

State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

David Martin
Cabinet Secretary-Designate

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

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 N23 2306 #1H

API# 30-043-21263, Section 23, 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 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.

* APD Held for
name change
See Sunday


NMOCD Approved by Signature

8-12-2015
Date KC

JUN 15 2015

RECEIVED

FEB 06 2015

Form 3160-3
(March 2012)FORM APPROVED
OMB No. 1004-0137
Expires October 31, 2014UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENTFarmington Field Office
Bureau of Land Management

APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of work: ☒ DRILL ☐ REENTER		5. Lease Serial No. NMNM 17009 Gallo Canyon Unit 131710X
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 N23-2306 01H
3b. Phone No. (include area code) 720-876-3740		9. API Well No. 30-043-21263
4. Location of Well (Report location clearly and in accordance with any State requirements*) At surface 913' FSL and 1861' FWL, Section 23, T23N, R6W SENW At proposed prod. zone 1000' FSL and 610' FWL, Section 25, T23N, R6W SWSW		10. Field and Pool, or Exploratory Counselors Gallup-Dakota
14. Distance in miles and direction from nearest town or post office* +/- 56.8 miles south from the intersection of HWY 64 & HWY 550 IN Bloomfield, NM		11. Sec., T. R. M. or Blk. and Survey or Area Section 23, T23N, R6W NMPM
15. Distance from proposed* location to nearest property or lease line, ft. POE is 1690' FWL Section 26, T23N, R6W (Also to nearest drig. unit line, if any)	16. No. of acres in lease NMNM 131017X- 5,120 acres NMNM 17009 2560.00 acres	17. Spacing Unit dedicated to this well 5,120 acres- Sections 22-26 and 34-36, T23N, R6W
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. SHL +/- E 30' Gallo Canyon Unit N23-2306 02H	19. Proposed Depth 5,493' TVD; 11,914' MD	20. BLM/BIA Bond No. on file COB-000235
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 6,946' GL; 6,962' 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. Mankoo</i>	Name (Printed/Typed)	Date 6/16/15
Title AFM	Office FFO	

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

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

*(Instructions on page 2)

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

NMCD

DISTRICT I

1695 W. French Dr., Hobbs, N.M. 88240
Phone: (505) 598-8161 Fax: (505) 598-0780

DISTRICT II

811 E. First St., Artesia, N.M. 80510
Phone: (505) 742-1888 Fax: (505) 742-0780

DISTRICT III

1000 E. Bravo Rd., Aztec, N.M. 87410
Phone: (505) 934-6178 Fax: (505) 934-6170

DISTRICT IV

1890 S. St. Francis Dr., Santa Fe, NM 87506
Phone: (505) 478-3490 Fax: (505) 478-3458

State of New Mexico
Energy, Minerals & Natural Resources Department

Form C-102
Revised August 1, 2011

OIL CONSERVATION DIVISION

1220 South St. Francis Dr.
Santa Fe, NM 87505

Farmington Field Office
Bureau of Land Management

Submit one copy to appropriate
District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-043-21263	² Pool Code 13379	³ Pool Name COUNSELORS GALLUP-DAKOTA
⁴ Property Code 315083	⁵ Property Name GALLO CANYON UNIT N23-2306-	⁶ Well Number 01H-103H
⁷ GRID No. 282327	⁸ Operator Name ENCANA OIL & GAS (USA) INC.	⁹ Elevation 6945.5'

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
N	23	23N	6W		913'	SOUTH	1861'	WEST	SANDOVAL

¹¹ Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
M	25	23N	6W		1000'	SOUTH	610'	WEST	SANDOVAL

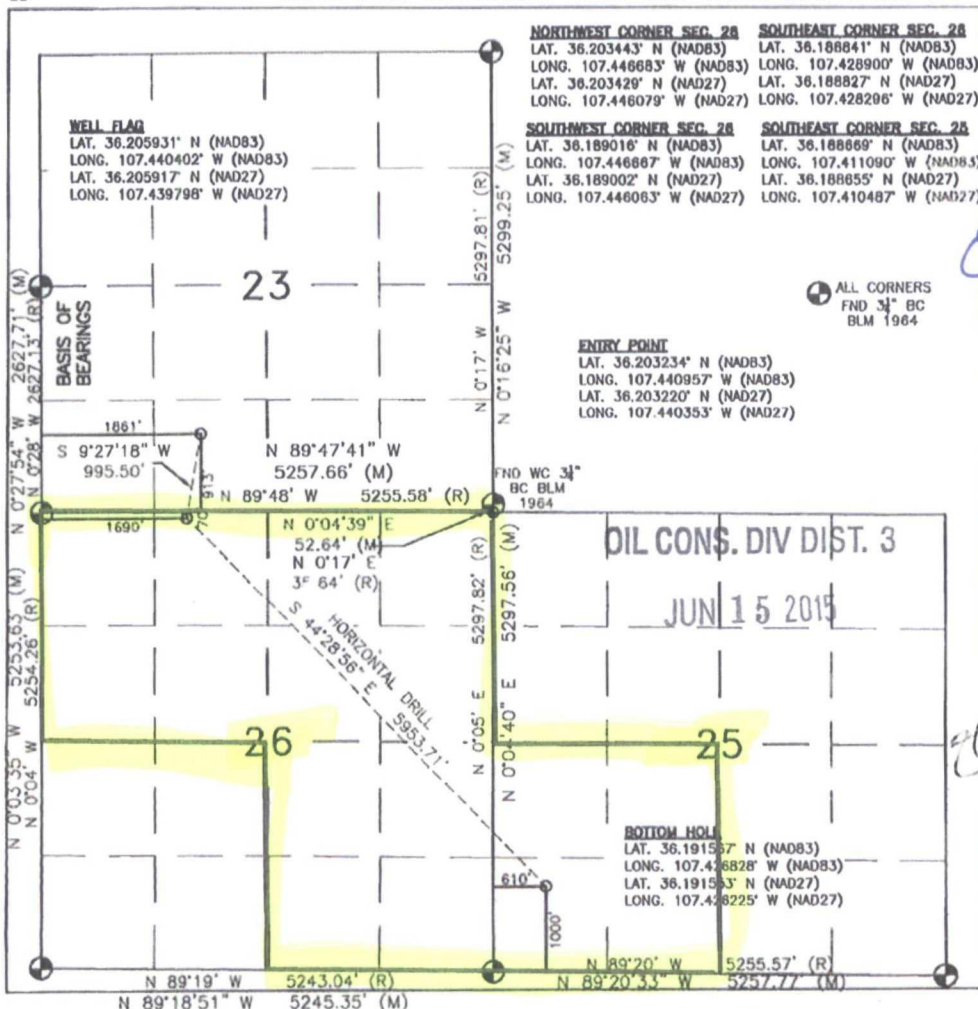
¹² Dedicated Acres PROJECT AREA
PENETRATED SPACING UNITS: N2 & SE/4 OF
SEC. 26, SW/4 SEC. 25, T23N, R6W, 640 Acres
5,120 ACRES - ALL OF SEC 22-26; 34-36 T23N R6W -
UNDIVIDED UNIT

¹³ Joint or Infill¹⁴ Consolidation Code¹⁵ Order No.

R-13718-A (5,120 acres)

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED
OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

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¹⁷ OPERATOR CERTIFICATION

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

Rosalie Thim 02/05/15
Signature Date

Rosalie Thim
Printed Name

rosalie.thim@encana.com
E-mail Address

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.

MARCH 12, 2014
Date of Survey

Signature and Seal of Professional Surveyor:

David R. Russell
DAVID R. RUSSELL
NEW MEXICO
REGISTERED PROFESSIONAL SURVEYOR
10201
Certificate Number

DISTRICT I

1685 N. French Dr., Hobbs, N.M. 88240
Phone: (505) 393-8161 Fax: (505) 393-0780

DISTRICT II

811 S. First St., Artesia, N.M. 88210
Phone: (505) 748-1883 Fax: (505) 748-9780

DISTRICT III

1000 Rio Blanco Rd., Artec, N.M. 87410
Phone: (505) 334-6178 Fax: (505) 334-6170

DISTRICT IV

1820 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3480 Fax: (505) 476-3488

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. 36.205931° N (NAD83)
LONG. 107.440402° W (NAD83)
LAT. 36.205917° N (NAD27)
LONG. 107.439798° W (NAD27)

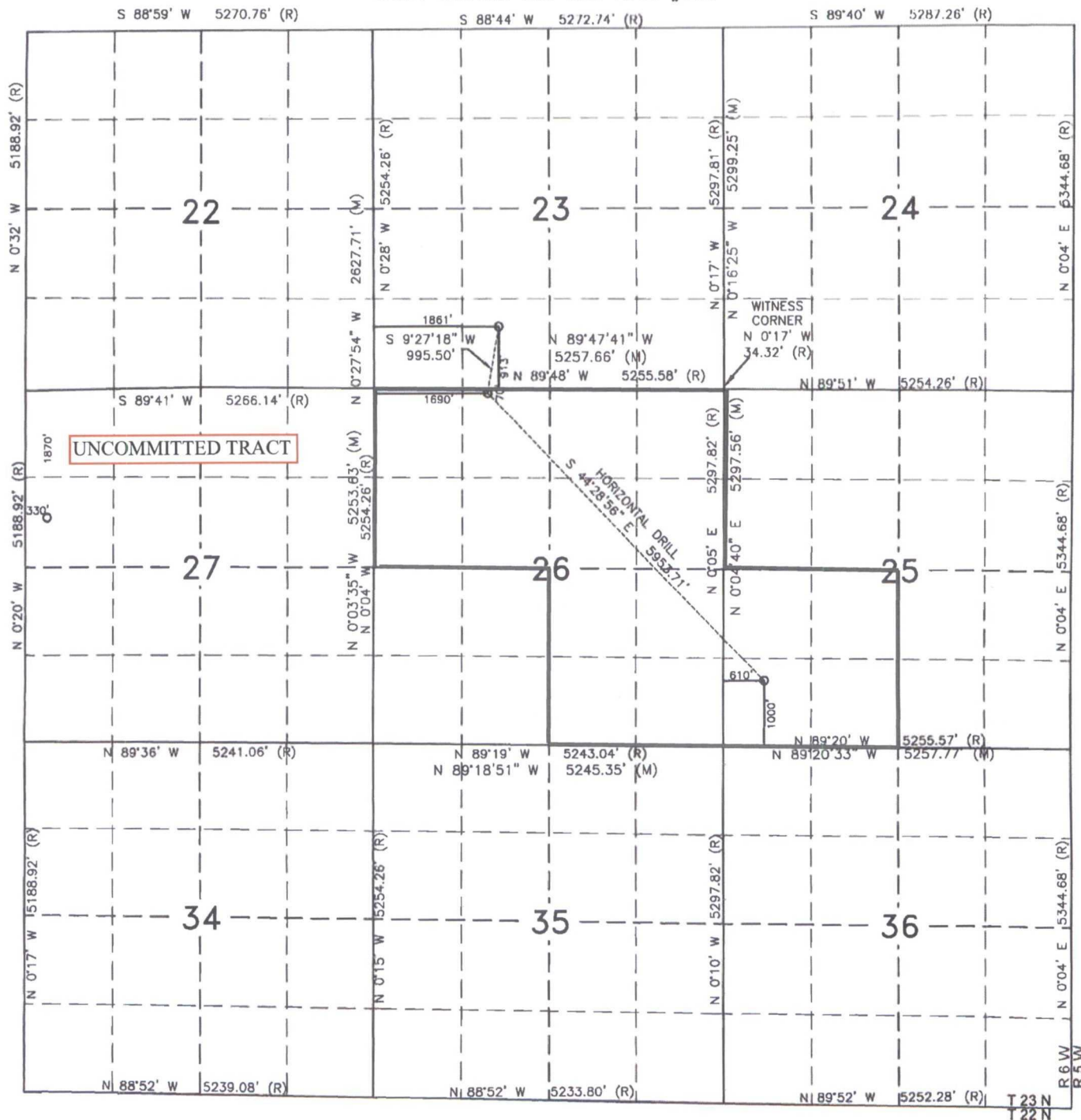
ENTRY POINT

LAT. 36.203234° N (NAD83)
LONG. 107.440957° W (NAD83)
LAT. 36.203220° N (NAD27)
LONG. 107.440353° W (NAD27)

