

State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

Ken McQueen
Cabinet Secretary

Matthias Sayer
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: 12-12-16

Well information;

Operator Encana, Well Name and Number N Alamito Unit # 307H

API# 30043-21297, Section 34, Township 23 N/S, Range 7 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
- ☐ Submit Gas Capture Plan form prior to spudding or initiating recompletion operations
- ☒ 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.

Charles R. ...
NMOCD Approved by Signature

1-25-2017
Date

32

Lessee - Encana
HBP actual
on site 6/16/15

10400008953

Form 3160-3
(March 2012)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

FORM APPROVED
OMB No. 1004-0137
Expires October 31, 2014

5. Lease Serial No.
NMNM 6682 ✓

6. If Indian, Allottee or Tribe Name

1a. Type of work: ☒ DRILL ☐ REENTER

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

2. Name of Operator
ENCANA OIL & GAS (USA) INC

7. If Unit or CA Agreement, Name and No.
/1/NORTH ALAMITO UNIT / NMNM1352

8. Lease Name and Well No.
NORTH ALAMITO UNIT 307H

9. API Well No.
30-043-21297

3a. Address
370 17TH STREET, SUITE 1700 DENVER CO

3b. Phone No. (include area code)
(970)285-2600

10. Field and Pool, or Exploratory
ALAMITO MANCOS N (OIL) ✓

4. Location of Well (Report location clearly and in accordance with any State requirements.)
At surface NWSW / 1433 FSL / 769 FWL / LAT 36.179763 / LONG -107.56837
At proposed prod. zone SWSW / 815 FSL / 925 FWL / LAT 36.19283 / LONG -107.585656

11. Sec., T. R. M. or Blk. and Survey or Area
SEC 34 / T23N / R7W / NMP ✓

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

12. County or Parish
SANDOVAL ✓

13. State
NM

15. Distance from proposed*
location to nearest
property or lease line, ft.
(Also to nearest drig. unit line, if any)
4305 feet

16. No. of acres in lease
2080 ✓

17. Spacing Unit dedicated to this well
14262.78 ✓

OIL CONS. DIV DIST. 3

18. Distance from proposed location*
to nearest well, drilling, completed, 30 feet
applied for, on this lease, ft.

19. Proposed Depth
5138 feet / 12333 feet

20. BLM/BIA Bond No. on file
FED: COB000235
417,500 DEC 30 2016

21. Elevations (Show whether DF, KDB, RT, GL, etc.)
6895 feet

22. Approximate date work will start*
03/01/2017

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
(Electronic Submission)

Name (Printed/Typed)
Katie Wegner / Ph: (720)876-3533

Date
12/12/2016

Title
Regulatory Analyst

Approved by (Signature)
[Signature]

Name (Printed/Typed)

Date
12/28/16

Title
AFM

Office
FARMINGTON

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)

*(Instructions on page 2)

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

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

NMOCDV

DISTRICT I
1695 N. French Dr., Hobbs, N.M. 88240
Phone: (505) 393-6161 Fax: (505) 393-0720

DISTRICT II
811 S. First St., Artesia, N.M. 88210
Phone: (505) 748-1283 Fax: (505) 748-0720

DISTRICT III
1000 Mo Brunes Rd., Artec, N.M. 87410
Phone: (505) 334-6178 Fax: (505) 334-6170

DISTRICT IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 478-5460 Fax: (505) 478-5462

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 LOCATION AND ACREAGE DEDICATION PLAT

*API Number 30.043-21297	*Pool Code 98174	*Pool Name ALAMITO MANCOS N (OIL)
*Property Code 317188	*Property Name NORTH ALAMITO UNIT	*Well Number 307H
*OGRD No. 282327	*Operator Name ENCANA OIL & GAS (USA) INC.	*Elevation 6894.6'

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
L	34	23N	7W		1433'	SOUTH	769'	WEST	SANDOVAL

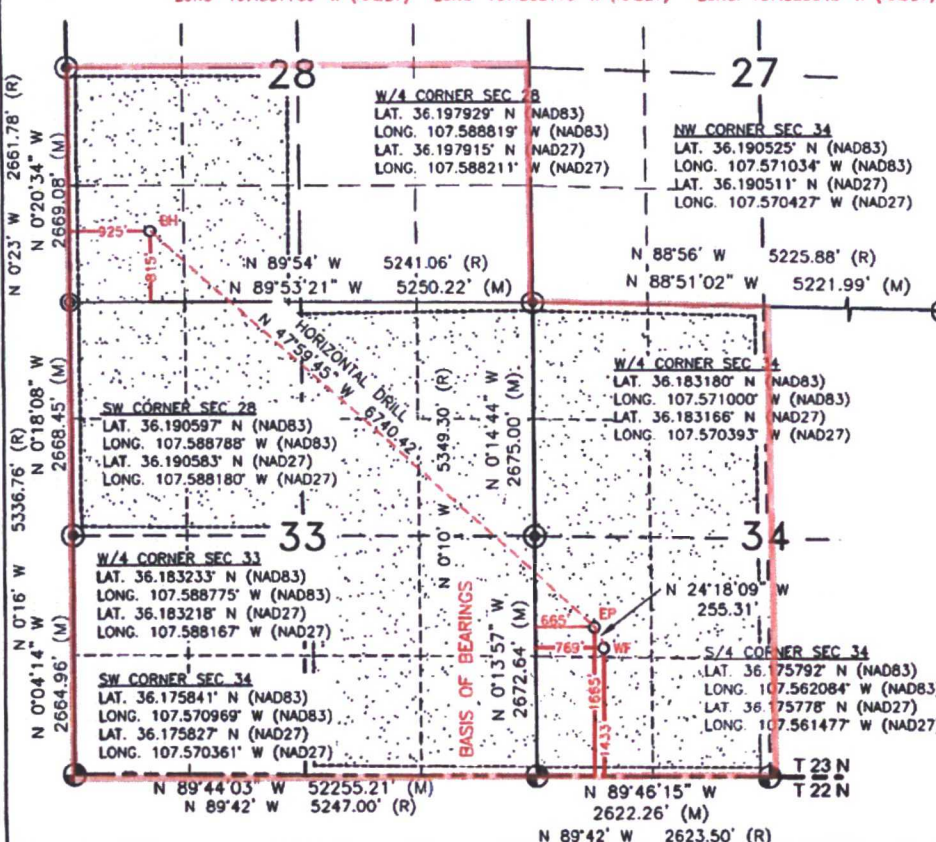
¹¹ Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
M	28	23N	7W		815'	SOUTH	925'	WEST	SANDOVAL

12 DEDICATED ACRES: PENETRATED SPACING UNIT: S/2 SEC 28 1/2 SEC 33 (320 ACRES); ALL SEC 33 (640 ACRES); W/2 SEC 34 (320 ACRES);
TOTAL: 14,262.78 ACRES T23N, R7W, SECs 19-23 & 25-34 (ALL); 35
(N/4); T22N, R7W, SECs 3 (N/2); 4 (N/2); 5 (N/2, S/4); 6 (ALL); 7
(N/2); 8 (N/4); T23N, R8W, SECs 25 & 36 (ALL); T22N, R8W SECs 1
(ALL) & 12 (N/2); UNDIVIDED UNIT

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

WELL FLAG ENTRY POINT BOTTOM HOLE
LAT. 36.179763° N (NAD83) LAT. 36.180402° N (NAD83) LAT. 36.192830° N (NAD83)
LONG. 107.568370° W (NAD83) LONG. 107.568723° W (NAD83) LONG. 107.585656° W (NAD83)
LAT. 36.179749° N (NAD27) LAT. 36.180388° N (NAD27) LAT. 36.192816° N (NAD27)
LONG. 107.567763° W (NAD27) LONG. 107.568116° W (NAD27) LONG. 107.585048° W (NAD27)



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.

Signature: *Katie Wegner* Date: *12/9/11*
Printed Name: *Katie Wegner*
E-mail Address: *Katie.wegner@cencana.com*

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.

JANUARY 26, 2015

Date of Survey
Signature and Seal of Professional Surveyor:



Certificate Number 11393

North Alamito Unit 307H (FKA Lybrook L34-2307 02H)
SHL: NWSW Section 34, T23N, R7W
1433' FSL and 769' FWL
BHL: SWSW Section 28, T23N, R7W
815' FSL and 925' FWL
Sandoval County, 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	972
Kirtland Shale	1,157
Fruitland Coal	1,377
Pictured Cliffs Ss.	1,499
Lewis Shale	1,622
Cliffhouse Ss.	2,319
Menefee Fn.	3,033
Point Lookout Ss.	3,881
Mancos Shale	4,088
Mancos Silt	4,624
Gallup Fn.	4,884

The referenced surface elevation is 6895', KB 6911'

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

Substance	Formation	Depth (TVD) units = feet
Water/Gas	Fruitland Coal	1,377
Water/Gas	Pictured Cliffs Ss.	1,499
Water/Gas	Cliffhouse Ss.	2,319
Water/Gas	Menefee Fn.	3,033
Water/Gas	Point Lookout Ss.	3,881
Oil/Gas	Mancos Shale	4,088
Oil/Gas	Mancos Silt	4,624
Oil/Gas	Gallup Fn.	4,884

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.
- 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.

North Alamito Unit 307H (FKA Lybrook L34-2307 02H)

SHL: NWSW Section 34, T23N, R7W

1433' FSL and 769' FWL

BHL: SWSW Section 28, T23N, R7W

815' FSL and 925' FWL

Sandoval County, New Mexico

- 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'	26"	16"	42	
Surface	0'-500'	12 1/4"	9 5/8"	32.3	J55, STC New
Intermediate	0'-5350'	8 3/4"	7"	26	J55, LTC New
Production Liner	5150'-12333'	6 1/8"	4 1/2"	11.6	B80*, BTC 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"	32.3	J55	STC	1370	2270	365	1.0	1.1	1.5
7"	26	J55	LTC	4330	4980	367	1.0	1.1	1.5
4.5"	11.6	B80	BTC	6350	7780	267	1.0	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.

North Alamito Unit 307H (FKA Lybrook L34-2307 02H)
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 1433' FSL and 769' FWL
 BHL: SWSW Section 28, T23N, R7W
 815' FSL and 925' FWL
 Sandoval County, 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'	248 sks	Class G w/ 2% CaCl Weight: 14.6ppg Yield: 13.8 ft ³ /sk	Surface	1 per joint on bottom 3 joints
Intermediate	0'-5350'	100% open hole excess Stage 1 Lead: 596 sks Stage 1 Tail: 292 sks	Lead: Extended Class G w/ 6% BWOC bentonite + 5 lb/sk Kol-Seal + 0.125 lb/sk Poly-flake + 0.3% BWOC HR-5 Weight: 12.1ppg Yield: 2.038 ft ³ /sk Tail: Extended Class G w/ 1% BWOC bentonite + 0.3% BWOC Halad-567 + 0.2% BWOC Versaset + 0.05% SA-1015 Weight: 14.6ppg Yield: 1.059 ft ³ /sk	Surface	1 every 3 joints through water bearing zones
Production Liner	5150'-12333'	30% open hole excess Cement Vol: 679 sks	Extended Class G w/ 2.5 lb/sk Kol-seal + 0.7% BWOC Halad-567 + 0.20% BWOC Halad-9 + 0.05% SA-1015 Weight: 13.5ppg Yield: 1.302 ft ³ /sk	Top of Liner	N/A

North Alamito Unit 307H (FKA Lybrook L34-2307 02H)
SHL: NWSW Section 34, T23N, R7W
1433' FSL and 769' FWL
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815' FSL and 925' FWL
Sandoval County, New Mexico

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 4445'. Directional plans are attached.

Description	Proposed Depth (TVD/MD)	Formation
Horizontal Lateral TD	5138'/12333'	Gallup

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)
26"	0-60'/60'	Fresh Water	8.3-9.2	38-100	NC
12 1/4"	0'-500'/500'	Fresh Water	8.3-10	60-70	NC
8 3/4"	500'/500'-5123'/5350'	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"	5123'/5350'- 5138'/12333'	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) Mud Logging - Mancos Top to TD
- d) Logging - See below

North Alamito Unit 307H (FKA Lybrook L34-2307 02H)

SHL: NWSW Section 34, T23N, R7W

1433' FSL and 769' FWL

BHL: SWSW Section 28, T23N, R7W

815' FSL and 925' FWL

Sandoval County, New Mexico

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 +/- 2412 psi based on a 9.0 ppg at 5153' 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 March 1st, 2017. 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 10 days.

