
MD Reference: HZ @ 6927.0ft
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 HZ @ 6927.0ft
 Offset Depths are relative to Offset Datum
 Central Meridian is -106.250000 °

Coordinates are relative to: GCU P14-2306 02H
 Coordinate System is US State Plane 1983, New Mexico Central Zone
 Grid Convergence at Surface is: -0.70°



Gallo Canyon Unit P14-2306 02H
SHL: SESE Section 14, T23N, R6W
50 FSL and 645 FEL
BHL: NENE Section 25, T23N, R6W
40 FNL and 330 FEL
Rio Arriba County, New Mexico
Lease Number: NMNM 17009

If the location becomes prone to wind or water erosion, Encana will take appropriate measures to prevent topsoil loss from wind. Such measures may include using tackifiers or water to wet the topsoil stockpile so that a crust is created across the exposed soil to prevent soil loss.

3. All construction materials for the well pad will consist of native borrow and subsoil accumulated during well pad construction. If additional fill or surfacing material is required, it will be obtained from existing permitted or private sources and will be hauled in by trucks over existing access roads.

The maximum cut will be approximately 24.4 feet on the southeast corner (corner 6) and the maximum fill will be approximately 11.7 feet on the northwest corner (corner 3).

4. As determined during the onsite on March 11, 2014, the following best management practices will be implemented:

Water will be diverted around the well pad and silt traps installed as needed upon interim reclamation.

5. Construction equipment may include chain saws, a brush hog, scraper, maintainer, excavator, and dozer. Construction for the access road and well pad will take approximately 3 weeks.

C. Pipeline

See the final Standard SF-299 Application for authorization to construct, operate, maintain and terminate a 1,561 foot, up to 6-inch outside diameter, buried steel well connect pipeline that was submitted to the Bureau of Land Management on Feb 11, 2014.

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.

Driving Directions:

1. From the intersection of US Hwy 64 and US Hwy 550 in Bloomfield N.M. travel south 53.6 miles on US Hwy 550.
2. Turn right at MP 197.7.
3. Turn Left at intersection of US Hwy 550 and Rio Arriba CO RD 379.
4. Travel north on Rio Arriba CO Road 379 for 0.89 miles.
5. Turn right and travel east at intersection 1.8 miles.
6. Turn right and travel south at intersection.
7. Travel south 0.2 miles to intersection,
8. Turn left and travel east and south along two track and staked access road 0.5 miles to well pad

WELLHEAD BLOWOUT CONTROL SYSTEM

encana

Well Name and Number:
GCU P14-2306 02H