BOTTOM HOLE

LAT. 36.191567° N (NAD83)
LONG. 107.428828° W (NAD83)
LAT. 36.191553° N (NAD27)
LONG. 107.428225° W (NAD27)

ENCANA OIL & GAS (USA) INC.
GALLO CANYON UNIT N23-2306 #01H



GCU N23-2306 01H

SHL: 913' FSL, 1861' FWL Sec 23 T23N R06W

BHL: 1000' FSL, 610' FWL 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.	1,489
Kirtland Shale	1,597
Fruitland Coal	1,761
Pictured Cliffs Ss.	2,038
Lewis Shale	2,154
Cliffhouse Ss.	2,828
Menefee Fn.	3,550
Point Lookout Ss.	4,254
Mancos Shale	4,453
Mancos Silt	5,041
Gallup Fn.	5,282
Base Gallup	5,607

The referenced surface elevation is 6946', KB 6962'

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

Substance	Formation	Depth (TVD) units = feet
Water/Gas	Fruitland Coal	1,761
Oil/Gas	Pictured Cliffs Ss.	2,038
Oil/Gas	Cliffhouse Ss.	2,828
Gas	Menefee Fn.	3,550
Oil/Gas	Point Lookout Ss.	4,254
Oil/Gas	Mancos Shale	4,453
Oil/Gas	Mancos Silt	5,041
Oil/Gas	Gallup Fn.	5,282

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

GCU N23-2306 01H

SHL: 913' FSL, 1861' FWL Sec 23 T23N R06W

BHL: 1000' FSL, 610' FWL 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'-5595'	8 3/4"	7"	26#	J55, LTC New
Production Liner	5495'-11914'	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 N23-2306 01H

SHL: 913' FSL, 1861' FWL Sec 23 T23N R06W

BHL: 1000' FSL, 610' FWL 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'	228 sks	Type III Cement + 1% bwoc Calcium Chloride + 0.25 lbs/sack Cello Flake + 0.2% bwoc FL-52A + 58.9% Fresh Water	Surface	1 per joint on bottom 3 joints
Intermediate	0'-5595'	100% open hole excess Stage 1 Lead: 521 sks Stage 1 Tail: 397 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	5495'-11914'	50% OH excess Stage 1 Blend Total: 360sks	Blend: Premium Lite High Strength FM + 0.7% bwoc R-3 + 3% bwoc 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 2000'. Directional plans are attached.

Description	Proposed Depth (TVD/MD)	Formation
Horizontal Lateral TD	5493'/11914'	Gallup

GCU N23-2306 01H

SHL: 913' FSL, 1861' FWL Sec 23 T23N R06W

BHL: 1000' FSL, 610' FWL 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'-5427'/5595'	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"	5427'/5595'- 5493'/11914'	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 +/- 2592 psi based on a 9.0 ppg at 5539' 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: 913' FSL, 1861' FWL Sec 23 T23N R06E			Encana Natural Gas						ENG: Michael Sanch		2-3-15	
County: Sandoval			WELL SUMMARY						RIG: Unassigned			
WELL: GCU N23-2306 01H									GLE: 6945.5			
									RKBE: 6961.5			
MWD	OPEN HOLE	FORM	DEPTH			HOLE	CASING	MW	DEVIATION			
LWD	LOGGING		TVD	MD			SPECS	MUD TYPE	INFORMATION			
			60	60'		26	16" 42.09# 100sx Type I Neat 16.0ppg cmt	Fresh wtr 8.3-9.2				
Multi-Well pad - take survey every stand and run anti-collision report prior to spud	None	San Jose Fn.	0									
		Nacimiento Fn. 9 5/8" Csg	surface 500	500.00			9 5/8" 36ppf J55 LTC TOC Surface with 100% OH Excess: 228 sks Type III Cement + 1% bwoc Calcium Chloride + 0.25 lbs/sack Cello Flake + 0.2% bwoc FL-52A + 58.9% Fresh Water.	Fresh wtr 8.3-10	Vertical <1°			
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	1,489 1,597									
		Fruitland Coal	1,761									
		Pictured Cliffs Ss. Lewis Shale	2,038 2,154									
		Cliffhouse Ss. Menefee Fn.	2,828 3,550									
		Point Lookout Ss. Mancos Shale	4,254 4,453									
Surveys every 30' through the curve	Mud logger onsite	KOP	2,000	2,000			7" 26ppf J55 LTC TOC @ surface (100% OH excess - 70% Lead 30% Tail) Stage 1 Total: 919sks Stage 1 Lead: 521 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.	Fresh Wtr 8.3-10	Vertical <1°			
		Mancos Silt	5,041				Stage 1 Tail: 397 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.					
		Gallup Fn. 7" Csg	5,282 5,427	5,595'								
Surveys every stand to TD unless directed otherwise by Geologist	No OH Logs	Horizontal Target TD	5,539 5,493	11,914		6 1/8	100' overlap at liner top		Horz Inc/TVD 90.4deg/5538.5ft			
		Base Gallup	5,607			6319' Drilled Lateral				TD = 11913.8 MD		
MWD Gamma Directional							4 1/2" 11.6ppf SB80 LTC TOC @ hanger (50% OH excess) Stage 1 Total: 360sks Stage 1 Blend: 360 sks Premium Lite High Strength FM + 0.7% bwoc R-3 + 3% bwoc 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 2000', 8 3/4 inch holesize
- 5) Start curve at 10deg/100' build rate
- 6) Drill to csg point of 5595' MD
- 7) R&C 7" csg, circ cmt to surface
- 8) Land at ~55 deg, drill lateral to 11914' run 4 1/2 inch cemented liner

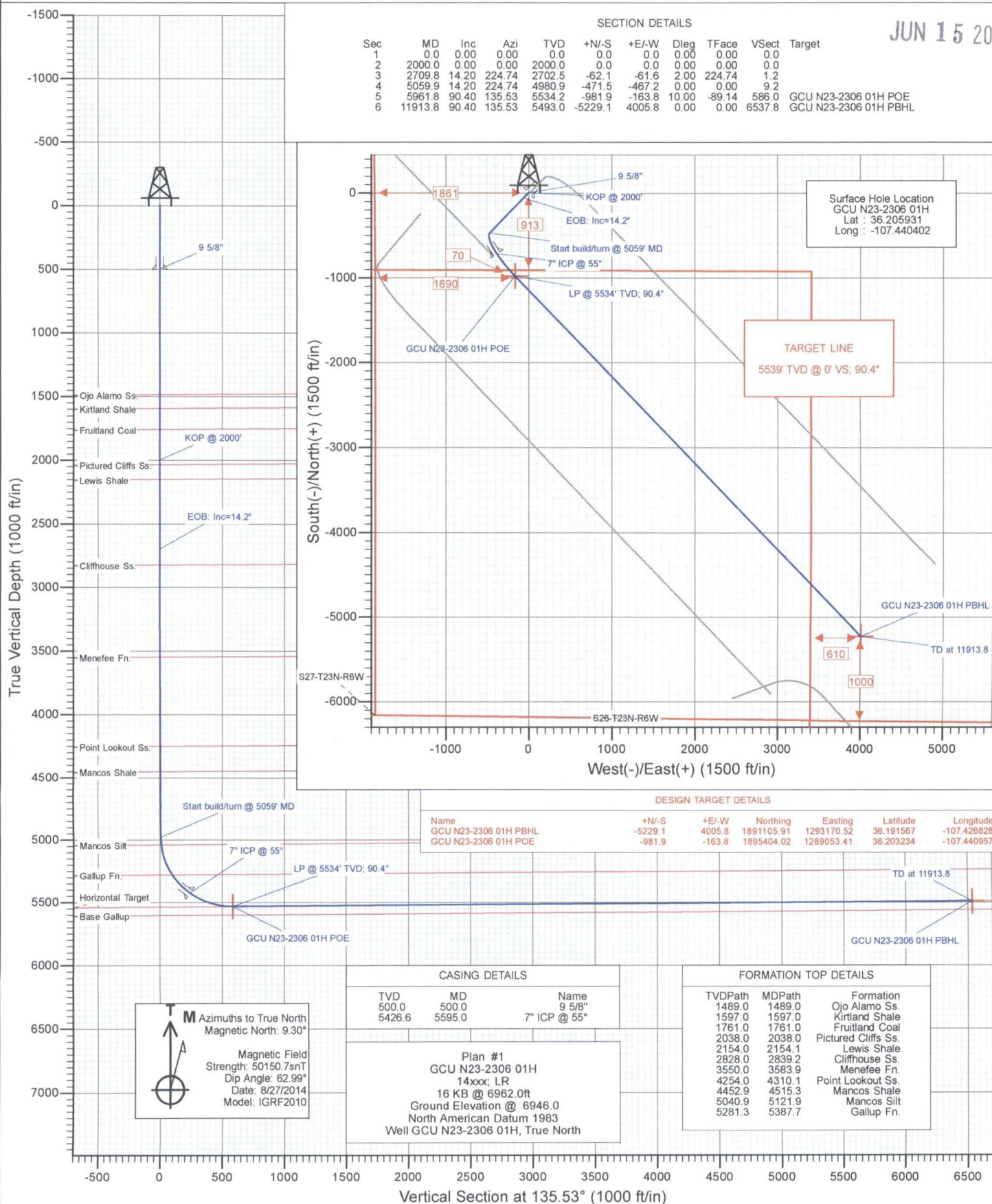


Project: Sandoval County, NM
Site: S23-T23N-R6W
Well: GCU N23-2306 01H
Wellbore: HZ
Design: Plan #1

CATHEDRAL
OIL CONS. DIV DIST. 3

JUN 15 2015

SECTION DETAILS										
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	2000.0	0.00	0.00	2000.0	0.0	0.0	0.00	0.00	0.0	
3	2709.8	14.20	224.74	2702.5	-62.1	-61.6	2.00	224.74	1.2	
4	5059.9	14.20	224.74	4980.9	-471.5	-467.2	0.00	0.00	9.2	
5	5961.8	90.40	135.53	5534.2	-981.9	-163.8	10.00	-89.14	586.0	GCU N23-2306 01H POE
6	11913.8	90.40	135.53	5493.0	-5229.1	4005.8	0.00	0.00	6537.8	GCU N23-2306 01H PBHL



Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well GCU N23-2306 01H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	16 KB @ 6962.0ft
Project:	Sandoval County, NM	MD Reference:	16 KB @ 6962.0ft
Site:	S23-T23N-R6W	North Reference:	True
Well:	GCU N23-2306 01H	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #1		

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		S23-T23N-R6W			
Site Position:		Northing:	1,896,152.77 ft	Latitude:	36.205251
From:	Lat/Long	Easting:	1,287,884.94 ft	Longitude:	-107.444948
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	-0.71 °

Well	GCU N23-2306 01H					
Well Position	+N/-S	0.0 ft	Northing:	1,896,383.82 ft	Latitude:	36.205931
	+E/-W	0.0 ft	Easting:	1,289,229.20 ft	Longitude:	-107.440402
Position Uncertainty		0.0 ft	Wellhead Elevation:	0.0 ft	Ground Level:	6,946.0 ft

Wellbore	HZ				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	8/27/2014	9.30	62.99	50,151

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	135.53

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	
2,709.8	14.20	224.74	2,702.5	-62.1	-61.6	2.00	2.00	0.00	224.74	
5,059.9	14.20	224.74	4,980.9	-471.5	-467.2	0.00	0.00	0.00	0.00	
5,961.8	90.40	135.53	5,534.2	-981.9	-163.8	10.00	8.45	-9.89	-89.14	GCU N23-2306 01H F
11,913.8	90.40	135.53	5,493.0	-5,229.1	4,005.8	0.00	0.00	0.00	0.00	GCU N23-2306 01H F