LOC: 1665' FSL, 665 FWL Sec 34 23N 07			Encana Natural Gas						ENG: L. Hubbard RIG: Unassigned GLE: 6895 RKBE: 6911		12-12-16
County: San Juan			WELL SUMMARY								
MWD	OPEN HOLE	FORM	DEPTH			HOLE	CASING	MW	DEVIATION		
LWD	LOGGING		TVD	MD						SIZE	SPECS
			60	60'		26	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" 32.3ppf J55 STC TOC to Surface 100% OHE	Fresh wtr 8.3-10	Vertical <1°		
Survey Every 60'-120', updating anticollision report after surveys. Stop operations 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	972 1,157 1,377 1,499 1,622 2,319 3,033 3,881 4,088		4923	8 3/4	7" 26ppf J55 LTC TOC @ surface (100% OH excess) Stage 1 Total: 889sks	Fresh Wtr 8.3-10	Vertical <1°		
Surveys every 30' through the curve	MWD GR Mud Log	KOP Mancos Silt Gallup Fn. 7" Csg	4,445 4,624 4,884 5,123	4,466 5,350'							
Surveys every stand to TD unless directed otherwise by Geologist	No OH Logs	Horizontal Target TD	5,153 5,138	12,333		6 1/8	200' overlap at liner top		Horz Inc/TVD 90.1deg/5150'		
MWD Gamma Directional		Base Gallup	5,235				6983' Drilled Lateral TOC @ Top of Liner (30% open hole excess)	WBM 8.3-10	TD = 12332.9' MD		

EnCana Oil & Gas (USA) Inc

Sandoval County, NM

S34-T23N-R7W

NORTH ALAMITO UNIT 307H

OH

PLAN #2

Anticollision Report

12 December, 2016

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well NORTH ALAMITO UNIT 307H
Project:	Sandoval County, NM	TVD Reference:	16' KB @ 6911.0ft
Reference Site:	S34-T23N-R7W	MD Reference:	16' KB @ 6911.0ft
Site Error:	0.0ft	North Reference:	True
Reference Well:	NORTH ALAMITO UNIT 307H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #2	Offset TVD Reference:	Offset Datum

Reference	PLAN #2		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	Error Model:	Systematic Ellipse
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 1,500.0ft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma		

Survey Tool Program	Date 12/12/2016			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	12,277.2	PLAN #2 (OH)	MWD+HDGM	OWSG MWD + HDGM

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						
S34-T23N-R7W						
Federal B-4 (Existing) - INC ONLY - INC ONLY	5,218.0	5,060.2	372.5	341.9	12.166	CC, ES
Federal B-4 (Existing) - INC ONLY - INC ONLY	5,250.0	5,074.0	373.7	342.8	12.097	SF
Federal B-5 (Existing) - INC ONLY - INC ONLY						Out of range
Federal I-1 (Existing) - INC ONLY - SURVEYS	8,617.5	5,125.7	118.0	10.7	1.099	Level 2, CC, ES, SF
Federal I-2 (Existing) - INC ONLY - SURVEYS	6,708.6	5,109.4	915.8	857.2	15.648	CC, ES
Federal I-2 (Existing) - INC ONLY - SURVEYS	6,900.0	5,109.7	935.5	873.3	15.042	SF
Federal I-4 (Existing) - EXISTING - SURVEYS						Out of range
Federal L-1 (Existing) - INC ONLY - SURVEYS						Out of range
LYBROOK D34-2307 01H - OH - PLAN #1	10,100.0	8,052.6	23.8	-167.8	0.124	Level 1, ES
LYBROOK D34-2307 01H - OH - PLAN #1	10,135.4	8,078.9	1.8	-63.0	0.027	Level 1, CC, SF
NORTH ALAMITO UNIT 306H - OH - PLAN #2	500.0	500.0	30.3	27.1	9.550	CC, ES
NORTH ALAMITO UNIT 306H - OH - PLAN #2	11,500.0	11,567.1	1,286.4	944.3	3.760	SF
NORTH ALAMITO UNIT 308H - OH - PLAN #1	600.0	600.0	29.7	25.8	7.641	CC, ES
NORTH ALAMITO UNIT 308H - OH - PLAN #1	12,277.2	12,449.7	1,300.1	916.0	3.384	SF

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

Cathedral Energy Services

Anticollision Report

Company: EnCana Oil & Gas (USA) Inc
Project: Sandoval County, NM
Reference Site: S34-T23N-R7W
Site Error: 0.0ft
Reference Well: NORTH ALAMITO UNIT 307H
Well Error: 0.0ft
Reference Wellbore: OH
Reference Design: PLAN #2

Local Co-ordinate Reference: Well NORTH ALAMITO UNIT 307H
TVD Reference: 16' KB @ 6911.0ft
MD Reference: 16' KB @ 6911.0ft
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 S34-T23N-R7W - Federal B-4 (Existing) - INC ONLY - INC ONLY													Offset Site Error: 0.0 ft
Survey Program: 150-ISCWSA MWD													Offset Well Error: 0.0 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)					
0.0	0.0	0.0	0.0	0.0	0.0	41.45	337.5	298.1	450.6				
100.0	100.0	84.2	84.2	0.2	0.1	41.46	337.5	298.1	450.3	450.0	0.25	1,835.725	
200.0	200.0	184.3	184.3	0.5	0.2	41.48	337.3	298.2	450.2	449.5	0.75	596.389	
300.0	300.0	284.4	284.4	0.9	0.5	41.51	337.1	298.4	450.2	448.8	1.34	336.304	
400.0	400.0	384.5	384.5	1.2	0.7	41.55	336.8	298.5	450.1	448.1	1.92	234.140	
500.0	500.0	484.5	484.5	1.6	0.9	41.59	336.5	298.7	449.9	447.4	2.51	179.557	
600.0	600.0	584.6	584.6	1.9	1.1	41.65	336.1	298.9	449.8	446.7	3.09	145.587	
700.0	700.0	684.7	684.7	2.3	1.4	-84.24	335.7	299.2	449.5	445.8	3.66	122.796	
800.0	799.8	784.7	784.7	2.6	1.6	-84.85	335.2	299.4	448.8	444.6	4.22	106.236	
909.8	909.2	894.3	894.3	3.0	1.8	-86.03	334.6	299.8	447.8	442.9	4.85	92.229	
1,000.0	998.9	984.2	984.1	3.3	2.0	-87.19	334.0	300.1	446.9	441.6	5.38	83.056	
1,100.0	1,098.3	1,083.8	1,083.8	3.7	2.3	-88.47	333.3	300.6	446.2	440.2	5.97	74.727	
1,200.0	1,197.7	1,183.4	1,183.4	4.1	2.5	-89.74	332.5	301.0	445.7	439.1	6.57	67.870	
1,300.0	1,297.1	1,283.1	1,283.0	4.4	2.7	-91.01	331.6	301.5	445.3	438.2	7.17	62.148	
1,400.0	1,396.5	1,382.7	1,382.7	4.8	2.9	-92.27	330.7	302.0	445.2	437.4	7.77	57.314	
1,432.3	1,428.6	1,414.9	1,414.9	4.9	3.0	-92.68	330.4	302.2	445.2	437.2	7.96	55.910	
1,500.0	1,495.9	1,482.4	1,482.4	5.2	3.2	-93.53	329.8	302.6	445.2	436.8	8.37	53.185	
1,600.0	1,595.4	1,582.1	1,582.0	5.6	3.4	-94.78	328.7	303.2	445.4	436.5	8.98	49.623	
1,700.0	1,694.8	1,681.8	1,681.7	6.0	3.6	-96.01	327.6	303.8	445.8	436.2	9.58	46.524	
1,800.0	1,794.2	1,781.5	1,781.4	6.3	3.9	-97.24	326.5	304.5	446.4	436.2	10.19	43.807	
1,900.0	1,893.6	1,881.2	1,881.1	6.7	4.1	-98.45	325.2	305.2	447.1	436.3	10.80	41.409	
2,000.0	1,993.0	1,980.9	1,980.8	7.1	4.3	-99.65	323.9	305.9	448.0	436.6	11.40	39.280	
2,100.0	2,092.4	2,080.7	2,080.6	7.5	4.5	-100.84	322.6	306.7	449.0	437.0	12.01	37.379	
2,200.0	2,191.9	2,180.4	2,180.3	7.9	4.8	-102.02	321.2	307.5	450.2	437.6	12.62	35.673	
2,300.0	2,291.3	2,280.2	2,280.1	8.3	5.0	-103.18	319.7	308.4	451.5	438.3	13.23	34.135	
2,400.0	2,390.7	2,379.7	2,379.6	8.7	5.2	-104.33	318.2	309.3	453.0	439.2	13.83	32.746	
2,500.0	2,490.1	2,479.3	2,479.2	9.0	5.4	-105.48	316.7	310.1	454.7	440.3	14.44	31.488	
2,600.0	2,589.5	2,578.9	2,578.7	9.4	5.7	-106.61	315.2	311.0	456.6	441.5	15.05	30.344	
2,700.0	2,688.9	2,678.5	2,678.3	9.8	5.9	-107.73	313.7	311.9	458.6	443.0	15.65	29.302	
2,800.0	2,788.4	2,778.0	2,777.8	10.2	6.1	-108.85	312.2	312.7	460.9	444.6	16.26	28.349	
2,900.0	2,887.8	2,877.6	2,877.4	10.6	6.3	-109.95	310.7	313.6	463.2	446.4	16.86	27.476	
3,000.0	2,987.2	2,977.5	2,977.2	11.0	6.6	-111.04	309.1	314.5	465.8	448.3	17.47	26.669	
3,100.0	3,086.6	3,077.4	3,077.2	11.4	6.8	-112.11	307.5	315.4	468.4	450.3	18.07	25.922	
3,200.0	3,186.0	3,177.4	3,177.1	11.8	7.0	-113.16	305.8	316.4	471.1	452.4	18.67	25.228	
3,300.0	3,285.4	3,277.4	3,277.1	12.2	7.3	-114.19	303.9	317.5	473.9	454.6	19.28	24.582	
3,400.0	3,384.8	3,377.1	3,376.7	12.5	7.5	-115.20	302.0	318.6	476.8	456.9	19.88	23.984	
3,500.0	3,484.3	3,476.7	3,476.3	12.9	7.7	-116.19	300.2	319.7	479.8	459.3	20.48	23.429	
3,600.0	3,583.7	3,576.3	3,575.9	13.3	7.9	-117.17	298.3	320.8	483.0	461.9	21.08	22.913	
3,700.0	3,683.1	3,675.9	3,675.5	13.7	8.2	-118.14	296.4	321.8	486.3	464.6	21.68	22.433	
3,800.0	3,782.5	3,775.6	3,775.2	14.1	8.4	-119.10	294.5	322.9	489.7	467.4	22.27	21.986	
3,900.0	3,881.9	3,875.5	3,875.1	14.5	8.6	-120.04	292.6	324.1	493.2	470.4	22.87	21.564	
4,000.0	3,981.3	3,975.5	3,975.0	14.9	8.8	-120.96	290.5	325.2	496.8	473.4	23.47	21.167	
4,100.0	4,080.8	4,075.5	4,075.0	15.3	9.1	-121.86	288.4	326.4	500.5	476.4	24.07	20.792	
4,200.0	4,180.2	4,175.5	4,175.0	15.7	9.3	-122.75	286.3	327.7	504.2	479.5	24.67	20.438	
4,300.0	4,279.6	4,275.4	4,274.8	16.1	9.5	-123.61	284.0	329.0	507.9	482.6	25.26	20.104	
4,400.0	4,379.0	4,375.0	4,374.4	16.4	9.8	-124.46	281.8	330.3	511.7	485.9	25.86	19.790	
4,466.1	4,444.7	4,440.9	4,440.3	16.7	9.9	-125.02	280.3	331.2	514.3	488.1	26.25	19.593	
4,500.0	4,478.5	4,474.7	4,474.1	16.8	10.0	-119.10	279.5	331.6	515.1	488.6	26.45	19.474	
4,550.0	4,528.5	4,524.7	4,524.1	17.0	10.1	21.66	278.4	332.2	514.0	487.3	26.73	19.228	
4,600.0	4,578.4	4,574.5	4,573.8	17.1	10.2	42.07	277.2	332.9	510.3	483.3	27.00	18.901	
4,650.0	4,627.8	4,623.8	4,623.1	17.3	10.3	46.03	276.1	333.5	504.1	476.8	27.26	18.490	
4,700.0	4,676.6	4,672.2	4,671.6	17.4	10.5	48.78	275.0	334.2	495.5	467.9	27.52	18.005	

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

Cathedral Energy Services
Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well NORTH ALAMITO UNIT 307H
Project:	Sandoval County, NM	TVD Reference:	16' KB @ 6911.0ft
Reference Site:	S34-T23N-R7W	MD Reference:	16' KB @ 6911.0ft
Site Error:	0.0ft	North Reference:	True
Reference Well:	NORTH ALAMITO UNIT 307H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #2	Offset TVD Reference:	Offset Datum