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well GCU N23-2306 01H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	16 KB @ 6962.0ft
Project:	Sandoval County, NM	MD Reference:	16 KB @ 6962.0ft
Site:	S23-T23N-R6W	North Reference:	True
Well:	GCU N23-2306 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
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	
1,489.0	0.00	0.00	1,489.0	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	
1,597.0	0.00	0.00	1,597.0	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	
1,761.0	0.00	0.00	1,761.0	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	
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	KOP @ 2000'
2,038.0	0.76	224.74	2,038.0	-0.2	-0.2	0.0	2.00	2.00	Pictured Cliffs Ss.
2,100.0	2.00	224.74	2,100.0	-1.2	-1.2	0.0	2.00	2.00	
2,154.1	3.08	224.74	2,154.0	-2.9	-2.9	0.1	2.00	2.00	Lewis Shale
2,200.0	4.00	224.74	2,199.8	-5.0	-4.9	0.1	2.00	2.00	
2,300.0	6.00	224.74	2,299.5	-11.1	-11.0	0.2	2.00	2.00	
2,400.0	8.00	224.74	2,398.7	-19.8	-19.6	0.4	2.00	2.00	
2,500.0	10.00	224.74	2,497.5	-30.9	-30.6	0.6	2.00	2.00	
2,600.0	12.00	224.74	2,595.6	-44.5	-44.1	0.9	2.00	2.00	
2,700.0	14.00	224.74	2,693.1	-60.4	-59.9	1.2	2.00	2.00	
2,709.8	14.20	224.74	2,702.5	-62.1	-61.6	1.2	2.00	2.00	EOB: Inc=14.2°
2,800.0	14.20	224.74	2,790.0	-77.9	-77.1	1.5	0.00	0.00	
2,839.2	14.20	224.74	2,828.0	-84.7	-83.9	1.6	0.00	0.00	Cliffhouse Ss.
2,900.0	14.20	224.74	2,887.0	-95.3	-94.4	1.9	0.00	0.00	
3,000.0	14.20	224.74	2,983.9	-112.7	-111.7	2.2	0.00	0.00	
3,100.0	14.20	224.74	3,080.8	-130.1	-128.9	2.5	0.00	0.00	
3,200.0	14.20	224.74	3,177.8	-147.5	-146.2	2.9	0.00	0.00	
3,300.0	14.20	224.74	3,274.7	-165.0	-163.5	3.2	0.00	0.00	
3,400.0	14.20	224.74	3,371.7	-182.4	-180.7	3.5	0.00	0.00	
3,500.0	14.20	224.74	3,468.6	-199.8	-198.0	3.9	0.00	0.00	
3,583.9	14.20	224.74	3,550.0	-214.4	-212.5	4.2	0.00	0.00	Menefee Fn.
3,600.0	14.20	224.74	3,565.6	-217.2	-215.2	4.2	0.00	0.00	
3,700.0	14.20	224.74	3,662.5	-234.6	-232.5	4.6	0.00	0.00	
3,800.0	14.20	224.74	3,759.5	-252.1	-249.8	4.9	0.00	0.00	
3,900.0	14.20	224.74	3,856.4	-269.5	-267.0	5.2	0.00	0.00	
4,000.0	14.20	224.74	3,953.4	-286.9	-284.3	5.6	0.00	0.00	
4,100.0	14.20	224.74	4,050.3	-304.3	-301.5	5.9	0.00	0.00	
4,200.0	14.20	224.74	4,147.3	-321.7	-318.8	6.3	0.00	0.00	
4,300.0	14.20	224.74	4,244.2	-339.1	-336.1	6.6	0.00	0.00	

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well GCU N23-2306 01H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	16 KB @ 6962.0ft
Project:	Sandoval County, NM	MD Reference:	16 KB @ 6962.0ft
Site:	S23-T23N-R6W	North Reference:	True
Well:	GCU N23-2306 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
4,310.1	14.20	224.74	4,254.0	-340.9	-337.8	6.6	0.00	0.00	Point Lookout Ss.
4,400.0	14.20	224.74	4,341.1	-356.6	-353.3	6.9	0.00	0.00	
4,500.0	14.20	224.74	4,438.1	-374.0	-370.6	7.3	0.00	0.00	
4,515.3	14.20	224.74	4,452.9	-376.7	-373.2	7.3	0.00	0.00	Mancos Shale
4,600.0	14.20	224.74	4,535.0	-391.4	-387.9	7.6	0.00	0.00	
4,700.0	14.20	224.74	4,632.0	-408.8	-405.1	7.9	0.00	0.00	
4,800.0	14.20	224.74	4,728.9	-426.2	-422.4	8.3	0.00	0.00	
4,900.0	14.20	224.74	4,825.9	-443.7	-439.6	8.6	0.00	0.00	
5,000.0	14.20	224.74	4,922.8	-461.1	-456.9	9.0	0.00	0.00	
5,059.9	14.20	224.74	4,980.9	-471.5	-467.2	9.2	0.00	0.00	Start build/turn @ 5059' MD
5,100.0	14.80	208.86	5,019.7	-479.5	-473.2	10.7	10.00	1.50	
5,121.9	15.55	200.98	5,040.9	-484.7	-475.6	12.7	10.00	3.44	Mancos Silt
5,200.0	19.99	179.67	5,115.3	-507.9	-479.3	26.7	10.00	5.69	
5,300.0	27.86	164.22	5,206.7	-547.5	-472.8	59.5	10.00	7.87	
5,387.7	35.60	156.32	5,281.3	-590.7	-456.9	101.4	10.00	8.83	Gallup Fn.
5,400.0	36.72	155.45	5,291.2	-597.3	-454.0	108.2	10.00	9.10	
5,500.0	46.00	149.77	5,366.2	-655.7	-423.4	171.4	10.00	9.28	
5,595.0	55.00	145.83	5,426.6	-717.6	-384.2	242.9	10.00	9.48	7" ICP @ 55°
5,600.0	55.48	145.65	5,429.5	-721.0	-381.9	247.0	10.00	9.54	
5,700.0	65.07	142.38	5,479.0	-791.1	-330.9	332.8	10.00	9.59	
5,800.0	74.72	139.59	5,513.3	-863.9	-271.8	426.1	10.00	9.65	
5,900.0	84.40	137.05	5,531.4	-937.3	-206.4	524.2	10.00	9.68	
5,961.8	90.40	135.53	5,534.2	-981.9	-163.8	586.0	10.00	9.69	LP @ 5534' TVD; 90.4° - GCU N23-2306 01H F
6,000.0	90.40	135.53	5,534.0	-1,009.1	-137.0	624.1	0.00	0.00	
6,100.0	90.40	135.53	5,533.3	-1,080.5	-67.0	724.1	0.00	0.00	
6,200.0	90.40	135.53	5,532.6	-1,151.8	3.1	824.1	0.00	0.00	
6,300.0	90.40	135.53	5,531.9	-1,223.2	73.1	924.1	0.00	0.00	
6,400.0	90.40	135.53	5,531.2	-1,294.6	143.2	1,024.1	0.00	0.00	
6,500.0	90.40	135.53	5,530.5	-1,365.9	213.2	1,124.1	0.00	0.00	
6,600.0	90.40	135.53	5,529.8	-1,437.3	283.3	1,224.1	0.00	0.00	
6,700.0	90.40	135.53	5,529.1	-1,508.6	353.4	1,324.1	0.00	0.00	
6,800.0	90.40	135.53	5,528.4	-1,580.0	423.4	1,424.1	0.00	0.00	
6,900.0	90.40	135.53	5,527.7	-1,651.4	493.5	1,524.1	0.00	0.00	
7,000.0	90.40	135.53	5,527.1	-1,722.7	563.5	1,624.1	0.00	0.00	
7,100.0	90.40	135.53	5,526.4	-1,794.1	633.6	1,724.1	0.00	0.00	
7,200.0	90.40	135.53	5,525.7	-1,865.4	703.6	1,824.1	0.00	0.00	
7,300.0	90.40	135.53	5,525.0	-1,936.8	773.7	1,924.1	0.00	0.00	
7,400.0	90.40	135.53	5,524.3	-2,008.1	843.7	2,024.1	0.00	0.00	
7,500.0	90.40	135.53	5,523.6	-2,079.5	913.8	2,124.1	0.00	0.00	
7,600.0	90.40	135.53	5,522.9	-2,150.9	983.8	2,224.1	0.00	0.00	
7,700.0	90.40	135.53	5,522.2	-2,222.2	1,053.9	2,324.1	0.00	0.00	
7,800.0	90.40	135.53	5,521.5	-2,293.6	1,123.9	2,424.1	0.00	0.00	
7,900.0	90.40	135.53	5,520.8	-2,364.9	1,194.0	2,524.1	0.00	0.00	
8,000.0	90.40	135.53	5,520.1	-2,436.3	1,264.0	2,624.1	0.00	0.00	
8,100.0	90.40	135.53	5,519.4	-2,507.7	1,334.1	2,724.1	0.00	0.00	
8,200.0	90.40	135.53	5,518.7	-2,579.0	1,404.2	2,824.1	0.00	0.00	
8,300.0	90.40	135.53	5,518.0	-2,650.4	1,474.2	2,924.1	0.00	0.00	
8,400.0	90.40	135.53	5,517.4	-2,721.7	1,544.3	3,024.1	0.00	0.00	
8,500.0	90.40	135.53	5,516.7	-2,793.1	1,614.3	3,124.1	0.00	0.00	
8,600.0	90.40	135.53	5,516.0	-2,864.4	1,684.4	3,224.1	0.00	0.00	
8,700.0	90.40	135.53	5,515.3	-2,935.8	1,754.4	3,324.1	0.00	0.00	
8,800.0	90.40	135.53	5,514.6	-3,007.2	1,824.5	3,424.1	0.00	0.00	

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well GCU N23-2306 01H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	16 KB @ 6962.0ft
Project:	Sandoval County, NM	MD Reference:	16 KB @ 6962.0ft
Site:	S23-T23N-R6W	North Reference:	True
Well:	GCU N23-2306 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
8,900.0	90.40	135.53	5,513.9	-3,078.5	1,894.5	3,524.1	0.00	0.00	
9,000.0	90.40	135.53	5,513.2	-3,149.9	1,964.6	3,624.1	0.00	0.00	
9,100.0	90.40	135.53	5,512.5	-3,221.2	2,034.6	3,724.1	0.00	0.00	
9,200.0	90.40	135.53	5,511.8	-3,292.6	2,104.7	3,824.1	0.00	0.00	
9,300.0	90.40	135.53	5,511.1	-3,364.0	2,174.7	3,924.1	0.00	0.00	
9,400.0	90.40	135.53	5,510.4	-3,435.3	2,244.8	4,024.1	0.00	0.00	
9,500.0	90.40	135.53	5,509.7	-3,506.7	2,314.8	4,124.1	0.00	0.00	
9,600.0	90.40	135.53	5,509.0	-3,578.0	2,384.9	4,224.1	0.00	0.00	
9,700.0	90.40	135.53	5,508.3	-3,649.4	2,455.0	4,324.0	0.00	0.00	
9,800.0	90.40	135.53	5,507.6	-3,720.8	2,525.0	4,424.0	0.00	0.00	
9,900.0	90.40	135.53	5,507.0	-3,792.1	2,595.1	4,524.0	0.00	0.00	
10,000.0	90.40	135.53	5,506.3	-3,863.5	2,665.1	4,624.0	0.00	0.00	
10,100.0	90.40	135.53	5,505.6	-3,934.8	2,735.2	4,724.0	0.00	0.00	
10,200.0	90.40	135.53	5,504.9	-4,006.2	2,805.2	4,824.0	0.00	0.00	
10,300.0	90.40	135.53	5,504.2	-4,077.5	2,875.3	4,924.0	0.00	0.00	
10,400.0	90.40	135.53	5,503.5	-4,148.9	2,945.3	5,024.0	0.00	0.00	
10,500.0	90.40	135.53	5,502.8	-4,220.3	3,015.4	5,124.0	0.00	0.00	
10,600.0	90.40	135.53	5,502.1	-4,291.6	3,085.4	5,224.0	0.00	0.00	
10,700.0	90.40	135.53	5,501.4	-4,363.0	3,155.5	5,324.0	0.00	0.00	
10,800.0	90.40	135.53	5,500.7	-4,434.3	3,225.5	5,424.0	0.00	0.00	
10,900.0	90.40	135.53	5,500.0	-4,505.7	3,295.6	5,524.0	0.00	0.00	
11,000.0	90.40	135.53	5,499.3	-4,577.1	3,365.6	5,624.0	0.00	0.00	
11,100.0	90.40	135.53	5,498.6	-4,648.4	3,435.7	5,724.0	0.00	0.00	
11,200.0	90.40	135.53	5,497.9	-4,719.8	3,505.7	5,824.0	0.00	0.00	
11,300.0	90.40	135.53	5,497.3	-4,791.1	3,575.8	5,924.0	0.00	0.00	
11,400.0	90.40	135.53	5,496.6	-4,862.5	3,645.9	6,024.0	0.00	0.00	
11,500.0	90.40	135.53	5,495.9	-4,933.8	3,715.9	6,124.0	0.00	0.00	
11,600.0	90.40	135.53	5,495.2	-5,005.2	3,786.0	6,224.0	0.00	0.00	
11,700.0	90.40	135.53	5,494.5	-5,076.6	3,856.0	6,324.0	0.00	0.00	
11,800.0	90.40	135.53	5,493.8	-5,147.9	3,926.1	6,424.0	0.00	0.00	
11,900.0	90.40	135.53	5,493.1	-5,219.3	3,996.1	6,524.0	0.00	0.00	
11,913.8	90.40	135.53	5,493.0	-5,229.1	4,005.8	6,537.8	0.00	0.00	TD at 11913.8 - GCU N23-2306 01H PBHL