Offset Design S34-T23N-R7W - Federal B-4 (Existing) - INC ONLY - INC ONLY														Offset Site Error:	0.0 ft
Survey Program: 150-ISCWSA MWD														Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning		
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)							
4,750.0	4,724.4	4,719.6	4,718.9	17.5	10.6	51.54	274.0	334.8	484.7	456.9	27.77	17.453			
4,800.0	4,770.8	4,765.6	4,764.9	17.6	10.7	54.65	272.9	335.4	472.0	444.0	28.02	16.847			
4,850.0	4,815.7	4,809.9	4,809.2	17.8	10.8	58.21	271.9	336.0	457.8	429.5	28.26	16.199			
4,900.0	4,858.7	4,852.3	4,851.5	17.9	10.9	62.24	270.9	336.5	442.6	414.1	28.51	15.526			
4,950.0	4,899.6	4,892.4	4,891.6	18.0	11.0	66.69	270.0	337.1	427.0	398.2	28.76	14.846			
5,000.0	4,938.1	4,930.1	4,929.3	18.2	11.0	71.45	269.2	337.6	411.7	382.7	29.04	14.181			
5,050.0	4,973.9	4,965.1	4,964.3	18.3	11.1	76.33	268.4	338.0	397.7	368.4	29.34	13.557			
5,100.0	5,007.0	4,997.1	4,996.3	18.6	11.2	81.10	267.7	338.4	385.8	356.2	29.67	13.003			
5,150.0	5,037.0	5,026.1	5,025.3	18.8	11.3	85.51	267.0	338.8	377.2	347.2	30.05	12.553			
5,200.0	5,063.7	5,051.8	5,051.0	19.2	11.3	89.32	266.4	339.1	372.9	342.4	30.46	12.241			
5,218.0	5,072.5	5,060.2	5,059.4	19.3	11.3	90.51	266.2	339.3	372.5	341.9	30.62	12.166 CC, ES			
5,250.0	5,087.1	5,074.0	5,073.2	19.5	11.4	92.34	265.9	339.4	373.7	342.8	30.89	12.097 SF			
5,300.0	5,106.9	5,092.7	5,091.9	20.0	11.4	94.43	265.5	339.7	380.2	348.9	31.30	12.144			
5,350.0	5,123.0	5,107.7	5,106.8	20.5	11.5	95.48	265.2	339.9	392.6	360.9	31.68	12.393			
5,400.0	5,135.4	5,115.0	5,114.2	21.1	11.5	94.84	265.0	340.0	410.7	378.7	31.97	12.845			
5,450.0	5,144.0	5,115.0	5,114.2	21.7	11.5	92.46	265.0	340.0	434.1	402.0	32.19	13.488			
5,500.0	5,148.7	5,115.0	5,114.2	22.4	11.5	89.45	265.0	340.0	462.0	429.7	32.33	14.288			
5,535.6	5,149.6	5,115.0	5,114.2	22.9	11.5	86.92	265.0	340.0	484.0	451.6	32.41	14.936			
5,600.0	5,149.5	5,115.0	5,114.2	23.9	11.5	86.92	265.0	340.0	527.6	495.1	32.49	16.238			
5,700.0	5,149.3	5,115.0	5,114.2	25.6	11.5	86.92	265.0	340.0	602.7	570.2	32.54	18.523			
5,800.0	5,149.1	5,115.0	5,114.2	27.5	11.5	86.92	265.0	340.0	684.2	651.7	32.53	21.032			
5,900.0	5,149.0	5,115.0	5,114.2	29.5	11.5	86.92	265.0	340.0	770.1	737.6	32.50	23.693			
6,000.0	5,148.8	5,115.0	5,114.2	31.5	11.5	86.92	265.0	340.0	859.0	826.6	32.46	26.461			
6,100.0	5,148.6	5,114.6	5,113.8	33.7	11.5	86.86	265.0	340.0	950.2	917.7	32.42	29.305			
6,200.0	5,148.4	5,111.9	5,111.1	35.9	11.5	86.45	265.1	339.9	1,042.9	1,010.5	32.38	32.207			
6,300.0	5,148.3	5,109.3	5,108.4	38.2	11.5	86.04	265.1	339.9	1,136.9	1,104.6	32.34	35.150			
6,400.0	5,148.1	5,106.6	5,105.8	40.5	11.5	85.63	265.2	339.9	1,231.8	1,199.5	32.31	38.124			
6,500.0	5,147.9	5,103.9	5,103.1	42.9	11.4	85.23	265.2	339.8	1,327.5	1,295.2	32.28	41.121			
6,600.0	5,147.7	5,101.3	5,100.4	45.3	11.4	84.82	265.3	339.8	1,423.8	1,391.5	32.26	44.137			

Cathedral Energy Services

Anticollision Report

Company: EnCana Oil & Gas (USA) Inc
 Project: Sandoval County, NM
 Reference Site: S34-T23N-R7W
 Site Error: 0.0ft
 Reference Well: NORTH ALAMITO UNIT 307H
 Well Error: 0.0ft
 Reference Wellbore: OH
 Reference Design: PLAN #2

Local Co-ordinate Reference: Well NORTH ALAMITO UNIT 307H
 TVD Reference: 16' KB @ 6911.0ft
 MD Reference: 16' KB @ 6911.0ft
 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 S34-T23N-R7W - Federal I-1 (Existing) - INC ONLY - SURVEYS													Offset Site Error: 0.0 ft
Survey Program: 525-ISCWSA MWD													Offset Well Error: 0.0 ft
Reference		Offset		Semi Major Axis			Distance				Total Uncertainty Axis	Separation Factor	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)			
7,200.0	5,146.7	5,123.4	5,123.0	60.1	11.0	-87.46	2,179.1	-2,502.7	1,422.4	1,392.9	29.49	48.229	
7,300.0	5,146.5	5,123.6	5,123.1	62.6	11.0	-87.53	2,179.1	-2,502.7	1,322.8	1,293.1	29.68	44.564	
7,400.0	5,146.3	5,123.7	5,123.3	65.1	11.0	-87.61	2,179.1	-2,502.7	1,223.2	1,193.3	29.92	40.879	
7,500.0	5,146.2	5,123.9	5,123.5	67.7	11.0	-87.69	2,179.1	-2,502.7	1,123.7	1,093.5	30.23	37.172	
7,600.0	5,146.0	5,124.1	5,123.6	70.2	11.0	-87.77	2,179.1	-2,502.7	1,024.4	993.7	30.63	33.440	
7,700.0	5,145.8	5,124.2	5,123.8	72.8	11.0	-87.85	2,179.1	-2,502.8	925.1	893.9	31.17	29.682	
7,800.0	5,145.6	5,124.4	5,124.0	75.3	11.0	-87.93	2,179.1	-2,502.8	826.0	794.1	31.90	25.896	
7,900.0	5,145.5	5,124.6	5,124.1	77.9	11.0	-88.01	2,179.1	-2,502.8	727.2	694.3	32.92	22.086	
8,000.0	5,145.3	5,124.7	5,124.3	80.5	11.0	-88.09	2,179.1	-2,502.8	628.7	594.3	34.42	18.268	
8,100.0	5,145.1	5,124.9	5,124.5	83.1	11.0	-88.17	2,179.1	-2,502.8	530.8	494.2	36.67	14.475	
8,200.0	5,144.9	5,125.1	5,124.6	85.7	11.0	-88.25	2,179.1	-2,502.8	433.9	393.6	40.25	10.779	
8,300.0	5,144.8	5,125.2	5,124.8	88.2	11.0	-88.33	2,179.1	-2,502.8	338.8	292.5	46.31	7.316	
8,400.0	5,144.6	5,125.4	5,124.9	90.8	11.0	-88.41	2,179.1	-2,502.8	247.5	190.2	57.34	4.316	
8,500.0	5,144.4	5,125.5	5,125.1	93.4	11.0	-88.49	2,179.1	-2,502.8	166.6	88.0	78.55	2.121	
8,600.0	5,144.2	5,125.7	5,125.3	96.0	11.0	-88.57	2,179.1	-2,502.8	119.3	13.4	105.96	1.126 Level 2	
8,617.5	5,144.2	5,125.7	5,125.3	96.5	11.0	-88.59	2,179.1	-2,502.8	118.0	10.7	107.38	1.099 Level 2, CC, ES, SF	
8,700.0	5,144.1	5,125.9	5,125.4	98.6	11.0	-88.65	2,179.1	-2,502.8	144.0	51.7	92.31	1.560	
8,800.0	5,143.9	5,126.0	5,125.6	101.2	11.0	-88.73	2,179.1	-2,502.8	217.3	149.5	67.86	3.203	
8,900.0	5,143.7	5,126.2	5,125.8	103.8	11.0	-88.81	2,179.1	-2,502.8	306.1	251.9	54.23	5.645	
9,000.0	5,143.5	5,126.4	5,125.9	106.4	11.0	-88.89	2,179.1	-2,502.8	400.3	353.5	46.74	8.563	
9,100.0	5,143.4	5,126.5	5,126.1	109.1	11.0	-88.97	2,179.1	-2,502.8	496.7	454.4	42.28	11.749	
9,200.0	5,143.2	5,126.7	5,126.3	111.7	11.0	-89.05	2,179.1	-2,502.8	594.3	554.9	39.42	15.077	
9,300.0	5,143.0	5,126.9	5,126.4	114.3	11.0	-89.14	2,179.1	-2,502.8	692.6	655.1	37.48	18.478	
9,400.0	5,142.8	5,127.0	5,126.6	116.9	11.0	-89.22	2,179.1	-2,502.8	791.3	755.2	36.12	21.910	
9,500.0	5,142.7	5,127.2	5,126.8	119.5	11.0	-89.30	2,179.1	-2,502.8	890.3	855.2	35.12	25.349	
9,600.0	5,142.5	5,127.4	5,126.9	122.1	11.0	-89.38	2,179.1	-2,502.8	989.5	955.2	34.38	28.785	
9,700.0	5,142.3	5,127.5	5,127.1	124.8	11.0	-89.46	2,179.1	-2,502.8	1,088.9	1,055.1	33.81	32.209	
9,800.0	5,142.2	5,127.7	5,127.3	127.4	11.0	-89.54	2,179.1	-2,502.8	1,188.3	1,155.0	33.36	35.618	
9,900.0	5,142.0	5,127.9	5,127.4	130.0	11.0	-89.62	2,179.1	-2,502.8	1,287.9	1,254.9	33.01	39.010	
10,000.0	5,141.8	5,128.0	5,127.6	132.6	11.0	-89.70	2,179.1	-2,502.8	1,387.5	1,354.8	32.74	42.384	
10,100.0	5,141.6	5,128.2	5,127.8	135.2	11.0	-89.78	2,179.1	-2,502.8	1,487.2	1,454.6	32.51	45.740	

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

Cathedral Energy Services

Anticollision Report

Company: EnCana Oil & Gas (USA) Inc
 Project: Sandoval County, NM
 Reference Site: S34-T23N-R7W
 Site Error: 0.0ft
 Reference Well: NORTH ALAMITO UNIT 307H
 Well Error: 0.0ft
 Reference Wellbore: OH
 Reference Design: PLAN #2

Local Co-ordinate Reference: Well NORTH ALAMITO UNIT 307H
 TVD Reference: 16' KB @ 6911.0ft
 MD Reference: 16' KB @ 6911.0ft
 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 S34-T23N-R7W - Federal I-2 (Existing) - INC ONLY - SURVEYS													Offset Site Error: 0.0 ft
Survey Program: 751-ISCWSA 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
5,535.6	5,149.6	5,107.5	5,106.9	22.9	10.7	-88.46	306.7	-1,622.9	1,488.1	1,457.6	30.52	48.755	
5,600.0	5,149.5	5,107.6	5,107.0	23.9	10.7	-88.46	306.7	-1,622.9	1,437.9	1,406.8	31.15	46.163	
5,700.0	5,149.3	5,107.7	5,107.2	25.6	10.7	-88.48	306.7	-1,622.9	1,362.3	1,330.0	32.36	42.103	
5,800.0	5,149.1	5,107.9	5,107.3	27.5	10.7	-88.49	306.7	-1,622.9	1,290.1	1,256.2	33.88	38.079	
5,900.0	5,149.0	5,108.1	5,107.5	29.5	10.7	-88.50	306.7	-1,622.9	1,221.7	1,186.0	35.73	34.189	
6,000.0	5,148.8	5,108.2	5,107.7	31.5	10.7	-88.51	306.7	-1,623.0	1,157.9	1,120.0	37.93	30.528	
6,100.0	5,148.6	5,108.4	5,107.8	33.7	10.7	-88.52	306.7	-1,623.0	1,099.6	1,059.1	40.46	27.179	
6,200.0	5,148.4	5,108.6	5,108.0	35.9	10.7	-88.53	306.7	-1,623.0	1,047.5	1,004.3	43.28	24.204	
6,300.0	5,148.3	5,108.7	5,108.2	38.2	10.7	-88.54	306.7	-1,623.0	1,002.8	956.5	46.33	21.645	
6,400.0	5,148.1	5,108.9	5,108.3	40.5	10.7	-88.55	306.7	-1,623.0	966.4	916.9	49.50	19.522	
6,500.0	5,147.9	5,109.1	5,108.5	42.9	10.7	-88.56	306.7	-1,623.0	939.2	886.6	52.66	17.835	
6,600.0	5,147.7	5,109.2	5,108.7	45.3	10.7	-88.57	306.7	-1,623.0	922.2	866.5	55.65	16.571	
6,700.0	5,147.6	5,109.4	5,108.8	47.7	10.7	-88.58	306.7	-1,623.0	915.8	857.5	58.31	15.705	
6,708.6	5,147.5	5,109.4	5,108.8	47.9	10.7	-88.58	306.7	-1,623.0	915.8	857.2	58.52	15.648	CC, ES
6,800.0	5,147.4	5,109.6	5,109.0	50.1	10.7	-88.59	306.7	-1,623.0	920.3	859.8	60.52	15.207	
6,900.0	5,147.2	5,109.7	5,109.1	52.6	10.7	-88.60	306.7	-1,623.0	935.5	873.3	62.19	15.042	SF
7,000.0	5,147.0	5,109.9	5,109.3	55.1	10.7	-88.61	306.7	-1,623.0	961.0	897.7	63.33	15.175	
7,100.0	5,146.9	5,110.0	5,109.5	57.6	10.7	-88.62	306.7	-1,623.0	995.9	931.9	63.95	15.572	
7,200.0	5,146.7	5,110.2	5,109.6	60.1	10.7	-88.63	306.7	-1,623.0	1,039.3	975.1	64.15	16.201	
7,300.0	5,146.5	5,110.4	5,109.8	62.6	10.7	-88.64	306.7	-1,623.0	1,090.1	1,026.1	64.01	17.031	
7,400.0	5,146.3	5,110.5	5,110.0	65.1	10.7	-88.65	306.7	-1,623.0	1,147.4	1,083.8	63.61	18.038	
7,500.0	5,146.2	5,110.7	5,110.1	67.7	10.7	-88.66	306.7	-1,623.0	1,210.3	1,147.3	63.04	19.198	
7,600.0	5,146.0	5,110.9	5,110.3	70.2	10.7	-88.67	306.7	-1,623.0	1,277.9	1,215.6	62.36	20.491	
7,700.0	5,145.8	5,111.0	5,110.5	72.8	10.7	-88.68	306.7	-1,623.0	1,349.6	1,288.0	61.62	21.900	
7,800.0	5,145.6	5,111.2	5,110.6	75.3	10.7	-88.69	306.7	-1,623.0	1,424.7	1,363.8	60.86	23.410	