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 N23-2306 01H PO - plan hits target center - Point	0.00	0.00	5,534.2	-981.9	-163.8	1,895,404.02	1,289,053.41	36.203234	-107.440957
GCU N23-2306 01H PBI - plan hits target center - Point	0.00	0.00	5,493.0	-5,229.1	4,005.8	1,891,105.91	1,293,170.52	36.191567	-107.426828
	500.0	500.0	9 5/8"					0.000	0.000
	5,595.0	5,426.6	7" ICP @ 55°					0.000	0.000

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well GCU N23-2306 01H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	16 KB @ 6962.0ft
Project:	Sandoval County, NM	MD Reference:	16 KB @ 6962.0ft
Site:	S23-T23N-R6W	North Reference:	True
Well:	GCU N23-2306 01H	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #1		

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,489.0	1,489.0	Ojo Alamo Ss.		-0.40	135.53	
1,597.0	1,597.0	Kirtland Shale		-0.40	135.53	
1,761.0	1,761.0	Fruitland Coal		-0.40	135.53	
2,038.0	2,038.0	Pictured Cliffs Ss.		-0.40	135.53	
2,154.1	2,154.0	Lewis Shale		-0.40	135.53	
2,839.2	2,828.0	Cliffhouse Ss.		-0.40	135.53	
3,583.9	3,550.0	Menefee Fn.		-0.40	135.53	
4,310.1	4,254.0	Point Lookout Ss.		-0.40	135.53	
4,515.3	4,453.0	Mancos Shale		-0.40	135.53	
5,121.9	5,041.0	Mancos Silt		-0.40	135.53	
5,387.7	5,282.0	Gallup Fn.		-0.40	135.53	

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'	
2,709.8	2,702.5	-62.1	-61.6	EOB: Inc=14.2°	
5,059.9	4,980.9	-471.5	-467.2	Start build/turn @ 5059' MD	
5,961.8	5,534.2	-981.9	-163.8	LP @ 5534' TVD; 90.4°	
11,913.8	5,493.0	-5,229.1	4,005.8	TD at 11913.8	

EnCana Oil & Gas (USA) Inc

Sandoval County, NM

S23-T23N-R6W

GCU N23-2306 01H

HZ

Plan #1

Anticollision Report

27 August, 2014

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well GCU N23-2306 01H
Project:	Sandoval County, NM	TVD Reference:	16 KB @ 6962.0ft
Reference Site:	S23-T23N-R6W	MD Reference:	16 KB @ 6962.0ft
Site Error:	0.0ft	North Reference:	True
Reference Well:	GCU N23-2306 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:	GLOBAL FILTER APPLIED: All wellpaths within 200' + 100/1000 of reference
Interpolation Method:	MD Interval 100.0ft
Depth Range:	Unlimited
Results Limited by:	Maximum center-center distance of 1,391.4ft
Warning Levels Evaluated at:	2.00 Sigma
Error Model:	Systematic Ellipse
Scan Method:	Closest Approach 3D
Error Surface:	Elliptical Conic

Survey Tool Program	Date	8/27/2014
From (ft)	To (ft)	Survey (Wellbore)
0.0	11,913.8	Plan #1 (HZ)
		Tool Name
		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						
S15-T23N-R6W						
GCU M15-2306 02H - HZ - Plan #1	5,632.4	12,797.5	101.7	19.5	1.238	Level 2, CC, ES, SF
S23-T23N-R6W						
GCU M23-2306 02H - HZ - Plan #1	5,964.7	6,709.3	1,234.7	1,189.2	27.146	CC
GCU M23-2306 02H - HZ - Plan #1	11,700.0	12,381.6	1,254.7	970.0	4.407	ES
GCU M23-2306 02H - HZ - Plan #1	11,800.0	12,381.6	1,263.9	977.1	4.407	SF
GCU N23-2306 02H - HZ - Plan #1	2,000.0	2,000.0	29.8	22.8	4.299	CC, ES, SF
S26-T23N-R6W						
GCU P26-2306 02H - Hz - Plan #1	11,913.8	6,216.4	828.5	669.4	5.207	CC, ES, SF

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 N23-2306 01H
Project:	Sandoval County, NM	TVD Reference:	16 KB @ 6962.0ft
Reference Site:	S23-T23N-R6W	MD Reference:	16 KB @ 6962.0ft
Site Error:	0.0ft	North Reference:	True
Reference Well:	GCU N23-2306 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 M15-2306 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		
4,300.0	4,244.2	12,597.0	5,528.5	11.4	167.5	-18.83	-594.1	-576.3	1,326.4	1,161.1	165.34	8.022		
4,400.0	4,341.1	12,596.4	5,528.6	11.9	167.5	-17.47	-593.6	-576.8	1,226.5	1,060.1	166.38	7.371		
4,500.0	4,438.1	12,595.7	5,528.6	12.3	167.5	-16.09	-593.1	-577.3	1,126.5	959.2	167.34	6.732		
4,600.0	4,535.0	12,595.0	5,528.6	12.8	167.5	-14.69	-592.7	-577.8	1,026.5	858.3	168.20	6.103		
4,700.0	4,632.0	12,594.3	5,528.6	13.2	167.4	-13.27	-592.2	-578.2	926.6	757.6	168.98	5.483		
4,800.0	4,728.9	12,593.6	5,528.6	13.7	167.4	-11.83	-591.7	-578.7	826.6	656.9	169.67	4.872		
4,900.0	4,825.9	12,593.0	5,528.6	14.1	167.4	-10.38	-591.2	-579.2	726.7	556.4	170.26	4.268		
5,000.0	4,922.8	12,592.3	5,528.6	14.6	167.4	-8.91	-590.7	-579.7	626.7	456.0	170.75	3.671		
5,100.0	5,019.7	12,593.0	5,528.6	15.0	167.4	68.42	-591.2	-579.2	526.9	422.4	104.42	5.046		
5,200.0	5,115.3	12,608.0	5,528.5	15.5	167.7	119.90	-601.8	-568.6	428.3	372.5	55.74	7.683		
5,300.0	5,206.7	12,639.9	5,528.2	15.9	168.4	137.57	-624.4	-546.1	333.8	279.4	54.39	6.138		
5,400.0	5,291.2	12,687.7	5,527.8	16.4	169.4	145.32	-658.3	-512.4	246.5	186.3	60.17	4.096		
5,500.0	5,366.2	12,750.0	5,527.2	17.0	170.8	147.98	-702.5	-468.4	169.0	98.5	70.43	2.399		
5,600.0	5,429.5	12,797.5	5,526.8	17.7	171.8	148.67	-736.1	-434.9	107.5	26.6	80.97	1.328 Level 3		
5,632.4	5,447.1	12,797.5	5,526.8	17.9	171.8	149.43	-736.1	-434.9	101.7	19.5	82.12	1.238 Level 2, CC, ES, SF		
5,700.0	5,479.0	12,797.5	5,526.8	18.5	171.8	149.78	-736.1	-434.9	125.2	38.5	86.69	1.444 Level 3		
5,800.0	5,513.3	12,797.5	5,526.8	19.4	171.8	146.13	-736.1	-434.9	207.4	105.3	102.07	2.032		
5,900.0	5,531.4	12,797.5	5,526.8	20.4	171.8	123.43	-736.1	-434.9	304.6	149.3	155.25	1.962		
6,000.0	5,534.0	12,797.5	5,526.8	21.6	171.8	54.93	-736.1	-434.9	404.2	249.4	154.85	2.611		
6,100.0	5,533.3	12,797.5	5,526.8	22.9	171.8	54.93	-736.1	-434.9	504.1	347.8	156.26	3.226		
6,200.0	5,532.6	12,797.5	5,526.8	24.4	171.8	54.93	-736.1	-434.9	604.0	446.2	157.74	3.829		
6,300.0	5,531.9	12,797.5	5,526.8	25.9	171.8	54.93	-736.1	-434.9	703.9	544.6	159.27	4.419		
6,400.0	5,531.2	12,797.5	5,526.8	27.5	171.8	54.93	-736.1	-434.9	803.8	643.0	160.83	4.998		
6,500.0	5,530.5	12,797.5	5,526.8	29.2	171.8	54.93	-736.1	-434.9	903.8	741.4	162.42	5.564		
6,600.0	5,529.8	12,797.5	5,526.8	31.0	171.8	54.93	-736.1	-434.9	1,003.7	839.7	164.04	6.119		
6,700.0	5,529.1	12,797.5	5,526.8	32.8	171.8	54.93	-736.1	-434.9	1,103.7	938.0	165.67	6.662		
6,800.0	5,528.4	12,797.5	5,526.8	34.6	171.8	54.93	-736.1	-434.9	1,203.7	1,036.4	167.32	7.194		
6,900.0	5,527.7	12,797.5	5,526.8	36.5	171.8	54.93	-736.1	-434.9	1,303.7	1,134.7	168.98	7.715		

Anticollision Report

Company: EnCana Oil & Gas (USA) Inc
Project: Sandoval County, NM
Reference Site: S23-T23N-R6W
Site Error: 0.0ft
Reference Well: GCU N23-2306 01H
Well Error: 0.0ft
Reference Wellbore: HZ
Reference Design: Plan #1