Cathedral Energy Services

Anticollision Report

Company: EnCana Oil & Gas (USA) Inc
Project: Sandoval County, NM
Reference Site: S34-T23N-R7W
Site Error: 0.0ft
Reference Well: NORTH ALAMITO UNIT 307H
Well Error: 0.0ft
Reference Wellbore: OH
Reference Design: PLAN #2

Local Co-ordinate Reference: Well NORTH ALAMITO UNIT 307H
TVD Reference: 16' KB @ 6911.0ft
MD Reference: 16' KB @ 6911.0ft
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 S34-T23N-R7W - LYBROOK D34-2307 01H - OH - PLAN #1														Offset Site Error:	0.0 ft
Survey Program: 0-MWD+HDGM														Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)										
7,900.0	5,145.5	6,418.1	5,188.6	77.9	45.0	91.03	3,281.2	-1,888.2	1,496.3	1,392.5	103.81	14.415			
8,000.0	5,145.3	6,492.4	5,187.7	80.5	47.0	91.03	3,281.4	-1,962.4	1,429.4	1,321.7	107.69	13.273			
8,100.0	5,145.1	6,566.7	5,186.8	83.1	49.1	91.03	3,281.6	-2,036.7	1,362.5	1,250.8	111.61	12.208			
8,200.0	5,144.9	6,641.0	5,185.9	85.7	51.1	91.04	3,281.8	-2,111.0	1,295.5	1,180.0	115.54	11.213			
8,300.0	5,144.8	6,715.3	5,185.0	88.2	53.1	91.05	3,281.9	-2,185.3	1,228.6	1,109.1	119.49	10.282			
8,400.0	5,144.6	6,789.6	5,184.1	90.8	55.2	91.05	3,282.1	-2,259.6	1,161.6	1,038.2	123.46	9.409			
8,500.0	5,144.4	6,863.9	5,183.2	93.4	57.3	91.06	3,282.3	-2,333.9	1,094.7	967.3	127.44	8.590			
8,600.0	5,144.2	6,938.2	5,182.3	96.0	59.4	91.07	3,282.5	-2,408.2	1,027.8	896.3	131.43	7.820			
8,700.0	5,144.1	7,012.5	5,181.3	98.6	61.5	91.08	3,282.7	-2,482.5	960.8	825.4	135.44	7.094			
8,800.0	5,143.9	7,086.7	5,180.4	101.2	63.6	91.09	3,282.9	-2,556.7	893.9	754.4	139.46	6.410			
8,900.0	5,143.7	7,161.0	5,179.5	103.8	65.7	91.10	3,283.1	-2,631.0	827.0	683.5	143.48	5.763			
9,000.0	5,143.5	7,235.3	5,178.6	106.4	67.8	91.11	3,283.2	-2,705.3	760.0	612.5	147.52	5.152			
9,100.0	5,143.4	7,309.6	5,177.7	109.1	69.9	91.13	3,283.4	-2,779.6	693.1	541.5	151.56	4.573			
9,200.0	5,143.2	7,383.9	5,176.8	111.7	72.0	91.15	3,283.6	-2,853.9	626.1	470.5	155.62	4.024			
9,300.0	5,143.0	7,458.2	5,175.9	114.3	74.2	91.18	3,283.8	-2,928.2	559.2	399.5	159.67	3.502			
9,400.0	5,142.8	7,532.5	5,175.0	116.9	76.3	91.21	3,284.0	-3,002.5	492.3	328.5	163.74	3.006			
9,500.0	5,142.7	7,606.8	5,174.1	119.5	78.5	91.25	3,284.2	-3,076.8	425.3	257.5	167.81	2.535			
9,600.0	5,142.5	7,681.1	5,173.2	122.1	80.6	91.31	3,284.4	-3,151.0	358.4	186.5	171.88	2.085			
9,700.0	5,142.3	7,755.4	5,172.3	124.8	82.8	91.40	3,284.5	-3,225.3	291.5	115.5	175.96	1.856			
9,800.0	5,142.2	7,829.7	5,171.4	127.4	84.9	91.54	3,284.7	-3,299.6	224.5	44.5	180.04	1.247 Level 2			
9,900.0	5,142.0	7,904.0	5,170.5	130.0	87.1	91.80	3,284.9	-3,373.9	157.6	-26.5	184.11	0.856 Level 1			
10,000.0	5,141.8	7,978.3	5,169.5	132.6	89.2	92.43	3,285.1	-3,448.2	90.7	-97.5	188.14	0.482 Level 1			
10,100.0	5,141.6	8,052.6	5,168.6	135.2	91.4	96.65	3,285.3	-3,522.5	23.8	-167.8	191.55	0.124 Level 1, ES			
10,135.4	5,141.6	8,078.9	5,168.3	136.2	92.1	-179.06	3,285.4	-3,548.8	1.8	-63.0	64.80	0.027 Level 1, CC, SF			
10,200.0	5,141.5	8,126.8	5,167.7	137.9	93.5	-92.21	3,285.5	-3,596.8	43.3	-153.3	196.52	0.220 Level 1			
10,300.0	5,141.3	8,201.1	5,166.8	140.5	95.7	-90.30	3,285.7	-3,671.0	110.2	-90.5	200.63	0.549 Level 1			
10,400.0	5,141.1	8,275.4	5,165.9	143.1	97.9	-89.83	3,285.8	-3,745.3	177.1	-27.6	204.73	0.865 Level 1			
10,500.0	5,140.9	8,349.7	5,165.0	145.8	100.0	-89.62	3,286.0	-3,819.6	244.0	35.2	208.83	1.169 Level 2			
10,600.0	5,140.8	8,424.0	5,164.1	148.4	102.2	-89.50	3,286.2	-3,893.9	311.0	98.0	212.94	1.460 Level 3			
10,700.0	5,140.6	8,498.3	5,163.2	151.0	104.4	-89.42	3,286.4	-3,968.2	377.9	160.9	217.06	1.741			
10,800.0	5,140.4	8,572.6	5,162.3	153.6	106.6	-89.37	3,286.6	-4,042.5	444.9	223.7	221.18	2.011			
10,900.0	5,140.2	8,646.9	5,161.4	156.3	108.7	-89.33	3,286.8	-4,116.8	511.8	286.5	225.30	2.272			
11,000.0	5,140.1	8,721.2	5,160.5	158.9	110.9	-89.30	3,287.0	-4,191.1	578.7	349.3	229.42	2.523			
11,100.0	5,139.9	8,795.5	5,159.6	161.5	113.1	-89.28	3,287.1	-4,265.3	645.7	412.1	233.55	2.765			
11,200.0	5,139.7	8,869.8	5,158.7	164.2	115.3	-89.26	3,287.3	-4,339.6	712.6	474.9	237.68	2.998			
11,300.0	5,139.5	8,944.1	5,157.7	166.8	117.5	-89.24	3,287.5	-4,413.9	779.5	537.7	241.81	3.224			
11,400.0	5,139.4	9,018.4	5,156.8	169.4	119.6	-89.23	3,287.7	-4,488.2	846.5	600.5	245.94	3.442			
11,500.0	5,139.2	9,092.7	5,155.9	172.1	121.8	-89.21	3,287.9	-4,562.5	913.4	663.3	250.08	3.653			
11,600.0	5,139.0	9,166.9	5,155.0	174.7	124.0	-89.20	3,288.1	-4,636.8	980.3	726.1	254.21	3.856			
11,700.0	5,138.8	9,241.2	5,154.1	177.4	126.2	-89.19	3,288.3	-4,711.1	1,047.3	788.9	258.35	4.054			
11,800.0	5,138.7	9,315.5	5,153.2	180.0	128.4	-89.19	3,288.4	-4,785.4	1,114.2	851.7	262.49	4.245			
11,900.0	5,138.5	9,389.8	5,152.3	182.6	130.6	-89.18	3,288.6	-4,859.6	1,181.2	914.5	266.63	4.430			
12,000.0	5,138.3	9,464.1	5,151.4	185.3	132.8	-89.17	3,288.8	-4,933.9	1,248.1	977.3	270.77	4.609			
12,100.0	5,138.1	9,538.4	5,150.5	187.9	134.9	-89.17	3,289.0	-5,008.2	1,315.0	1,040.1	274.92	4.783			
12,200.0	5,138.0	9,612.7	5,149.6	190.5	137.1	-89.16	3,289.2	-5,082.5	1,382.0	1,102.9	279.06	4.952			
12,277.2	5,137.8	9,670.1	5,148.9	192.6	138.8	-89.16	3,289.3	-5,139.9	1,433.7	1,151.4	282.26	5.079			

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

Cathedral Energy Services
Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well NORTH ALAMITO UNIT 307H
Project:	Sandoval County, NM	TVD Reference:	16' KB @ 6911.0ft
Reference Site:	S34-T23N-R7W	MD Reference:	16' KB @ 6911.0ft
Site Error:	0.0ft	North Reference:	True
Reference Well:	NORTH ALAMITO UNIT 307H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #2	Offset TVD Reference:	Offset Datum

Offset Design S34-T23N-R7W - NORTH ALAMITO UNIT 306H - OH - PLAN #2													Offset Site Error:	0.0 ft
Survey Program: 0-MWD+HDGM													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Total Uncertainty Axis	Separation Factor	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		+N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)				
0.0	0.0	0.0	0.0	0.0	0.0	-167.04	-29.5	-6.8	30.3					
100.0	100.0	100.0	100.0	0.2	0.2	-167.04	-29.5	-6.8	30.3	30.0	0.30	100.505		
200.0	200.0	200.0	200.0	0.5	0.5	-167.04	-29.5	-6.8	30.3	29.2	1.02	29.726		
300.0	300.0	300.0	300.0	0.9	0.9	-167.04	-29.5	-6.8	30.3	28.5	1.73	17.442		
400.0	400.0	400.0	400.0	1.2	1.2	-167.04	-29.5	-6.8	30.3	27.8	2.45	12.342		
500.0	500.0	500.0	500.0	1.6	1.6	-167.04	-29.5	-6.8	30.3	27.1	3.17	9.550 CC, ES		
600.0	600.0	598.9	598.9	1.9	1.9	-166.55	-31.1	-7.4	32.0	28.1	3.90	8.204		
700.0	700.0	697.6	697.5	2.3	2.3	71.37	-35.8	-9.4	36.5	31.9	4.64	7.867		
800.0	799.8	795.8	795.3	2.6	2.6	78.63	-43.6	-12.5	43.8	38.4	5.40	8.112		
909.8	909.2	902.9	901.5	3.0	3.0	87.50	-55.7	-17.5	55.9	49.7	6.23	8.975		
1,000.0	998.9	989.9	987.6	3.3	3.3	93.11	-68.2	-22.6	69.6	62.7	6.92	10.066		
1,100.0	1,098.3	1,085.6	1,081.5	3.7	3.7	96.45	-84.7	-29.3	88.3	80.6	7.67	11.504		
1,200.0	1,197.7	1,180.1	1,173.7	4.1	4.1	97.97	-103.9	-37.1	110.1	101.7	8.43	13.060		
1,300.0	1,297.1	1,273.3	1,264.0	4.4	4.5	98.45	-125.6	-45.9	134.9	125.7	9.18	14.693		
1,400.0	1,396.5	1,365.0	1,351.9	4.8	4.9	98.35	-149.5	-55.7	162.6	152.7	9.92	16.383		
1,500.0	1,495.9	1,459.4	1,441.9	5.2	5.4	98.03	-176.0	-66.5	192.2	181.6	10.62	18.098		
1,600.0	1,595.4	1,554.9	1,532.9	5.6	5.9	97.78	-202.9	-77.5	222.0	210.6	11.32	19.606		
1,700.0	1,694.8	1,650.4	1,623.8	6.0	6.4	97.59	-229.8	-88.4	251.7	239.6	12.03	20.919		
1,800.0	1,794.2	1,745.9	1,714.8	6.3	6.9	97.44	-256.7	-99.4	281.4	268.6	12.75	22.069		
1,900.0	1,893.6	1,841.4	1,805.7	6.7	7.4	97.32	-283.6	-110.3	311.1	297.6	13.48	23.081		
2,000.0	1,893.0	1,836.8	1,806.7	7.1	7.9	97.22	-310.5	-121.3	340.9	326.6	14.22	23.978		
2,100.0	2,092.4	2,032.3	1,987.7	7.5	8.4	97.14	-337.3	-132.2	370.6	355.6	14.96	24.776		
2,200.0	2,191.9	2,127.8	2,078.6	7.9	8.9	97.07	-364.2	-143.2	400.3	384.6	15.70	25.491		
2,300.0	2,291.3	2,223.3	2,169.6	8.3	9.4	97.01	-391.1	-154.1	430.0	413.6	16.46	26.133		
2,400.0	2,390.7	2,318.7	2,260.5	8.7	9.9	96.95	-418.0	-165.1	459.8	442.6	17.21	26.714		
2,500.0	2,490.1	2,414.2	2,351.5	9.0	10.5	96.91	-444.9	-176.1	489.5	471.5	17.97	27.240		
2,600.0	2,589.5	2,509.7	2,442.4	9.4	11.0	96.86	-471.8	-187.0	519.2	500.5	18.73	27.720		
2,700.0	2,688.9	2,605.2	2,533.4	9.8	11.5	96.83	-498.7	-198.0	549.0	529.5	19.50	28.158		
2,800.0	2,788.4	2,700.7	2,624.4	10.2	12.0	96.79	-525.5	-208.9	578.7	558.4	20.26	28.560		
2,900.0	2,887.8	2,796.1	2,715.3	10.6	12.6	96.76	-552.4	-219.9	608.4	587.4	21.03	28.929		
3,000.0	2,987.2	2,891.6	2,806.3	11.0	13.1	96.74	-579.3	-230.8	638.2	616.3	21.80	29.270		
3,100.0	3,086.6	2,987.1	2,897.2	11.4	13.6	96.71	-606.2	-241.8	667.9	645.3	22.57	29.586		
3,200.0	3,186.0	3,082.6	2,988.2	11.8	14.2	96.69	-633.1	-252.7	697.6	674.3	23.35	29.878		
3,300.0	3,285.4	3,178.0	3,079.1	12.2	14.7	96.67	-660.0	-263.7	727.3	703.2	24.12	30.150		
3,400.0	3,384.8	3,273.5	3,170.1	12.5	15.2	96.65	-686.8	-274.7	757.1	732.2	24.90	30.404		
3,500.0	3,484.3	3,369.0	3,261.1	12.9	15.8	96.63	-713.7	-285.6	786.8	761.1	25.68	30.641		
3,600.0	3,583.7	3,464.5	3,352.0	13.3	16.3	96.61	-740.6	-296.6	816.5	790.1	26.46	30.863		
3,700.0	3,683.1	3,560.0	3,443.0	13.7	16.8	96.60	-767.5	-307.5	846.3	819.0	27.24	31.071		
3,800.0	3,782.5	3,655.4	3,533.9	14.1	17.4	96.58	-794.4	-318.5	876.0	848.0	28.02	31.267		
3,900.0	3,881.9	3,750.9	3,624.9	14.5	17.9	96.57	-821.3	-329.4	905.7	876.9	28.80	31.451		
4,000.0	3,981.3	3,846.4	3,715.8	14.9	18.4	96.56	-848.1	-340.4	935.5	905.9	29.58	31.625		
4,100.0	4,080.8	3,941.9	3,806.8	15.3	19.0	96.55	-875.0	-351.3	965.2	934.8	30.36	31.789		
4,200.0	4,180.2	4,037.3	3,897.8	15.7	19.5	96.54	-901.9	-362.3	994.9	963.8	31.15	31.944		
4,300.0	4,279.6	4,132.8	3,988.7	16.1	20.0	96.53	-928.8	-373.3	1,024.7	992.7	31.93	32.091		
4,400.0	4,379.0	4,228.3	4,079.7	16.4	20.6	96.52	-955.7	-384.2	1,054.4	1,021.7	32.71	32.230		
4,466.1	4,444.7	4,291.4	4,139.8	16.7	20.9	96.51	-973.5	-391.5	1,074.0	1,040.8	33.23	32.318		
4,500.0	4,478.5	4,323.8	4,170.6	16.8	21.1	103.58	-982.6	-395.2	1,084.1	1,050.6	33.49	32.369		
4,550.0	4,528.5	4,371.3	4,215.9	17.0	21.4	-114.55	-995.9	-400.6	1,098.9	1,065.1	33.84	32.471		
4,600.0	4,578.4	4,418.3	4,260.7	17.1	21.7	-93.76	-1,009.2	-406.0	1,113.6	1,079.5	34.16	32.600		
4,650.0	4,627.8	4,464.5	4,304.7	17.3	21.9	-90.11	-1,022.2	-411.3	1,128.3	1,093.8	34.45	32.747		
4,700.0	4,676.6	4,509.7	4,347.7	17.4	22.2	-88.38	-1,034.9	-416.5	1,142.8	1,108.1	34.72	32.911		
4,750.0	4,724.4	4,554.6	4,390.5	17.5	22.4	-87.33	-1,047.3	-421.9	1,157.3	1,122.4	34.98	33.084		

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

Cathedral Energy Services

Anticollision Report

Company: EnCana Oil & Gas (USA) Inc
Project: Sandoval County, NM
Reference Site: S34-T23N-R7W
Site Error: 0.0ft
Reference Well: NORTH ALAMITO UNIT 307H
Well Error: 0.0ft
Reference Wellbore: OH
Reference Design: PLAN #2

Local Co-ordinate Reference: Well NORTH ALAMITO UNIT 307H
TVD Reference: 16' KB @ 6911.0ft
MD Reference: 16' KB @ 6911.0ft
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 S34-T23N-R7W - NORTH ALAMITO UNIT 306H - OH - PLAN #2													Offset Site Error: 0.0 ft
Survey Program: 0-MWD+HDGM													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	
4,800.0	4,770.8	4,600.9	4,434.9	17.6	22.7	-86.57	-1,058.3	-429.5	1,171.8	1,136.6	35.25	33.246	
4,850.0	4,815.7	4,648.5	4,480.5	17.8	22.9	-86.00	-1,067.6	-439.7	1,186.1	1,150.6	35.52	33.397	
4,900.0	4,858.7	4,697.6	4,527.2	17.9	23.2	-85.55	-1,074.8	-452.5	1,200.3	1,164.5	35.80	33.528	
4,950.0	4,899.6	4,748.3	4,575.2	18.0	23.4	-85.21	-1,079.8	-468.2	1,214.2	1,178.1	36.10	33.633	
5,000.0	4,938.1	4,800.9	4,624.2	18.2	23.6	-84.97	-1,082.4	-487.2	1,227.8	1,191.3	36.43	33.701	
5,050.0	4,973.9	4,855.8	4,674.3	18.3	23.8	-84.84	-1,082.1	-509.6	1,240.9	1,204.1	36.80	33.724	
5,100.0	5,007.0	4,913.1	4,725.1	18.6	24.0	-84.79	-1,078.6	-535.9	1,253.6	1,216.4	37.21	33.691	
5,150.0	5,037.0	4,973.4	4,776.5	18.8	24.2	-84.85	-1,071.5	-566.4	1,265.7	1,228.0	37.68	33.592	
5,200.0	5,063.7	5,036.8	4,828.1	19.2	24.4	-85.00	-1,060.2	-601.5	1,277.2	1,238.9	38.22	33.413	
5,250.0	5,087.1	5,103.9	4,879.4	19.5	24.5	-85.26	-1,044.2	-641.7	1,287.8	1,249.0	38.86	33.142	
5,300.0	5,106.9	5,175.0	4,929.5	20.0	24.7	-85.61	-1,022.6	-687.3	1,297.5	1,257.9	39.61	32.756	
5,350.0	5,123.0	5,250.5	4,977.4	20.5	24.9	-86.05	-995.0	-738.6	1,306.2	1,265.7	40.51	32.247	
5,400.0	5,135.4	5,330.8	5,021.8	21.1	25.0	-86.58	-960.5	-795.8	1,313.7	1,272.1	41.60	31.581	
5,450.0	5,144.0	5,415.9	5,060.8	21.7	25.2	-87.17	-918.6	-858.7	1,319.9	1,277.0	42.91	30.761	
5,500.0	5,148.7	5,505.8	5,092.6	22.4	25.5	-87.80	-869.2	-926.7	1,324.5	1,280.0	44.46	29.790	
5,535.6	5,149.6	5,572.7	5,109.6	22.9	25.8	-88.27	-829.3	-977.6	1,326.8	1,281.0	45.74	29.010	
5,600.0	5,149.5	5,699.0	5,125.7	23.9	26.8	-88.97	-748.3	-1,072.9	1,328.6	1,280.3	48.34	27.486	
5,700.0	5,149.3	5,815.9	5,126.3	25.6	28.2	-89.01	-669.4	-1,159.2	1,328.0	1,276.2	51.75	25.661	
5,800.0	5,149.1	5,915.9	5,126.1	27.5	29.7	-89.01	-601.7	-1,232.8	1,327.3	1,271.8	55.47	23.930	
5,900.0	5,149.0	6,015.9	5,125.9	29.5	31.5	-89.01	-534.1	-1,306.5	1,326.5	1,267.2	59.34	22.354	
6,000.0	5,148.8	6,115.9	5,125.7	31.5	33.3	-89.01	-466.4	-1,380.1	1,325.8	1,262.4	63.42	20.905	
6,100.0	5,148.6	6,215.9	5,125.6	33.7	35.3	-89.01	-398.7	-1,453.7	1,325.1	1,257.4	67.67	19.582	
6,200.0	5,148.4	6,315.9	5,125.4	35.9	37.4	-89.00	-331.1	-1,527.4	1,324.3	1,252.3	72.05	18.381	
6,300.0	5,148.3	6,415.9	5,125.2	38.2	39.6	-89.00	-263.4	-1,601.0	1,323.6	1,247.0	76.55	17.291	
6,400.0	5,148.1	6,515.9	5,125.0	40.5	41.8	-89.00	-195.8	-1,674.6	1,322.9	1,241.7	81.14	16.303	
6,500.0	5,147.9	6,615.9	5,124.9	42.9	44.0	-89.00	-128.1	-1,748.3	1,322.1	1,236.3	85.82	15.407	
6,600.0	5,147.7	6,715.9	5,124.7	45.3	46.3	-89.00	-60.4	-1,821.9	1,321.4	1,230.8	90.56	14.592	
6,700.0	5,147.6	6,815.9	5,124.5	47.7	48.6	-89.00	7.2	-1,895.5	1,320.7	1,225.3	95.36	13.850	
6,800.0	5,147.4	6,915.9	5,124.3	50.1	51.0	-89.00	74.9	-1,969.2	1,319.9	1,219.7	100.21	13.172	
6,900.0	5,147.2	7,015.9	5,124.2	52.6	53.4	-89.00	142.5	-2,042.8	1,319.2	1,214.1	105.10	12.552	
7,000.0	5,147.0	7,115.9	5,124.0	55.1	55.8	-89.00	210.2	-2,116.4	1,318.5	1,208.4	110.03	11.983	
7,100.0	5,146.9	7,215.9	5,123.8	57.6	58.2	-89.00	277.8	-2,190.1	1,317.7	1,202.7	114.99	11.460	
7,200.0	5,146.7	7,315.9	5,123.6	60.1	60.7	-89.00	345.5	-2,263.7	1,317.0	1,197.0	119.98	10.977	
7,300.0	5,146.5	7,415.9	5,123.5	62.6	63.2	-89.00	413.2	-2,337.3	1,316.3	1,191.3	124.99	10.531	
7,400.0	5,146.3	7,515.9	5,123.3	65.1	65.6	-89.00	480.8	-2,411.0	1,315.5	1,185.5	130.03	10.117	
7,500.0	5,146.2	7,615.9	5,123.1	67.7	68.1	-89.00	548.5	-2,484.6	1,314.8	1,179.7	135.08	9.733	
7,600.0	5,146.0	7,715.9	5,122.9	70.2	70.6	-89.00	616.1	-2,558.2	1,314.1	1,173.9	140.16	9.376	
7,700.0	5,145.8	7,815.9	5,122.8	72.8	73.1	-89.00	683.8	-2,631.9	1,313.3	1,168.1	145.25	9.042	
7,800.0	5,145.6	7,915.9	5,122.6	75.3	75.7	-89.00	751.4	-2,705.5	1,312.6	1,162.3	150.35	8.730	
7,900.0	5,145.5	8,015.9	5,122.4	77.9	78.2	-89.00	819.1	-2,779.1	1,311.9	1,156.4	155.46	8.438	
8,000.0	5,145.3	8,115.9	5,122.3	80.5	80.7	-88.99	886.8	-2,852.8	1,311.1	1,150.5	160.59	8.164	
8,100.0	5,145.1	8,215.9	5,122.1	83.1	83.3	-88.99	954.4	-2,926.4	1,310.4	1,144.7	165.73	7.907	
8,200.0	5,144.9	8,315.9	5,121.9	85.7	85.8	-88.99	1,022.1	-3,000.0	1,309.7	1,138.8	170.87	7.665	
8,300.0	5,144.8	8,415.8	5,121.7	88.2	88.4	-88.99	1,089.7	-3,073.7	1,308.9	1,132.9	176.03	7.436	
8,400.0	5,144.6	8,515.8	5,121.6	90.8	90.9	-88.99	1,157.4	-3,147.3	1,308.2	1,127.0	181.19	7.220	
8,500.0	5,144.4	8,615.8	5,121.4	93.4	93.5	-88.99	1,225.1	-3,220.9	1,307.5	1,121.1	186.36	7.016	
8,600.0	5,144.2	8,715.8	5,121.2	96.0	96.0	-88.99	1,292.7	-3,294.6	1,306.7	1,115.2	191.54	6.822	
8,700.0	5,144.1	8,815.8	5,121.0	98.6	98.6	-88.99	1,360.4	-3,368.2	1,306.0	1,109.3	196.72	6.639	
8,800.0	5,143.9	8,915.8	5,120.9	101.2	101.2	-88.99	1,428.0	-3,441.8	1,305.3	1,103.4	201.91	6.465	
8,900.0	5,143.7	9,015.8	5,120.7	103.8	103.8	-88.99	1,495.7	-3,515.5	1,304.5	1,097.4	207.11	6.299	
9,000.0	5,143.5	9,115.8	5,120.5	106.4	106.3	-88.99	1,563.3	-3,589.1	1,303.8	1,091.5	212.30	6.141	
9,100.0	5,143.4	9,215.8	5,120.3	109.1	108.9	-88.99	1,631.0	-3,662.7	1,303.1	1,085.6	217.51	5.991	