Local Co-ordinate Reference: Well GCU N23-2306 01H
TVD Reference: 16 KB @ 6962.0ft
MD Reference: 16 KB @ 6962.0ft
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 S23-T23N-R6W - GCU M23-2306 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		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	46.0	46.0	0.0	0.1	-100.86	-251.5	-1,311.5	1,335.4				
100.0	100.0	146.0	146.0	0.1	0.2	-100.86	-251.5	-1,311.5	1,335.4	1,335.1	0.37	3,575.441	
200.0	200.0	246.0	246.0	0.3	0.4	-100.86	-251.5	-1,311.5	1,335.4	1,334.7	0.72	1,848.176	
300.0	300.0	346.0	346.0	0.5	0.6	-100.86	-251.5	-1,311.5	1,335.4	1,334.4	1.07	1,246.164	
400.0	400.0	446.0	446.0	0.7	0.8	-100.86	-251.5	-1,311.5	1,335.4	1,334.0	1.42	939.981	
500.0	500.0	546.0	546.0	0.8	0.9	-100.86	-251.5	-1,311.5	1,335.4	1,333.7	1.77	754.581	
600.0	600.0	646.0	646.0	1.0	1.1	-100.86	-251.5	-1,311.5	1,335.4	1,333.3	2.12	630.268	
700.0	700.0	746.0	746.0	1.2	1.3	-100.86	-251.5	-1,311.5	1,335.4	1,333.0	2.47	541.121	
800.0	800.0	846.0	846.0	1.4	1.4	-100.86	-251.5	-1,311.5	1,335.4	1,332.6	2.82	474.068	
900.0	900.0	946.0	946.0	1.5	1.6	-100.86	-251.5	-1,311.5	1,335.4	1,332.3	3.17	421.800	
1,000.0	1,000.0	1,046.0	1,046.0	1.7	1.8	-100.86	-251.5	-1,311.5	1,335.4	1,331.9	3.52	379.913	
1,100.0	1,100.0	1,146.0	1,146.0	1.9	2.0	-100.86	-251.5	-1,311.5	1,335.4	1,331.6	3.86	345.594	
1,200.0	1,200.0	1,246.0	1,246.0	2.1	2.1	-100.86	-251.5	-1,311.5	1,335.4	1,331.2	4.21	316.961	
1,300.0	1,300.0	1,346.0	1,346.0	2.2	2.3	-100.86	-251.5	-1,311.5	1,335.4	1,330.9	4.56	292.710	
1,400.0	1,400.0	1,446.0	1,446.0	2.4	2.5	-100.86	-251.5	-1,311.5	1,335.4	1,330.5	4.91	271.907	
1,500.0	1,500.0	1,546.0	1,546.0	2.6	2.7	-100.86	-251.5	-1,311.5	1,335.4	1,330.2	5.26	253.864	
1,600.0	1,600.0	1,646.0	1,646.0	2.8	2.8	-100.86	-251.5	-1,311.5	1,335.4	1,329.8	5.61	238.066	
1,700.0	1,700.0	1,746.0	1,746.0	2.9	3.0	-100.86	-251.5	-1,311.5	1,335.4	1,329.5	5.96	224.120	
1,800.0	1,800.0	1,846.0	1,846.0	3.1	3.2	-100.86	-251.5	-1,311.5	1,335.4	1,329.1	6.31	211.717	
1,900.0	1,900.0	1,946.0	1,946.0	3.3	3.4	-100.86	-251.5	-1,311.5	1,335.4	1,328.8	6.66	200.615	
1,938.3	1,938.3	1,984.3	1,984.3	3.4	3.4	-100.86	-251.5	-1,311.5	1,335.4	1,328.6	6.79	196.668	
2,000.0	2,000.0	2,033.7	2,033.7	3.5	3.5	-100.86	-251.7	-1,311.7	1,335.6	1,328.7	6.98	191.235	
2,100.0	2,100.0	2,100.0	2,100.0	3.6	3.6	34.38	-252.9	-1,312.7	1,336.2	1,328.9	7.27	183.716	
2,200.0	2,199.8	2,180.1	2,180.0	3.8	3.8	34.38	-255.8	-1,315.2	1,335.7	1,328.2	7.58	176.130	
2,300.0	2,299.5	2,253.3	2,253.0	4.0	3.9	34.40	-260.0	-1,318.8	1,334.5	1,326.6	7.88	169.283	
2,400.0	2,398.7	2,326.6	2,325.9	4.2	4.1	34.44	-265.6	-1,323.7	1,332.3	1,324.1	8.19	162.768	
2,500.0	2,497.5	2,400.0	2,398.7	4.4	4.2	34.51	-272.6	-1,329.7	1,329.3	1,320.8	8.49	156.491	
2,600.0	2,595.6	2,473.1	2,471.0	4.7	4.4	34.60	-281.1	-1,337.0	1,325.4	1,316.6	8.82	150.322	
2,700.0	2,693.1	2,546.5	2,543.2	5.0	4.5	34.71	-290.9	-1,345.5	1,320.7	1,311.5	9.16	144.203	
2,800.0	2,790.0	2,619.9	2,615.1	5.3	4.7	34.76	-302.1	-1,355.2	1,316.2	1,306.7	9.54	137.971	
2,900.0	2,887.0	2,700.0	2,693.1	5.7	5.0	34.75	-316.0	-1,367.1	1,313.8	1,303.8	9.96	131.960	
2,970.6	2,955.4	2,745.5	2,737.1	5.9	5.1	34.72	-324.6	-1,374.5	1,313.2	1,303.0	10.24	128.254	
3,000.0	2,983.9	2,767.1	2,758.0	6.0	5.2	34.69	-328.8	-1,378.2	1,313.3	1,303.0	10.36	126.728	
3,100.0	3,080.8	2,849.0	2,836.7	6.4	5.5	34.57	-346.0	-1,393.0	1,314.8	1,304.0	10.82	121.555	
3,200.0	3,177.8	2,948.9	2,932.6	6.8	5.9	34.41	-367.3	-1,411.4	1,316.7	1,305.4	11.33	116.219	
3,300.0	3,274.7	3,048.9	3,028.4	7.2	6.3	34.25	-388.5	-1,429.8	1,318.7	1,306.8	11.85	111.241	
3,400.0	3,371.7	3,148.8	3,124.3	7.6	6.7	34.09	-409.8	-1,448.1	1,320.7	1,308.3	12.39	106.601	
3,500.0	3,468.6	3,248.7	3,220.2	8.0	7.2	33.94	-431.1	-1,466.5	1,322.6	1,309.7	12.93	102.283	
3,600.0	3,565.6	3,348.6	3,316.1	8.4	7.6	33.78	-452.4	-1,484.9	1,324.6	1,311.1	13.48	98.265	
3,700.0	3,662.5	3,448.5	3,411.9	8.8	8.1	33.62	-473.7	-1,503.2	1,326.6	1,312.6	14.03	94.526	
3,800.0	3,759.5	3,548.4	3,507.8	9.3	8.6	33.46	-495.0	-1,521.6	1,328.6	1,314.0	14.59	91.047	
3,900.0	3,856.4	3,648.3	3,603.7	9.7	9.0	33.30	-516.3	-1,540.0	1,330.6	1,315.5	15.15	87.805	
4,000.0	3,953.4	3,748.2	3,699.6	10.1	9.5	33.15	-537.6	-1,558.4	1,332.6	1,316.9	15.72	84.782	
4,100.0	4,050.3	3,848.2	3,795.4	10.6	10.0	32.99	-558.8	-1,576.7	1,334.7	1,318.4	16.28	81.960	
4,200.0	4,147.3	3,948.1	3,891.3	11.0	10.5	32.84	-580.1	-1,595.1	1,336.7	1,319.9	16.85	79.323	
4,300.0	4,244.2	4,048.0	3,987.2	11.4	11.0	32.68	-601.4	-1,613.5	1,338.8	1,321.4	17.42	76.854	
4,400.0	4,341.1	4,147.9	4,083.1	11.9	11.5	32.53	-622.7	-1,631.8	1,340.8	1,322.9	17.99	74.540	
4,500.0	4,438.1	4,247.8	4,178.9	12.3	12.0	32.37	-644.0	-1,650.2	1,342.9	1,324.4	18.56	72.368	
4,600.0	4,535.0	4,347.7	4,274.8	12.8	12.5	32.22	-665.3	-1,668.6	1,345.0	1,325.9	19.13	70.327	
4,700.0	4,632.0	4,447.6	4,370.7	13.2	13.0	32.07	-686.6	-1,686.9	1,347.1	1,327.4	19.69	68.406	
4,800.0	4,728.9	4,547.5	4,466.6	13.7	13.5	31.91	-707.9	-1,705.3	1,349.2	1,328.9	20.26	66.596	
4,900.0	4,825.9	4,647.5	4,562.4	14.1	14.0	31.76	-729.2	-1,723.7	1,351.3	1,330.5	20.83	64.888	

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 N23-2306 01H
Project:	Sandoval County, NM	TVD Reference:	16 KB @ 6962.0ft
Reference Site:	S23-T23N-R6W	MD Reference:	16 KB @ 6962.0ft
Site Error:	0.0ft	North Reference:	True
Reference Well:	GCU N23-2306 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 S23-T23N-R6W - GCU M23-2306 02H - HZ - Plan #1													Offset Site Error:	0.0 ft
Survey Program: 0-Geolink MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Semi Major Axis (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	Warning
5,000.0	4,922.8	4,747.4	4,658.3	14.6	14.5	31.61		-750.4	-1,742.1	1,353.4	1,332.0	21.39	63.275	
5,100.0	5,019.7	4,847.3	4,754.2	15.0	15.0	46.76		-771.7	-1,760.4	1,356.3	1,334.3	21.97	61.735	
5,200.0	5,115.3	4,946.2	4,849.1	15.5	15.5	74.22		-792.8	-1,778.6	1,366.4	1,343.9	22.44	60.900	
5,300.0	5,206.7	5,182.6	5,064.9	15.9	25.2	70.39		-1,469.2	-1,413.6	1,353.5	1,322.0	31.44	43.047	
5,400.0	5,291.2	6,230.7	5,564.5	16.4	25.9	79.93		-1,503.6	-1,380.0	1,315.5	1,282.3	33.11	39.725	
5,500.0	5,366.2	6,293.2	5,564.0	17.0	26.8	85.05		-1,548.3	-1,336.3	1,285.8	1,251.0	34.79	36.962	
5,600.0	5,429.5	6,368.3	5,563.3	17.7	27.9	87.63		-1,602.1	-1,283.9	1,264.0	1,227.4	36.59	34.543	
5,700.0	5,479.0	6,453.7	5,562.6	18.5	29.2	88.74		-1,663.2	-1,224.3	1,249.0	1,210.5	38.60	32.362	
5,800.0	5,513.3	6,546.8	5,561.8	19.4	30.8	89.08		-1,729.8	-1,159.3	1,239.9	1,199.0	40.89	30.326	
5,900.0	5,531.4	6,644.7	5,560.9	20.4	32.4	89.11		-1,799.9	-1,090.9	1,235.6	1,192.1	43.44	28.441	
5,964.7	5,535.6	6,709.3	5,560.3	21.2	33.5	89.00		-1,846.1	-1,045.8	1,234.7	1,189.2	45.48	27.146 CC	
6,000.0	5,534.0	6,744.6	5,560.0	21.6	34.2	89.07		-1,871.4	-1,021.1	1,235.1	1,188.6	46.53	26.544	
6,100.0	5,533.3	6,844.6	5,559.2	22.9	35.9	89.07		-1,943.0	-951.3	1,235.4	1,185.1	50.34	24.543	
6,200.0	5,532.6	6,944.6	5,558.3	24.4	37.8	89.06		-2,014.6	-881.5	1,235.8	1,181.5	54.23	22.789	
6,300.0	5,531.9	7,044.6	5,557.4	25.9	39.6	89.05		-2,086.1	-811.6	1,236.1	1,177.9	58.18	21.246	
6,400.0	5,531.2	7,144.6	5,556.5	27.5	41.5	89.04		-2,157.7	-741.8	1,236.4	1,174.2	62.18	19.883	
6,500.0	5,530.5	7,244.6	5,555.7	29.2	43.4	89.03		-2,229.3	-672.0	1,236.7	1,170.5	66.22	18.675	
6,600.0	5,529.8	7,344.6	5,554.8	31.0	45.4	89.02		-2,300.9	-602.1	1,237.0	1,166.7	70.30	17.597	
6,700.0	5,529.1	7,444.6	5,553.9	32.8	47.3	89.02		-2,372.4	-532.3	1,237.3	1,162.9	74.39	16.632	
6,800.0	5,528.4	7,544.6	5,553.1	34.6	49.3	89.01		-2,444.0	-462.5	1,237.6	1,159.1	78.51	15.764	
6,900.0	5,527.7	7,644.6	5,552.2	36.5	51.3	89.00		-2,515.6	-392.6	1,238.0	1,155.3	82.65	14.979	
7,000.0	5,527.1	7,744.6	5,551.3	38.4	53.3	88.99		-2,587.2	-322.8	1,238.3	1,151.5	86.80	14.266	
7,100.0	5,526.4	7,844.6	5,550.4	40.3	55.3	88.98		-2,658.7	-253.0	1,238.6	1,147.6	90.96	13.617	
7,200.0	5,525.7	7,944.6	5,549.6	42.3	57.3	88.98		-2,730.3	-183.2	1,238.9	1,143.8	95.13	13.023	
7,300.0	5,525.0	8,044.6	5,548.7	44.2	59.3	88.97		-2,801.9	-113.3	1,239.2	1,139.9	99.31	12.478	
7,400.0	5,524.3	8,144.6	5,547.8	46.2	61.3	88.96		-2,873.5	-43.5	1,239.5	1,136.0	103.50	11.976	
7,500.0	5,523.6	8,244.6	5,547.0	48.2	63.4	88.95		-2,945.0	26.3	1,239.8	1,132.1	107.70	11.512	
7,600.0	5,522.9	8,344.6	5,546.1	50.2	65.4	88.94		-3,016.6	96.2	1,240.2	1,128.3	111.90	11.082	
7,700.0	5,522.2	8,444.6	5,545.2	52.2	67.5	88.94		-3,088.2	166.0	1,240.5	1,124.4	116.11	10.683	
7,800.0	5,521.5	8,544.6	5,544.3	54.3	69.5	88.93		-3,159.8	235.8	1,240.8	1,120.5	120.32	10.312	
7,900.0	5,520.8	8,644.6	5,543.5	56.3	71.6	88.92		-3,231.3	305.6	1,241.1	1,116.6	124.54	9.965	
8,000.0	5,520.1	8,744.6	5,542.6	58.4	73.6	88.91		-3,302.9	375.5	1,241.4	1,112.7	128.76	9.641	
8,100.0	5,519.4	8,844.6	5,541.7	60.4	75.7	88.90		-3,374.5	445.3	1,241.7	1,108.7	132.99	9.337	
8,200.0	5,518.7	8,944.6	5,540.9	62.5	77.8	88.90		-3,446.1	515.1	1,242.1	1,104.8	137.21	9.052	
8,300.0	5,518.0	9,044.6	5,540.0	64.5	79.9	88.89		-3,517.6	585.0	1,242.4	1,100.9	141.44	8.783	
8,400.0	5,517.4	9,144.6	5,539.1	66.6	81.9	88.88		-3,589.2	654.8	1,242.7	1,097.0	145.68	8.530	
8,500.0	5,516.7	9,244.6	5,538.2	68.7	84.0	88.87		-3,660.8	724.6	1,243.0	1,093.1	149.91	8.291	
8,600.0	5,516.0	9,344.6	5,537.4	70.8	86.1	88.87		-3,732.4	794.5	1,243.3	1,089.2	154.15	8.066	
8,700.0	5,515.3	9,444.6	5,536.5	72.8	88.2	88.86		-3,803.9	864.3	1,243.6	1,085.2	158.39	7.852	
8,800.0	5,514.6	9,544.6	5,535.6	74.9	90.3	88.85		-3,875.5	934.1	1,243.9	1,081.3	162.63	7.649	
8,900.0	5,513.9	9,644.6	5,534.8	77.0	92.4	88.84		-3,947.1	1,003.9	1,244.3	1,077.4	166.87	7.456	
9,000.0	5,513.2	9,744.6	5,533.9	79.1	94.5	88.83		-4,018.7	1,073.8	1,244.6	1,073.5	171.12	7.273	
9,100.0	5,512.5	9,844.6	5,533.0	81.2	96.6	88.83		-4,090.2	1,143.6	1,244.9	1,069.5	175.36	7.099	
9,200.0	5,511.8	9,944.6	5,532.1	83.3	98.7	88.82		-4,161.8	1,213.4	1,245.2	1,065.6	179.61	6.933	
9,300.0	5,511.1	10,044.6	5,531.3	85.4	100.8	88.81		-4,233.4	1,283.3	1,245.5	1,061.7	183.86	6.774	
9,400.0	5,510.4	10,144.6	5,530.4	87.5	102.9	88.80		-4,305.0	1,353.1	1,245.8	1,057.7	188.11	6.623	
9,500.0	5,509.7	10,244.6	5,529.5	89.6	105.0	88.79		-4,376.5	1,422.9	1,246.1	1,053.8	192.36	6.478	
9,600.0	5,509.0	10,344.6	5,528.7	91.7	107.1	88.79		-4,448.1	1,492.7	1,246.5	1,049.9	196.61	6.340	
9,700.0	5,508.3	10,444.6	5,527.8	93.8	109.2	88.78		-4,519.7	1,562.6	1,246.8	1,045.9	200.86	6.207	
9,800.0	5,507.6	10,544.6	5,526.9	95.9	111.3	88.77		-4,591.3	1,632.4	1,247.1	1,042.0	205.11	6.080	
9,900.0	5,507.0	10,644.6	5,526.0	98.0	113.4	88.76		-4,662.8	1,702.2	1,247.4	1,038.0	209.36	5.958	
10,000.0	5,506.3	10,744.6	5,525.2	100.1	115.5	88.75		-4,734.4	1,772.1	1,247.7	1,034.1	213.62	5.841	