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

Cathedral Energy Services

Anticollision Report

Company: EnCana Oil & Gas (USA) Inc
Project: Sandoval County, NM
Reference Site: S34-T23N-R7W
Site Error: 0.0ft
Reference Well: NORTH ALAMITO UNIT 307H
Well Error: 0.0ft
Reference Wellbore: OH
Reference Design: PLAN #2

Local Co-ordinate Reference: Well NORTH ALAMITO UNIT 307H
TVD Reference: 16' KB @ 6911.0ft
MD Reference: 16' KB @ 6911.0ft
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 S34-T23N-R7W - NORTH ALAMITO UNIT 306H - OH - PLAN #2													Offset Site Error: 0.0 ft
Survey Program: 0-MWD+HDGM													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	
9,200.0	5,143.2	9,315.8	5,120.2	111.7	111.5	-88.99	1,698.7	-3,736.4	1,302.4	1,079.6	222.71	5.848	
9,300.0	5,143.0	9,415.8	5,120.0	114.3	114.1	-88.99	1,766.3	-3,810.0	1,301.6	1,073.7	227.93	5.711	
9,400.0	5,142.8	9,515.8	5,119.8	116.9	116.7	-88.99	1,834.0	-3,883.6	1,300.9	1,067.7	233.14	5.580	
9,500.0	5,142.7	9,615.8	5,119.6	119.5	119.3	-88.99	1,901.6	-3,957.3	1,300.2	1,061.8	238.36	5.455	
9,600.0	5,142.5	9,715.8	5,119.5	122.1	121.9	-88.99	1,969.3	-4,030.9	1,299.4	1,055.8	243.58	5.335	
9,700.0	5,142.3	9,815.8	5,119.3	124.8	124.5	-88.98	2,037.0	-4,104.5	1,298.7	1,049.9	248.80	5.220	
9,800.0	5,142.2	9,915.8	5,119.1	127.4	127.1	-88.98	2,104.6	-4,178.2	1,298.0	1,043.9	254.03	5.109	
9,900.0	5,142.0	10,015.8	5,118.9	130.0	129.7	-88.98	2,172.3	-4,251.8	1,297.2	1,038.0	259.26	5.004	
10,000.0	5,141.8	10,115.8	5,118.8	132.6	132.3	-88.98	2,239.9	-4,325.4	1,296.5	1,032.0	264.49	4.902	
10,100.0	5,141.6	10,215.8	5,118.6	135.2	134.9	-88.98	2,307.6	-4,399.1	1,295.8	1,026.0	269.73	4.804	
10,200.0	5,141.5	10,315.8	5,118.4	137.9	137.5	-88.98	2,375.2	-4,472.7	1,295.0	1,020.1	274.96	4.710	
10,300.0	5,141.3	10,415.8	5,118.2	140.5	140.1	-88.98	2,442.9	-4,546.3	1,294.3	1,014.1	280.20	4.619	
10,400.0	5,141.1	10,515.8	5,118.1	143.1	142.7	-88.98	2,510.6	-4,620.0	1,293.6	1,008.1	285.44	4.532	
10,500.0	5,140.9	10,615.8	5,117.9	145.8	145.3	-88.98	2,578.2	-4,693.6	1,292.8	1,002.1	290.69	4.448	
10,600.0	5,140.8	10,715.8	5,117.7	148.4	147.9	-88.98	2,645.9	-4,767.2	1,292.1	996.2	295.93	4.366	
10,700.0	5,140.6	10,815.8	5,117.5	151.0	150.5	-88.98	2,713.5	-4,840.8	1,291.4	990.2	301.18	4.288	
10,800.0	5,140.4	10,915.8	5,117.4	153.6	153.1	-88.98	2,781.2	-4,914.5	1,290.6	984.2	306.42	4.212	
10,900.0	5,140.2	11,015.8	5,117.2	156.3	155.7	-88.98	2,848.9	-4,988.1	1,289.9	978.2	311.67	4.139	
11,000.0	5,140.1	11,115.8	5,117.0	158.9	158.4	-88.98	2,916.5	-5,061.7	1,289.2	972.2	316.92	4.068	
11,100.0	5,139.9	11,215.8	5,116.8	161.5	161.0	-88.98	2,984.2	-5,135.4	1,288.4	966.3	322.17	3.999	
11,200.0	5,139.7	11,315.8	5,116.7	164.2	163.6	-88.98	3,051.8	-5,209.0	1,287.7	960.3	327.43	3.933	
11,300.0	5,139.5	11,415.8	5,116.5	166.8	166.2	-88.98	3,119.5	-5,282.6	1,287.0	954.3	332.68	3.868	
11,400.0	5,139.4	11,515.8	5,116.3	169.4	168.8	-88.97	3,187.1	-5,356.3	1,286.2	948.3	337.94	3.806	
11,460.7	5,139.3	11,567.1	5,116.2	171.0	170.2	-88.97	3,221.9	-5,394.1	1,285.8	944.9	340.96	3.771	
11,500.0	5,139.2	11,567.1	5,116.2	172.1	170.2	-88.97	3,221.9	-5,394.1	1,286.4	944.3	342.11	3.760 SF	
11,600.0	5,139.0	11,567.1	5,116.2	174.7	170.2	-88.97	3,221.9	-5,394.1	1,293.3	949.7	343.62	3.764	
11,700.0	5,138.8	11,567.1	5,116.2	177.4	170.2	-88.97	3,221.9	-5,394.1	1,307.9	964.8	343.13	3.812	
11,800.0	5,138.7	11,567.1	5,116.2	180.0	170.2	-88.97	3,221.9	-5,394.1	1,329.8	989.0	340.79	3.902	
11,900.0	5,138.5	11,567.1	5,116.2	182.6	170.2	-88.97	3,221.9	-5,394.1	1,358.8	1,022.0	336.81	4.034	
12,000.0	5,138.3	11,567.1	5,116.2	185.3	170.2	-88.97	3,221.9	-5,394.1	1,394.3	1,062.9	331.44	4.207	
12,100.0	5,138.1	11,567.1	5,116.2	187.9	170.2	-88.97	3,221.9	-5,394.1	1,436.0	1,111.0	324.99	4.418	
12,200.0	5,138.0	11,567.1	5,116.2	190.5	170.2	-88.97	3,221.9	-5,394.1	1,483.2	1,165.5	317.73	4.668	

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

Cathedral Energy Services
Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well NORTH ALAMITO UNIT 307H
Project:	Sandoval County, NM	TVD Reference:	16' KB @ 6911.0ft
Reference Site:	S34-T23N-R7W	MD Reference:	16' KB @ 6911.0ft
Site Error:	0.0ft	North Reference:	True
Reference Well:	NORTH ALAMITO UNIT 307H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #2	Offset TVD Reference:	Offset Datum