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 N23-2306 01H
Project:	Sandoval County, NM	TVD Reference:	16 KB @ 6962.0ft
Reference Site:	S23-T23N-R6W	MD Reference:	16 KB @ 6962.0ft
Site Error:	0.0ft	North Reference:	True
Reference Well:	GCU N23-2306 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 S23-T23N-R6W - GCU M23-2306 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		
10,100.0	5,505.6	10,844.6	5,524.3	102.2	117.6	88.75	-4,806.0	1,841.9	1,248.0	1,030.2	217.87	5.728		
10,200.0	5,504.9	10,944.6	5,523.4	104.3	119.7	88.74	-4,877.6	1,911.7	1,248.3	1,026.2	222.13	5.620		
10,300.0	5,504.2	11,044.6	5,522.6	106.4	121.8	88.73	-4,949.1	1,981.6	1,248.7	1,022.3	226.39	5.516		
10,400.0	5,503.5	11,144.6	5,521.7	108.5	123.9	88.72	-5,020.7	2,051.4	1,249.0	1,018.3	230.64	5.415		
10,500.0	5,502.8	11,244.6	5,520.8	110.7	126.1	88.71	-5,092.3	2,121.2	1,249.3	1,014.4	234.90	5.318		
10,600.0	5,502.1	11,344.6	5,519.9	112.8	128.2	88.71	-5,163.9	2,191.0	1,249.6	1,010.5	239.16	5.225		
10,700.0	5,501.4	11,444.6	5,519.1	114.9	130.3	88.70	-5,235.4	2,260.9	1,249.9	1,006.5	243.42	5.135		
10,800.0	5,500.7	11,544.6	5,518.2	117.0	132.4	88.69	-5,307.0	2,330.7	1,250.2	1,002.6	247.67	5.048		
10,900.0	5,500.0	11,644.6	5,517.3	119.1	134.5	88.68	-5,378.6	2,400.5	1,250.6	998.6	251.93	4.964		
11,000.0	5,499.3	11,744.6	5,516.5	121.2	136.6	88.68	-5,450.2	2,470.4	1,250.9	994.7	256.19	4.883		
11,100.0	5,498.6	11,844.6	5,515.6	123.4	138.8	88.67	-5,521.7	2,540.2	1,251.2	990.7	260.45	4.804		
11,200.0	5,497.9	11,944.6	5,514.7	125.5	140.9	88.66	-5,593.3	2,610.0	1,251.5	986.8	264.71	4.728		
11,300.0	5,497.3	12,044.6	5,513.8	127.6	143.0	88.65	-5,664.9	2,679.8	1,251.8	982.8	268.97	4.654		
11,400.0	5,496.6	12,144.6	5,513.0	129.7	145.1	88.64	-5,736.5	2,749.7	1,252.1	978.9	273.24	4.583		
11,500.0	5,495.9	12,244.6	5,512.1	131.8	147.2	88.64	-5,808.0	2,819.5	1,252.4	974.9	277.50	4.513		
11,600.0	5,495.2	12,344.6	5,511.2	134.0	149.3	88.63	-5,879.6	2,889.3	1,252.8	971.0	281.76	4.446		
11,700.0	5,494.5	12,381.6	5,510.9	136.1	150.1	88.63	-5,906.1	2,915.2	1,254.7	970.0	284.68	4.407 ES		
11,800.0	5,493.8	12,381.6	5,510.9	138.2	150.1	88.63	-5,906.1	2,915.2	1,263.9	977.1	286.81	4.407 SF		
11,900.0	5,493.1	12,381.6	5,510.9	140.3	150.1	88.63	-5,906.1	2,915.2	1,281.0	992.1	288.94	4.433		
11,913.8	5,493.0	12,381.6	5,510.9	140.6	150.1	88.63	-5,906.1	2,915.2	1,284.0	994.7	289.24	4.439		

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well GCU N23-2306 01H
Project:	Sandoval County, NM	TVD Reference:	16 KB @ 6962.0ft
Reference Site:	S23-T23N-R6W	MD Reference:	16 KB @ 6962.0ft
Site Error:	0.0ft	North Reference:	True
Reference Well:	GCU N23-2306 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 S23-T23N-R6W - GCU N23-2306 02H - HZ - Plan #1												Offset Site Error:	0.0 ft
Survey Program: 0-Geolink MWD												Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Semi Major Axis Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Distance Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	60.71	14.6	26.0	29.8				
100.0	100.0	100.0	100.0	0.1	0.1	60.71	14.6	26.0	29.8	29.5	0.29	101.528	
200.0	200.0	200.0	200.0	0.3	0.3	60.71	14.6	26.0	29.8	29.1	0.64	46.350	
300.0	300.0	300.0	300.0	0.5	0.5	60.71	14.6	26.0	29.8	28.8	0.99	30.030	
400.0	400.0	400.0	400.0	0.7	0.7	60.71	14.6	26.0	29.8	28.4	1.34	22.209	
500.0	500.0	500.0	500.0	0.8	0.8	60.71	14.6	26.0	29.8	28.1	1.69	17.621	
600.0	600.0	600.0	600.0	1.0	1.0	60.71	14.6	26.0	29.8	27.7	2.04	14.603	
700.0	700.0	700.0	700.0	1.2	1.2	60.71	14.6	26.0	29.8	27.4	2.39	12.468	
800.0	800.0	800.0	800.0	1.4	1.4	60.71	14.6	26.0	29.8	27.0	2.74	10.878	
900.0	900.0	900.0	900.0	1.5	1.5	60.71	14.6	26.0	29.8	26.7	3.09	9.648	
1,000.0	1,000.0	1,000.0	1,000.0	1.7	1.7	60.71	14.6	26.0	29.8	26.3	3.43	8.667	
1,100.0	1,100.0	1,100.0	1,100.0	1.9	1.9	60.71	14.6	26.0	29.8	26.0	3.78	7.868	
1,200.0	1,200.0	1,200.0	1,200.0	2.1	2.1	60.71	14.6	26.0	29.8	25.6	4.13	7.203	
1,300.0	1,300.0	1,300.0	1,300.0	2.2	2.2	60.71	14.6	26.0	29.8	25.3	4.48	6.642	
1,400.0	1,400.0	1,400.0	1,400.0	2.4	2.4	60.71	14.6	26.0	29.8	24.9	4.83	6.162	
1,500.0	1,500.0	1,500.0	1,500.0	2.6	2.6	60.71	14.6	26.0	29.8	24.6	5.18	5.747	
1,600.0	1,600.0	1,600.0	1,600.0	2.8	2.8	60.71	14.6	26.0	29.8	24.2	5.53	5.384	
1,700.0	1,700.0	1,700.0	1,700.0	2.9	2.9	60.71	14.6	26.0	29.8	23.9	5.88	5.064	
1,800.0	1,800.0	1,800.0	1,800.0	3.1	3.1	60.71	14.6	26.0	29.8	23.5	6.23	4.780	
1,900.0	1,900.0	1,900.0	1,900.0	3.3	3.3	60.71	14.6	26.0	29.8	23.2	6.58	4.527	
2,000.0	2,000.0	2,000.0	2,000.0	3.5	3.5	60.71	14.6	26.0	29.8	22.8	6.93	4.299 CC, ES, SF	
2,100.0	2,100.0	2,100.0	2,100.0	3.6	3.6	-164.89	14.6	26.0	31.5	24.2	7.27	4.325	
2,200.0	2,199.8	2,199.8	2,199.8	3.8	3.8	-167.01	14.6	26.0	36.5	28.9	7.61	4.799	
2,300.0	2,299.5	2,299.5	2,299.5	4.0	4.0	-169.47	14.6	26.0	45.1	37.1	7.95	5.672	
2,400.0	2,398.7	2,398.7	2,398.7	4.2	4.2	-171.67	14.6	26.0	57.1	48.8	8.27	6.902	
2,500.0	2,497.5	2,497.5	2,497.5	4.4	4.3	-173.42	14.6	26.0	72.6	64.0	8.59	8.454	
2,600.0	2,595.6	2,595.6	2,595.6	4.7	4.5	-174.75	14.6	26.0	91.6	82.7	8.90	10.295	
2,700.0	2,693.1	2,693.1	2,693.1	5.0	4.7	-175.75	14.6	26.0	114.0	104.8	9.20	12.397	
2,800.0	2,790.0	2,790.0	2,790.0	5.3	4.8	-176.50	14.6	26.0	138.5	128.9	9.53	14.523	
2,900.0	2,887.0	2,887.0	2,887.0	5.7	5.0	-177.03	14.6	26.0	163.0	153.1	9.88	16.498	
3,000.0	2,983.9	2,983.9	2,983.9	6.0	5.2	-177.42	14.6	26.0	187.5	177.2	10.22	18.341	
3,100.0	3,080.8	3,080.8	3,080.8	6.4	5.3	-177.71	14.6	26.0	212.0	201.4	10.56	20.066	
3,200.0	3,177.8	3,177.8	3,177.8	6.8	5.5	-177.95	14.6	26.0	236.5	225.6	10.91	21.682	
3,300.0	3,274.7	3,274.7	3,274.7	7.2	5.7	-178.14	14.6	26.0	261.0	249.7	11.25	23.200	
3,400.0	3,371.7	3,371.7	3,371.7	7.6	5.9	-178.30	14.6	26.0	285.5	273.9	11.59	24.629	
3,500.0	3,468.6	3,468.6	3,468.6	8.0	6.0	-178.44	14.6	26.0	310.0	298.1	11.93	25.976	
3,600.0	3,565.6	3,565.6	3,565.6	8.4	6.2	-178.55	14.6	26.0	334.5	322.2	12.28	27.248	
3,700.0	3,662.5	3,662.5	3,662.5	8.8	6.4	-178.65	14.6	26.0	359.0	346.4	12.62	28.451	
3,800.0	3,759.5	3,759.5	3,759.5	9.3	6.5	-178.74	14.6	26.0	383.5	370.6	12.96	29.591	
3,900.0	3,856.4	3,856.4	3,856.4	9.7	6.7	-178.81	14.6	26.0	408.1	394.8	13.30	30.672	
4,000.0	3,953.4	3,944.9	3,944.9	10.1	6.9	-178.88	14.9	26.3	433.1	419.5	13.63	31.771	
4,100.0	4,050.3	4,025.4	4,025.3	10.6	7.0	-178.94	17.0	28.3	461.2	447.2	13.95	33.069	
4,200.0	4,147.3	4,100.0	4,099.8	11.0	7.1	-179.00	20.8	32.0	492.6	478.3	14.25	34.569	
4,300.0	4,244.2	4,181.0	4,180.3	11.4	7.3	-179.07	26.8	37.8	527.1	512.5	14.56	36.197	
4,400.0	4,341.1	4,255.9	4,254.5	11.9	7.4	-179.13	34.2	45.0	564.7	549.8	14.86	37.991	
4,500.0	4,438.1	4,328.9	4,326.4	12.3	7.6	-179.20	43.1	53.5	605.2	590.1	15.16	39.919	
4,600.0	4,535.0	4,400.0	4,396.1	12.8	7.7	-179.26	53.3	63.4	648.6	633.2	15.46	41.968	
4,700.0	4,632.0	4,468.5	4,462.8	13.2	7.9	-179.31	64.6	74.3	694.7	679.0	15.75	44.120	
4,800.0	4,728.9	4,535.2	4,527.2	13.7	8.1	-179.37	76.9	86.3	743.4	727.3	16.03	46.370	
4,900.0	4,825.9	4,608.8	4,597.8	14.1	8.3	-179.42	91.9	100.7	794.3	778.0	16.33	48.648	
5,000.0	4,922.8	4,694.6	4,680.0	14.6	8.6	-179.48	109.7	117.9	845.6	829.0	16.64	50.810	
5,100.0	5,019.7	4,780.4	4,762.2	15.0	8.8	-161.86	127.4	135.0	896.9	879.9	16.99	52.797	