Offset Design S34-T23N-R7W - NORTH ALAMITO UNIT 308H - OH - PLAN #1														Offset Site Error:	0.0 ft
Survey Program: 0-MWD+HDGM														Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Total Uncertainty Axis	Separation Factor	Warning		
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		+N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)					
0.0	0.0	0.0	0.0	0.0	0.0	14.39	28.8	7.4	29.7						
100.0	100.0	100.0	100.0	0.2	0.2	14.39	28.8	7.4	29.7	29.4	0.30	98.611			
200.0	200.0	200.0	200.0	0.5	0.5	14.39	28.8	7.4	29.7	28.7	1.02	29.167			
300.0	300.0	300.0	300.0	0.9	0.9	14.39	28.8	7.4	29.7	28.0	1.74	17.114			
400.0	400.0	400.0	400.0	1.2	1.2	14.39	28.8	7.4	29.7	27.2	2.45	12.110			
500.0	500.0	500.0	500.0	1.6	1.6	14.39	28.8	7.4	29.7	26.5	3.17	9.370			
600.0	600.0	600.0	600.0	1.9	1.9	14.39	28.8	7.4	29.7	25.8	3.89	7.641 CC, ES			
700.0	700.0	699.3	699.3	2.3	2.3	-111.90	29.5	8.9	31.5	26.9	4.59	6.852			
800.0	799.8	798.4	798.2	2.6	2.6	-113.25	31.9	13.5	36.9	31.5	5.31	6.945			
909.8	909.2	906.7	906.2	3.0	3.0	-114.90	36.3	22.0	46.9	40.8	6.10	7.682			
1,000.0	998.9	995.3	994.0	3.3	3.4	-115.01	41.2	31.6	57.8	51.0	6.77	8.529			
1,100.0	1,098.3	1,092.9	1,090.5	3.7	3.7	-113.06	48.1	45.0	71.8	64.3	7.53	9.539			
1,200.0	1,197.7	1,189.7	1,185.5	4.1	4.1	-110.11	56.4	61.2	88.2	79.9	8.30	10.619			
1,300.0	1,297.1	1,285.5	1,278.9	4.4	4.5	-106.83	66.1	80.0	107.0	97.9	9.09	11.779			
1,400.0	1,396.5	1,380.0	1,370.4	4.8	4.9	-103.59	77.0	101.2	128.6	118.7	9.87	13.024			
1,500.0	1,495.9	1,473.2	1,459.7	5.2	5.4	-100.55	89.1	124.8	152.9	142.2	10.65	14.357			
1,600.0	1,595.4	1,566.1	1,547.9	5.6	5.8	-97.77	102.5	150.8	180.0	168.6	11.41	15.775			
1,700.0	1,694.8	1,661.8	1,638.5	6.0	6.3	-95.51	116.6	178.2	208.1	195.9	12.15	17.118			
1,800.0	1,794.2	1,757.5	1,729.1	6.3	6.9	-93.80	130.7	205.6	236.4	223.5	12.90	18.321			
1,900.0	1,893.6	1,853.2	1,819.7	6.7	7.4	-92.45	144.8	233.1	264.8	251.2	13.65	19.398			
2,000.0	1,993.0	1,948.9	1,910.3	7.1	7.9	-91.36	158.8	260.5	293.4	279.0	14.41	20.365			
2,100.0	2,092.4	2,044.6	2,000.9	7.5	8.5	-90.46	172.9	287.9	322.0	306.9	15.17	21.235			
2,200.0	2,191.9	2,140.3	2,091.5	7.9	9.0	-89.71	187.0	315.3	350.7	334.8	15.93	22.021			
2,300.0	2,291.3	2,236.0	2,182.1	8.3	9.6	-89.08	201.1	342.7	379.5	362.8	16.69	22.733			
2,400.0	2,390.7	2,331.7	2,272.7	8.7	10.1	-88.53	215.2	370.2	408.3	390.8	17.46	23.380			
2,500.0	2,490.1	2,427.4	2,363.3	9.0	10.7	-88.05	229.3	397.6	437.1	418.9	18.24	23.971			
2,600.0	2,589.5	2,523.1	2,453.9	9.4	11.2	-87.64	243.4	425.0	466.0	447.0	19.01	24.511			
2,700.0	2,688.9	2,618.8	2,544.5	9.8	11.8	-87.27	257.5	452.4	494.8	475.0	19.79	25.006			
2,800.0	2,788.4	2,714.4	2,635.0	10.2	12.4	-86.94	271.6	479.9	523.7	503.1	20.57	25.463			
2,900.0	2,887.8	2,810.1	2,725.6	10.6	12.9	-86.65	285.7	507.3	552.6	531.3	21.35	25.884			
3,000.0	2,987.2	2,905.8	2,816.2	11.0	13.5	-86.39	299.8	534.7	581.5	559.4	22.13	26.274			
3,100.0	3,086.6	3,001.5	2,906.8	11.4	14.1	-86.15	313.9	562.1	610.4	587.5	22.92	26.636			
3,200.0	3,186.0	3,097.2	2,997.4	11.8	14.7	-85.93	328.0	589.5	639.4	615.7	23.70	26.972			
3,300.0	3,285.4	3,192.9	3,088.0	12.2	15.2	-85.73	342.1	617.0	668.3	643.8	24.49	27.286			
3,400.0	3,384.8	3,288.6	3,178.6	12.5	15.8	-85.55	356.2	644.4	697.3	672.0	25.28	27.579			
3,500.0	3,484.3	3,384.3	3,269.2	12.9	16.4	-85.38	370.3	671.8	726.2	700.1	26.07	27.853			
3,600.0	3,583.7	3,480.0	3,359.8	13.3	17.0	-85.23	384.4	699.2	755.2	728.3	26.86	28.111			
3,700.0	3,683.1	3,575.7	3,450.4	13.7	17.5	-85.09	398.5	726.7	784.1	756.5	27.66	28.353			
3,800.0	3,782.5	3,671.4	3,541.0	14.1	18.1	-84.95	412.6	754.1	813.1	784.6	28.45	28.580			
3,900.0	3,881.9	3,767.1	3,631.6	14.5	18.7	-84.83	426.6	781.5	842.0	812.8	29.24	28.795			
4,000.0	3,981.3	3,862.8	3,722.2	14.9	19.3	-84.71	440.7	808.9	871.0	841.0	30.04	28.997			
4,100.0	4,080.8	3,958.5	3,812.8	15.3	19.9	-84.61	454.8	836.3	900.0	869.2	30.83	29.189			
4,200.0	4,180.2	4,054.2	3,903.4	15.7	20.4	-84.50	468.9	863.8	929.0	897.3	31.63	29.371			
4,300.0	4,279.6	4,149.9	3,994.0	16.1	21.0	-84.41	483.0	891.2	957.9	925.5	32.43	29.543			
4,400.0	4,379.0	4,245.6	4,084.6	16.4	21.6	-84.32	497.1	918.6	986.9	953.7	33.22	29.706			
4,466.1	4,444.7	4,308.9	4,144.5	16.7	22.0	-84.26	506.4	936.7	1,006.1	972.3	33.75	29.810			
4,500.0	4,478.5	4,341.3	4,175.1	16.8	22.2	-78.92	511.2	946.0	1,015.9	981.9	34.01	29.868			
4,550.0	4,528.5	4,388.9	4,220.2	17.0	22.5	60.75	518.2	959.7	1,030.3	995.9	34.36	29.982			
4,600.0	4,578.4	4,435.9	4,264.7	17.1	22.8	79.78	525.2	973.1	1,044.6	1,009.9	34.68	30.124			
4,650.0	4,627.8	4,482.1	4,308.5	17.3	23.0	82.06	532.0	986.4	1,058.7	1,023.8	34.96	30.286			
4,700.0	4,676.6	4,527.2	4,351.2	17.4	23.3	82.75	538.6	999.3	1,072.8	1,037.6	35.21	30.466			
4,750.0	4,724.4	4,571.0	4,392.5	17.5	23.6	83.03	545.0	1,011.8	1,086.9	1,051.5	35.44	30.667			

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

Cathedral Energy Services

Anticollision Report

Company: EnCana Oil & Gas (USA) Inc
 Project: Sandoval County, NM
 Reference Site: S34-T23N-R7W
 Site Error: 0.0ft
 Reference Well: NORTH ALAMITO UNIT 307H
 Well Error: 0.0ft
 Reference Wellbore: OH
 Reference Design: PLAN #2

Local Co-ordinate Reference: Well NORTH ALAMITO UNIT 307H
 TVD Reference: 16' KB @ 6911.0ft
 MD Reference: 16' KB @ 6911.0ft
 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

S34-T23N-R7W - NORTH ALAMITO UNIT 308H - OH - PLAN #1														Offset Site Error:	0.0 ft
Survey Program: 0-MWD+HDGM														Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Total Uncertainty Axis	Separation Factor	Warning		
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		+N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)					
4,800.0	4,770.8	4,614.1	4,433.4	17.6	23.8	83.20	551.6	1,024.0	1,101.1	1,065.4	35.66	30.879			
4,850.0	4,815.7	4,658.9	4,476.0	17.8	24.1	83.32	560.0	1,034.9	1,115.4	1,079.5	35.89	31.075			
4,900.0	4,858.7	4,705.1	4,520.1	17.9	24.3	83.40	570.7	1,044.0	1,129.7	1,093.5	36.14	31.255			
4,950.0	4,899.6	4,753.0	4,565.5	18.0	24.6	83.50	583.9	1,051.1	1,143.9	1,107.5	36.42	31.407			
5,000.0	4,938.1	4,802.8	4,612.4	18.2	24.8	83.62	599.7	1,055.9	1,158.1	1,121.4	36.74	31.522			
5,050.0	4,973.9	4,854.8	4,660.9	18.3	25.0	83.78	618.6	1,058.1	1,172.1	1,135.0	37.10	31.593			
5,100.0	5,007.0	4,909.5	4,710.8	18.6	25.2	84.01	640.9	1,057.3	1,185.9	1,148.4	37.52	31.610			
5,150.0	5,037.0	4,967.3	4,762.2	18.8	25.4	84.31	667.1	1,053.0	1,199.3	1,161.3	37.99	31.568			
5,200.0	5,063.7	5,028.8	4,814.9	19.2	25.5	84.70	697.5	1,044.5	1,212.3	1,173.8	38.53	31.461			
5,250.0	5,087.1	5,094.6	4,868.6	19.5	25.7	85.19	733.0	1,031.0	1,224.8	1,185.7	39.15	31.285			
5,300.0	5,106.9	5,165.4	4,922.9	20.0	25.8	85.77	774.1	1,011.6	1,236.6	1,196.7	39.85	31.029			
5,350.0	5,123.0	5,242.0	4,976.8	20.5	25.9	86.47	821.6	985.1	1,247.5	1,206.8	40.65	30.684			
5,400.0	5,135.4	5,325.2	5,029.1	21.1	26.0	87.26	876.0	950.2	1,257.3	1,215.7	41.60	30.223			
5,450.0	5,144.0	5,415.7	5,077.7	21.7	26.1	88.14	937.7	905.4	1,265.8	1,223.1	42.74	29.617			
5,500.0	5,148.7	5,514.0	5,119.9	22.4	26.2	89.07	1,006.7	849.7	1,272.8	1,228.7	44.16	28.824			
5,535.6	5,149.6	5,588.8	5,144.1	22.9	26.2	89.74	1,059.8	802.9	1,276.7	1,231.3	45.39	28.129			
5,600.0	5,149.5	5,734.0	5,170.6	23.9	26.2	90.94	1,161.9	703.5	1,280.8	1,232.6	48.19	26.578			
5,700.0	5,149.3	5,872.5	5,173.3	25.6	26.7	91.07	1,255.8	601.8	1,281.5	1,229.6	51.90	24.691			
5,800.0	5,149.1	5,972.5	5,173.2	27.5	28.2	91.07	1,323.1	527.9	1,281.8	1,226.3	55.55	23.074			
5,900.0	5,149.0	6,072.5	5,173.0	29.5	30.1	91.07	1,390.4	453.9	1,282.1	1,222.7	59.40	21.585			
6,000.0	5,148.8	6,172.5	5,172.8	31.5	32.0	91.07	1,457.8	380.0	1,282.4	1,218.9	63.44	20.213			
6,100.0	5,148.6	6,272.5	5,172.6	33.7	34.1	91.07	1,525.1	306.0	1,282.7	1,215.0	67.66	18.958			
6,200.0	5,148.4	6,372.5	5,172.5	35.9	36.2	91.07	1,592.4	232.1	1,282.9	1,210.9	72.01	17.815			
6,300.0	5,148.3	6,472.5	5,172.3	38.2	38.4	91.07	1,659.7	158.2	1,283.2	1,206.7	76.49	16.776			
6,400.0	5,148.1	6,572.5	5,172.1	40.5	40.7	91.07	1,727.1	84.2	1,283.5	1,202.4	81.06	15.833			
6,500.0	5,147.9	6,672.5	5,171.9	42.9	43.0	91.07	1,794.4	10.3	1,283.8	1,198.1	85.72	14.976			
6,600.0	5,147.7	6,772.5	5,171.8	45.3	45.3	91.07	1,861.7	-63.7	1,284.1	1,193.6	90.45	14.196			
6,700.0	5,147.6	6,872.5	5,171.6	47.7	47.7	91.07	1,929.1	-137.6	1,284.4	1,189.1	95.24	13.486			
6,800.0	5,147.4	6,972.5	5,171.4	50.1	50.1	91.07	1,996.4	-211.5	1,284.6	1,184.6	100.08	12.836			
6,900.0	5,147.2	7,072.5	5,171.2	52.6	52.5	91.07	2,063.7	-285.5	1,284.9	1,180.0	104.96	12.242			
7,000.0	5,147.0	7,172.5	5,171.1	55.1	55.0	91.07	2,131.0	-359.4	1,285.2	1,175.3	109.89	11.696			
7,100.0	5,146.9	7,272.5	5,170.9	57.6	57.4	91.07	2,198.4	-433.3	1,285.5	1,170.6	114.84	11.194			
7,200.0	5,146.7	7,372.5	5,170.7	60.1	59.9	91.07	2,265.7	-507.3	1,285.8	1,165.9	119.83	10.730			
7,300.0	5,146.5	7,472.5	5,170.5	62.6	62.4	91.07	2,333.0	-581.2	1,286.0	1,161.2	124.84	10.302			
7,400.0	5,146.3	7,572.5	5,170.4	65.1	64.9	91.07	2,400.3	-655.2	1,286.3	1,156.5	129.87	9.905			
7,500.0	5,146.2	7,672.5	5,170.2	67.7	67.4	91.07	2,467.7	-729.1	1,286.6	1,151.7	134.93	9.536			
7,600.0	5,146.0	7,772.5	5,170.0	70.2	69.9	91.07	2,535.0	-803.0	1,286.9	1,146.9	140.00	9.192			
7,700.0	5,145.8	7,872.5	5,169.8	72.8	72.5	91.07	2,602.3	-877.0	1,287.2	1,142.1	145.09	8.872			
7,800.0	5,145.6	7,972.5	5,169.7	75.3	75.0	91.07	2,669.7	-950.9	1,287.5	1,137.3	150.19	8.572			
7,900.0	5,145.5	8,072.5	5,169.5	77.9	77.5	91.07	2,737.0	-1,024.8	1,287.7	1,132.4	155.31	8.292			
8,000.0	5,145.3	8,172.5	5,169.3	80.5	80.1	91.07	2,804.3	-1,098.8	1,288.0	1,127.6	160.44	8.028			
8,100.0	5,145.1	8,272.5	5,169.1	83.1	82.7	91.07	2,871.6	-1,172.7	1,288.3	1,122.7	165.57	7.781			
8,200.0	5,144.9	8,372.5	5,169.0	85.7	85.2	91.07	2,939.0	-1,246.7	1,288.6	1,117.9	170.72	7.548			
8,300.0	5,144.8	8,472.5	5,168.8	88.2	87.8	91.07	3,006.3	-1,320.6	1,288.9	1,113.0	175.88	7.328			
8,400.0	5,144.6	8,572.5	5,168.6	90.8	90.4	91.07	3,073.6	-1,394.5	1,289.2	1,108.1	181.05	7.121			
8,500.0	5,144.4	8,672.5	5,168.4	93.4	92.9	91.07	3,141.0	-1,468.5	1,289.4	1,103.2	186.22	6.924			
8,600.0	5,144.2	8,772.5	5,168.3	96.0	95.5	91.07	3,208.3	-1,542.4	1,289.7	1,098.3	191.40	6.738			
8,700.0	5,144.1	8,872.5	5,168.1	98.6	98.1	91.07	3,275.6	-1,616.4	1,290.0	1,093.4	196.59	6.562			
8,800.0	5,143.9	8,972.5	5,167.9	101.2	100.7	91.07	3,342.9	-1,690.3	1,290.3	1,088.5	201.78	6.395			
8,900.0	5,143.7	9,072.5	5,167.7	103.8	103.3	91.07	3,410.3	-1,764.2	1,290.6	1,083.6	206.98	6.235			
9,000.0	5,143.5	9,172.5	5,167.6	106.4	105.9	91.07	3,477.6	-1,838.2	1,290.9	1,078.7	212.18	6.084			
9,100.0	5,143.4	9,272.5	5,167.4	109.1	108.5	91.07	3,544.9	-1,912.1	1,291.1	1,073.8	217.39	5.939			