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 N23-2306 01H
Project:	Sandoval County, NM	TVD Reference:	16 KB @ 6962.0ft
Reference Site:	S23-T23N-R6W	MD Reference:	16 KB @ 6962.0ft
Site Error:	0.0ft	North Reference:	True
Reference Well:	GCU N23-2306 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 S23-T23N-R6W - GCU N23-2306 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		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		
5,200.0	5,115.3	4,864.8	4,843.1	15.5	9.1	-129.15	144.8	151.8	947.8	930.3	17.56	53.967		
5,300.0	5,206.7	4,945.5	4,920.3	15.9	9.4	-111.28	161.5	167.9	997.6	979.3	18.33	54.415		
5,400.0	5,291.2	5,019.9	4,991.6	16.4	9.7	-100.89	176.8	182.8	1,046.2	1,027.0	19.22	54.434		
5,500.0	5,366.2	5,107.4	5,075.2	17.0	10.0	-94.71	191.3	203.7	1,093.4	1,073.2	20.14	54.294		
5,600.0	5,429.5	5,214.5	5,175.2	17.7	10.5	-91.12	195.8	241.4	1,137.5	1,116.4	21.08	53.948		
5,700.0	5,479.0	5,350.3	5,293.1	18.5	11.2	-89.57	180.4	306.4	1,176.7	1,154.5	22.21	52.982		
5,800.0	5,513.3	5,533.2	5,425.5	19.4	12.4	-89.78	124.0	418.1	1,208.2	1,184.1	24.15	50.019		
5,900.0	5,531.4	5,778.8	5,534.7	20.4	15.3	-90.78	-5.9	592.9	1,227.4	1,199.1	28.28	43.395		
6,000.0	5,534.0	5,983.2	5,554.6	21.6	18.4	-90.96	-145.6	739.7	1,230.8	1,197.5	33.28	36.986		
6,100.0	5,533.3	6,083.2	5,553.8	22.9	20.1	-90.95	-216.8	809.9	1,230.9	1,194.1	36.88	33.377		
6,200.0	5,532.6	6,183.2	5,552.9	24.4	21.9	-90.94	-288.0	880.0	1,231.1	1,190.5	40.61	30.314		
6,300.0	5,531.9	6,283.2	5,552.0	25.9	23.7	-90.93	-359.2	950.2	1,231.3	1,186.9	44.44	27.704		
6,400.0	5,531.2	6,383.2	5,551.1	27.5	25.6	-90.93	-430.5	1,020.4	1,231.5	1,183.1	48.35	25.470		
6,500.0	5,530.5	6,483.2	5,550.3	29.2	27.5	-90.92	-501.7	1,090.6	1,231.7	1,179.3	52.32	23.543		
6,600.0	5,529.8	6,583.2	5,549.4	31.0	29.4	-90.91	-572.9	1,160.8	1,231.8	1,175.5	56.33	21.870		
6,700.0	5,529.1	6,683.2	5,548.5	32.8	31.4	-90.90	-644.2	1,231.0	1,232.0	1,171.7	60.37	20.407		
6,800.0	5,528.4	6,783.2	5,547.6	34.6	33.4	-90.89	-715.4	1,301.1	1,232.2	1,167.8	64.45	19.119		
6,900.0	5,527.7	6,883.2	5,546.8	36.5	35.4	-90.88	-786.6	1,371.3	1,232.4	1,163.8	68.55	17.978		
7,000.0	5,527.1	6,983.2	5,545.9	38.4	37.5	-90.88	-857.8	1,441.5	1,232.6	1,159.9	72.67	16.961		
7,100.0	5,526.4	7,083.2	5,545.0	40.3	39.5	-90.87	-929.1	1,511.7	1,232.7	1,155.9	76.81	16.049		
7,200.0	5,525.7	7,183.2	5,544.1	42.3	41.5	-90.86	-1,000.3	1,581.9	1,232.9	1,152.0	80.96	15.228		
7,300.0	5,525.0	7,283.2	5,543.3	44.2	43.6	-90.85	-1,071.5	1,652.1	1,233.1	1,148.0	85.13	14.485		
7,400.0	5,524.3	7,383.2	5,542.4	46.2	45.7	-90.84	-1,142.8	1,722.2	1,233.3	1,144.0	89.30	13.810		
7,500.0	5,523.6	7,483.2	5,541.5	48.2	47.7	-90.83	-1,214.0	1,792.4	1,233.5	1,140.0	93.49	13.194		
7,600.0	5,522.9	7,583.2	5,540.7	50.2	49.8	-90.82	-1,285.2	1,862.6	1,233.7	1,136.0	97.68	12.629		
7,700.0	5,522.2	7,683.2	5,539.8	52.2	51.9	-90.82	-1,356.4	1,932.8	1,233.8	1,132.0	101.88	12.110		
7,800.0	5,521.5	7,783.2	5,538.9	54.3	54.0	-90.81	-1,427.7	2,003.0	1,234.0	1,127.9	106.09	11.632		
7,900.0	5,520.8	7,883.2	5,538.0	56.3	56.1	-90.80	-1,498.9	2,073.1	1,234.2	1,123.9	110.30	11.189		
8,000.0	5,520.1	7,983.2	5,537.2	58.4	58.2	-90.79	-1,570.1	2,143.3	1,234.4	1,119.9	114.52	10.779		
8,100.0	5,519.4	8,083.2	5,536.3	60.4	60.3	-90.78	-1,641.4	2,213.5	1,234.6	1,115.8	118.74	10.397		
8,200.0	5,518.7	8,183.2	5,535.4	62.5	62.4	-90.77	-1,712.6	2,283.7	1,234.7	1,111.8	122.96	10.042		
8,300.0	5,518.0	8,283.2	5,534.5	64.5	64.5	-90.76	-1,783.8	2,353.9	1,234.9	1,107.7	127.19	9.709		
8,400.0	5,517.4	8,383.2	5,533.7	66.6	66.6	-90.76	-1,855.0	2,424.1	1,235.1	1,103.7	131.42	9.398		
8,500.0	5,516.7	8,483.2	5,532.8	68.7	68.7	-90.75	-1,926.3	2,494.2	1,235.3	1,099.6	135.66	9.106		
8,600.0	5,516.0	8,583.2	5,531.9	70.8	70.8	-90.74	-1,997.5	2,564.4	1,235.5	1,095.6	139.89	8.831		
8,700.0	5,515.3	8,683.2	5,531.0	72.8	72.9	-90.73	-2,068.7	2,634.6	1,235.6	1,091.5	144.13	8.573		
8,800.0	5,514.6	8,783.2	5,530.2	74.9	75.0	-90.72	-2,140.0	2,704.8	1,235.8	1,087.4	148.37	8.329		
8,900.0	5,513.9	8,883.2	5,529.3	77.0	77.1	-90.71	-2,211.2	2,775.0	1,236.0	1,083.4	152.62	8.099		
9,000.0	5,513.2	8,983.2	5,528.4	79.1	79.2	-90.71	-2,282.4	2,845.2	1,236.2	1,079.3	156.86	7.881		
9,100.0	5,512.5	9,083.2	5,527.6	81.2	81.4	-90.70	-2,353.6	2,915.3	1,236.4	1,075.3	161.11	7.674		
9,200.0	5,511.8	9,183.2	5,526.7	83.3	83.5	-90.69	-2,424.9	2,985.5	1,236.5	1,071.2	165.36	7.478		
9,300.0	5,511.1	9,283.2	5,525.8	85.4	85.6	-90.68	-2,496.1	3,055.7	1,236.7	1,067.1	169.61	7.292		
9,400.0	5,510.4	9,383.2	5,524.9	87.5	87.7	-90.67	-2,567.3	3,125.9	1,236.9	1,063.0	173.86	7.114		
9,500.0	5,509.7	9,483.2	5,524.1	89.6	89.8	-90.66	-2,638.6	3,196.1	1,237.1	1,059.0	178.11	6.946		
9,600.0	5,509.0	9,583.2	5,523.2	91.7	92.0	-90.65	-2,709.8	3,266.3	1,237.3	1,054.9	182.37	6.785		
9,700.0	5,508.3	9,683.2	5,522.3	93.8	94.1	-90.65	-2,781.0	3,336.4	1,237.5	1,050.8	186.62	6.631		
9,800.0	5,507.6	9,783.2	5,521.4	95.9	96.2	-90.64	-2,852.2	3,406.6	1,237.6	1,046.8	190.88	6.484		
9,900.0	5,507.0	9,883.2	5,520.6	98.0	98.3	-90.63	-2,923.5	3,476.8	1,237.8	1,042.7	195.13	6.343		
10,000.0	5,506.3	9,983.2	5,519.7	100.1	100.4	-90.62	-2,994.7	3,547.0	1,238.0	1,038.6	199.39	6.209		
10,100.0	5,505.6	10,083.2	5,518.8	102.2	102.6	-90.61	-3,065.9	3,617.2	1,238.2	1,034.5	203.65	6.080		
10,200.0	5,504.9	10,183.2	5,517.9	104.3	104.7	-90.60	-3,137.2	3,687.4	1,238.4	1,030.4	207.91	5.956		
10,300.0	5,504.2	10,283.2	5,517.1	106.4	106.8	-90.60	-3,208.4	3,757.5	1,238.5	1,026.4	212.17	5.837		

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 N23-2306 01H
Project:	Sandoval County, NM	TVD Reference:	16 KB @ 6962.0ft
Reference Site:	S23-T23N-R6W	MD Reference:	16 KB @ 6962.0ft
Site Error:	0.0ft	North Reference:	True
Reference Well:	GCU N23-2306 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 S23-T23N-R6W - GCU N23-2306 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		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		
10,400.0	5,503.5	10,383.2	5,516.2	108.5	108.9	-90.59	-3,279.6	3,827.7	1,238.7	1,022.3	216.43	5.723		
10,500.0	5,502.8	10,483.2	5,515.3	110.7	111.1	-90.58	-3,350.9	3,897.9	1,238.9	1,018.2	220.69	5.614		
10,600.0	5,502.1	10,583.2	5,514.5	112.8	113.2	-90.57	-3,422.1	3,968.1	1,239.1	1,014.1	224.96	5.508		
10,700.0	5,501.4	10,683.2	5,513.6	114.9	115.3	-90.56	-3,493.3	4,038.3	1,239.3	1,010.0	229.22	5.406		
10,800.0	5,500.7	10,783.2	5,512.7	117.0	117.5	-90.55	-3,564.5	4,108.4	1,239.4	1,006.0	233.48	5.309		
10,900.0	5,500.0	10,883.2	5,511.8	119.1	119.6	-90.55	-3,635.8	4,178.6	1,239.6	1,001.9	237.75	5.214		
11,000.0	5,499.3	10,983.2	5,511.0	121.2	121.7	-90.54	-3,707.0	4,248.8	1,239.8	997.8	242.01	5.123		
11,100.0	5,498.6	11,083.2	5,510.1	123.4	123.8	-90.53	-3,778.2	4,319.0	1,240.0	993.7	246.27	5.035		
11,200.0	5,497.9	11,183.2	5,509.2	125.5	126.0	-90.52	-3,849.5	4,389.2	1,240.2	989.6	250.54	4.950		
11,300.0	5,497.3	11,283.2	5,508.3	127.6	128.1	-90.51	-3,920.7	4,459.4	1,240.4	985.6	254.81	4.868		
11,400.0	5,496.6	11,383.2	5,507.5	129.7	130.2	-90.50	-3,991.9	4,529.5	1,240.5	981.5	259.07	4.788		
11,500.0	5,495.9	11,483.2	5,506.6	131.8	132.4	-90.49	-4,063.1	4,599.7	1,240.7	977.4	263.34	4.712		
11,600.0	5,495.2	11,583.2	5,505.7	134.0	134.5	-90.49	-4,134.4	4,669.9	1,240.9	973.3	267.60	4.637		
11,700.0	5,494.5	11,683.2	5,504.9	136.1	136.6	-90.48	-4,205.6	4,740.1	1,241.1	969.2	271.87	4.565		
11,800.0	5,493.8	11,783.2	5,504.0	138.2	138.8	-90.47	-4,276.8	4,810.3	1,241.3	965.1	276.14	4.495		
11,900.0	5,493.1	11,883.2	5,503.1	140.3	140.9	-90.46	-4,348.1	4,880.5	1,241.4	961.0	280.41	4.427		
11,913.8	5,493.0	11,897.0	5,503.0	140.6	141.2	-90.46	-4,357.9	4,890.2	1,241.5	960.5	281.00	4.418		

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well GCU N23-2306 01H
Project:	Sandoval County, NM	TVD Reference:	16 KB @ 6962.0ft
Reference Site:	S23-T23N-R6W	MD Reference:	16 KB @ 6962.0ft
Site Error:	0.0ft	North Reference:	True
Reference Well:	GCU N23-2306 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 S26-T23N-R6W - GCU P26-2306 02H - Hz - Plan #1													Offset Site Error:	0.0 ft
Survey Program: 0-Geolink MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning	
10,700.0	5,501.4	5,850.0	5,387.2	114.9	19.5	88.04	-5,748.8	3,150.6	1,386.4	1,259.4	126.95	10.920		
10,800.0	5,500.7	5,850.0	5,387.2	117.0	19.5	88.04	-5,748.8	3,150.6	1,317.2	1,188.1	129.08	10.204		
10,900.0	5,500.0	5,880.8	5,389.9	119.1	20.1	88.17	-5,750.9	3,181.2	1,250.9	1,119.3	131.64	9.503		
11,000.0	5,499.3	5,900.0	5,391.5	121.2	20.5	88.25	-5,753.0	3,200.2	1,188.0	1,053.9	134.04	8.863		
11,100.0	5,498.6	5,932.2	5,394.0	123.4	21.2	88.38	-5,757.9	3,232.0	1,128.5	991.8	136.66	8.258		
11,200.0	5,497.9	5,950.0	5,395.3	125.5	21.5	88.45	-5,761.5	3,249.3	1,073.2	934.1	139.06	7.717		
11,300.0	5,497.3	6,000.0	5,398.6	127.6	22.5	88.64	-5,774.2	3,297.6	1,022.0	880.0	142.02	7.196		
11,400.0	5,496.6	6,023.5	5,400.0	129.7	22.9	88.72	-5,781.6	3,319.8	975.5	830.9	144.56	6.748		
11,500.0	5,495.9	6,050.0	5,401.5	131.8	23.4	88.81	-5,791.1	3,344.5	934.4	787.3	147.15	6.350		
11,600.0	5,495.2	6,100.0	5,403.8	134.0	24.3	88.96	-5,811.9	3,389.9	898.9	748.7	150.20	5.985		
11,700.0	5,494.5	6,131.5	5,405.0	136.1	24.8	89.05	-5,827.1	3,417.4	869.4	716.5	152.93	5.685		
11,800.0	5,493.8	6,170.6	5,406.1	138.2	25.5	89.14	-5,847.9	3,450.5	846.4	690.6	155.81	5.432		
11,900.0	5,493.1	6,200.0	5,406.8	140.3	25.9	89.19	-5,865.1	3,474.4	830.3	671.8	158.49	5.239		
11,913.8	5,493.0	6,216.4	5,407.0	140.6	26.2	89.21	-5,875.2	3,487.3	828.5	669.4	159.11	5.207 CC, ES, SF		

Anticollision Report

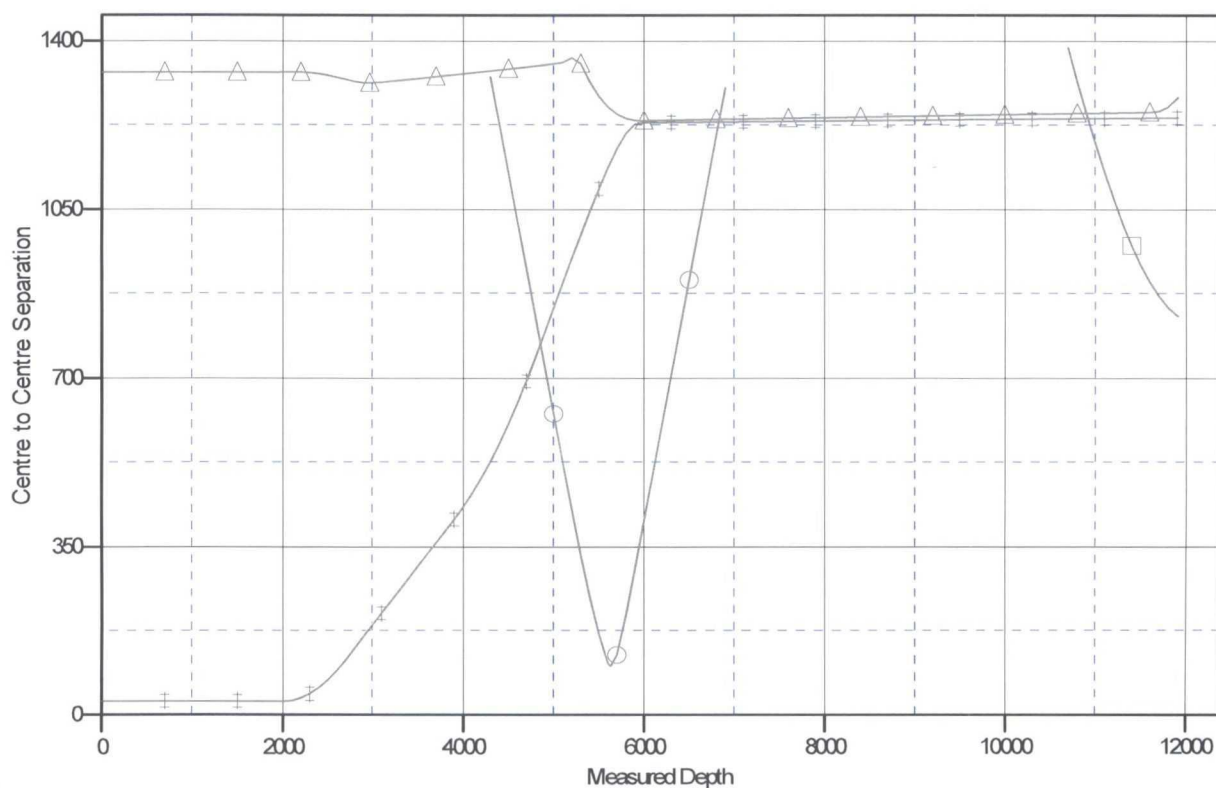
Company: EnCana Oil & Gas (USA) Inc
Project: Sandoval County, NM
Reference Site: S23-T23N-R6W
Site Error: 0.0ft
Reference Well: GCU N23-2306 01H
Well Error: 0.0ft
Reference Wellbore: HZ
Reference Design: Plan #1

Local Co-ordinate Reference: Well GCU N23-2306 01H
TVD Reference: 16 KB @ 6962.0ft
MD Reference: 16 KB @ 6962.0ft
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 @ 6962.0ft
 Offset Depths are relative to Offset Datum
 Central Meridian is -106.250000 °

Coordinates are relative to: GCU N23-2306 01H
 Coordinate System is US State Plane 1983, New Mexico Central Zone
 Grid Convergence at Surface is: -0.70°

Ladder Plot



LEGEND

GCU M15-2306 02H, HZ, Plan #1 V0 GCU N23-2306 02H, HZ, Plan #1 V0
 GCU M23-2306 02H, HZ, Plan #1 V0 GCU P26-2306 02H, HZ, Plan #1 V0

Gallo Canyon Unit N23-2306 01H
SHL: SESW Section 23, T23N, R6W
913 FSL and 1861 FWL
BHL: SWSW Section 25, T23N, R6W
1000 FSL and 610 FWL
Sandoval County, New Mexico
Lease Number: NMNM 131017X

6. 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 4 weeks.

C. Pipeline

1. See the Plan of Development submitted with the final Standard SF-299 Application for authorization to construct, operate, maintain and terminate a 3828 foot, up to 6-inch outside diameter, buried steel well connect pipeline that was submitted to the Bureau of Land Management on July 8, 2014.
2. A 30' x 50' silt trap will be installed at STA 14+52.30 to STA 15+02.30 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.

ENCANA OIL & GAS (USA) INC.

GALLO CANYON UNIT N23-2308 #01H

913' FSL & 1881' FWL

LOCATED IN THE SE/4 SW/4 OF SECTION 23, T23N, R8W, 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. 36.205931° N, LONG. 107.440402° W (NAD 83).

JOB No.: ENC161
DATE: 05/30/2014
DRAWN BY: TWT



Scorpion Survey & Consulting, L.L.C.
302 S. Ash
Aztec, New Mexico 87410
(505) 334-4007

encana

GCU N23-2306 01H



11" 3K Annular

3K Double Ram
Top: Pipe Ram
Bottom: Blind Ram
3" Outlets Below Ram

3K Mud Cross 3" gate valves