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

Cathedral Energy Services

Anticollision Report

Company: EnCana Oil & Gas (USA) Inc
 Project: Sandoval County, NM
 Reference Site: S34-T23N-R7W
 Site Error: 0.0ft
 Reference Well: NORTH ALAMITO UNIT 307H
 Well Error: 0.0ft
 Reference Wellbore: OH
 Reference Design: PLAN #2

Local Co-ordinate Reference: Well NORTH ALAMITO UNIT 307H
 TVD Reference: 16' KB @ 6911.0ft
 MD Reference: 16' KB @ 6911.0ft
 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 S34-T23N-R7W - NORTH ALAMITO UNIT 308H - OH - PLAN #1													Offset Site Error: 0.0 R
Survey Program: 0-MWD+HDGM													Offset Well Error: 0.0 R
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)					
9,200.0	5,143.2	9,372.5	5,167.2	111.7	111.1	91.07	3,612.2	-1,986.0	1,291.4	1,068.8	222.60	5.802	
9,300.0	5,143.0	9,472.5	5,167.0	114.3	113.7	91.07	3,679.6	-2,060.0	1,291.7	1,063.9	227.81	5.670	
9,400.0	5,142.8	9,572.5	5,166.9	116.9	116.3	91.07	3,746.9	-2,133.9	1,292.0	1,059.0	233.03	5.544	
9,500.0	5,142.7	9,672.5	5,166.7	119.5	118.9	91.06	3,814.2	-2,207.9	1,292.3	1,054.0	238.26	5.424	
9,600.0	5,142.5	9,772.5	5,166.5	122.1	121.5	91.06	3,881.6	-2,281.8	1,292.6	1,049.1	243.48	5.309	
9,700.0	5,142.3	9,872.5	5,166.4	124.8	124.1	91.06	3,948.9	-2,355.7	1,292.8	1,044.1	248.71	5.198	
9,800.0	5,142.2	9,972.5	5,166.2	127.4	126.7	91.06	4,016.2	-2,429.7	1,293.1	1,039.2	253.95	5.092	
9,900.0	5,142.0	10,072.5	5,166.0	130.0	129.3	91.06	4,083.5	-2,503.6	1,293.4	1,034.2	259.18	4.990	
10,000.0	5,141.8	10,172.5	5,165.8	132.6	132.0	91.06	4,150.9	-2,577.5	1,293.7	1,029.3	264.42	4.893	
10,100.0	5,141.6	10,272.5	5,165.7	135.2	134.6	91.06	4,218.2	-2,651.5	1,294.0	1,024.3	269.66	4.799	
10,200.0	5,141.5	10,372.5	5,165.5	137.9	137.2	91.06	4,285.5	-2,725.4	1,294.2	1,019.3	274.90	4.708	
10,300.0	5,141.3	10,472.5	5,165.3	140.5	139.8	91.06	4,352.9	-2,799.4	1,294.5	1,014.4	280.14	4.621	
10,400.0	5,141.1	10,572.5	5,165.1	143.1	142.4	91.06	4,420.2	-2,873.3	1,294.8	1,009.4	285.39	4.537	
10,500.0	5,140.9	10,672.5	5,165.0	145.8	145.0	91.06	4,487.5	-2,947.2	1,295.1	1,004.5	290.64	4.456	
10,600.0	5,140.8	10,772.5	5,164.8	148.4	147.7	91.06	4,554.8	-3,021.2	1,295.4	999.5	295.89	4.378	
10,700.0	5,140.6	10,872.5	5,164.6	151.0	150.3	91.06	4,622.2	-3,095.1	1,295.7	994.5	301.14	4.303	
10,800.0	5,140.4	10,972.5	5,164.4	153.6	152.9	91.06	4,689.5	-3,169.1	1,295.9	989.6	306.39	4.230	
10,900.0	5,140.2	11,072.5	5,164.3	156.3	155.5	91.06	4,756.8	-3,243.0	1,296.2	984.6	311.65	4.159	
11,000.0	5,140.1	11,172.5	5,164.1	158.9	158.2	91.06	4,824.2	-3,316.9	1,296.5	979.6	316.91	4.091	
11,100.0	5,139.9	11,272.5	5,163.9	161.5	160.8	91.06	4,891.5	-3,390.9	1,296.8	974.6	322.16	4.025	
11,200.0	5,139.7	11,372.5	5,163.7	164.2	163.4	91.06	4,958.8	-3,464.8	1,297.1	969.7	327.42	3.961	
11,300.0	5,139.5	11,472.5	5,163.6	166.8	166.0	91.06	5,026.1	-3,538.7	1,297.4	964.7	332.68	3.900	
11,400.0	5,139.4	11,572.5	5,163.4	169.4	168.7	91.06	5,093.5	-3,612.7	1,297.6	959.7	337.94	3.840	
11,500.0	5,139.2	11,672.5	5,163.2	172.1	171.3	91.06	5,160.8	-3,686.6	1,297.9	954.7	343.21	3.782	
11,600.0	5,139.0	11,772.5	5,163.0	174.7	173.9	91.06	5,228.1	-3,760.6	1,298.2	949.7	348.47	3.725	
11,700.0	5,138.8	11,872.5	5,162.9	177.4	176.5	91.06	5,295.4	-3,834.5	1,298.5	944.8	353.74	3.671	
11,800.0	5,138.7	11,972.5	5,162.7	180.0	179.2	91.06	5,362.8	-3,908.4	1,298.8	939.8	359.00	3.618	
11,900.0	5,138.5	12,072.5	5,162.5	182.6	181.8	91.06	5,430.1	-3,982.4	1,299.1	934.8	364.27	3.566	
12,000.0	5,138.3	12,172.5	5,162.3	185.3	184.4	91.06	5,497.4	-4,056.3	1,299.3	929.8	369.54	3.516	
12,100.0	5,138.1	12,272.5	5,162.2	187.9	187.1	91.06	5,564.8	-4,130.2	1,299.6	924.8	374.80	3.467	
12,200.0	5,138.0	12,372.5	5,162.0	190.5	189.7	91.06	5,632.1	-4,204.2	1,299.9	919.8	380.07	3.420	
12,277.2	5,137.8	12,449.7	5,161.9	192.6	191.7	91.06	5,684.1	-4,261.3	1,300.1	916.0	384.14	3.384 SF	

Cathedral Energy Services

Anticollision Report

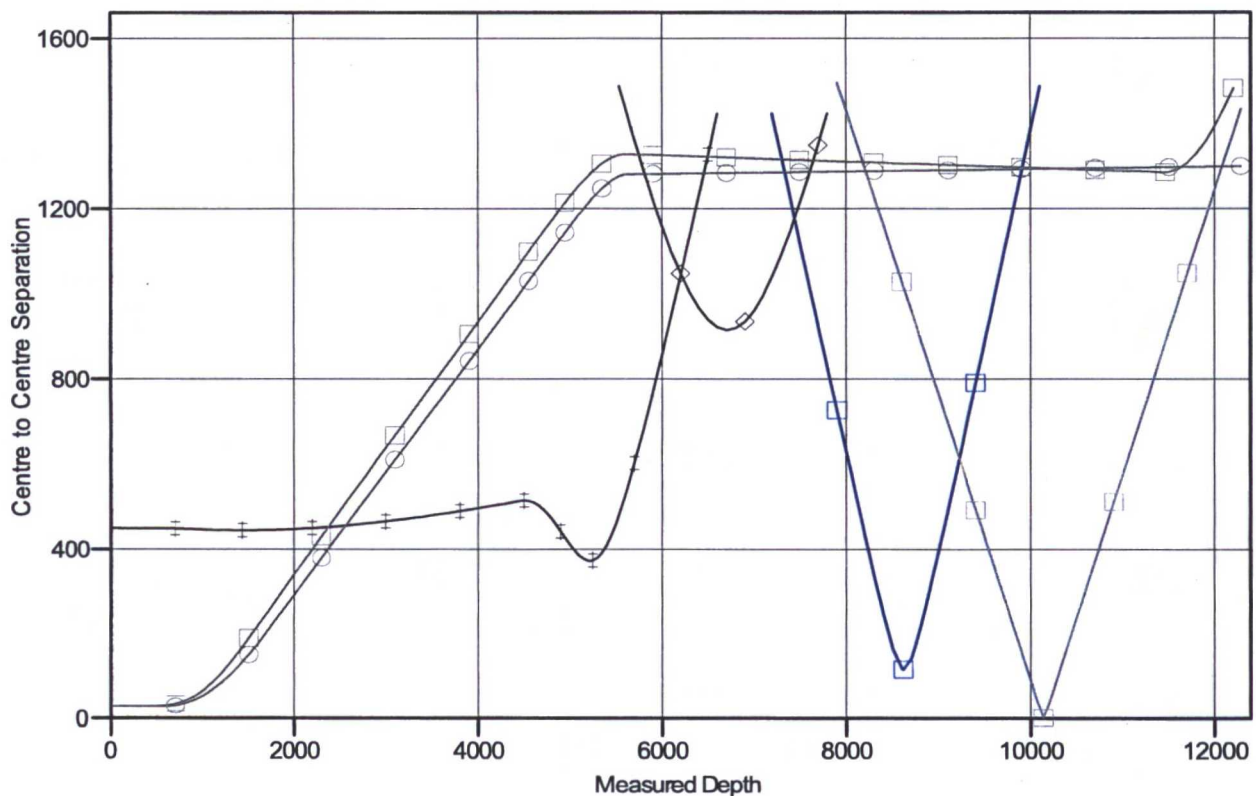
Company: EnCana Oil & Gas (USA) Inc
 Project: Sandoval County, NM
 Reference Site: S34-T23N-R7W
 Site Error: 0.0ft
 Reference Well: NORTH ALAMITO UNIT 307H
 Well Error: 0.0ft
 Reference Wellbore: OH
 Reference Design: PLAN #2

Local Co-ordinate Reference: Well NORTH ALAMITO UNIT 307H
 TVD Reference: 16' KB @ 6911.0ft
 MD Reference: 16' KB @ 6911.0ft
 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 @ 6911.0ft
 Offset Depths are relative to Offset Datum
 Central Meridian is -106.250000 °

Coordinates are relative to: NORTH ALAMITO UNIT 307H
 Coordinate System is US State Plane 1983, New Mexico Central Zone
 Grid Convergence at Surface is: -0.78°

Ladder Plot



LEGEND

■ Federal B-4 (Existing), IN ONLY, IN ONLY V0 ◆ Federal I-2 (Existing), IN ONLY, SURVEYS V0 ▣ NORTH ALAMITO UNIT 306H, OH, PLAN#2 V
 ■ Federal I-1 (Existing), IN ONLY, SURVEYS V0 ▣ LYBROOK D34-2307 01H, OH, PLAN#1 V0 ● NORTH ALAMITO UNIT 308H, OH, PLAN#1 V

Cathedral Energy Services

Planning Report

Database: USA EDM 5000 Multi Users DB
Company: EnCana Oil & Gas (USA) Inc
Project: Sandoval County, NM
Site: S34-T23N-R7W
Well: NORTH ALAMITO UNIT 307H
Wellbore: OH
Design: PLAN #2

Local Co-ordinate Reference: Well NORTH ALAMITO UNIT 307H
TVD Reference: 16' KB @ 6911.0ft
MD Reference: 16' KB @ 6911.0ft
North Reference: True
Survey Calculation Method: Minimum Curvature

Project	Sandoval County, NM		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Central Zone		

Site	S34-T23N-R7W				
Site Position:		Northing:	1,887,404.69 ft	Latitude:	36.179925
From:	Lat/Long	Easting:	1,251,356.59 ft	Longitude:	-107.568333
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	-0.78 °

Well	NORTH ALAMITO UNIT 307H					
Well Position	+N/-S	0.0 ft	Northing:	1,887,345.86 ft	Latitude:	36.179763
	+E/-W	0.0 ft	Easting:	1,251,344.87 ft	Longitude:	-107.568370
Position Uncertainty		0.0 ft	Wellhead Elevation:	0.0 ft	Ground Level:	6,895.0 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	11/10/2016	8.98	62.90	49,646

Design	PLAN #2			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(ft)	(ft)	(ft)	(°)
	0.0	0.0	0.0	312.16

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	
600.0	0.00	0.00	600.0	0.0	0.0	0.00	0.00	0.00	0.00	
909.8	6.20	125.72	909.2	-9.8	13.6	2.00	2.00	0.00	125.72	
4,466.1	6.20	125.72	4,444.7	-233.9	325.2	0.00	0.00	0.00	0.00	
5,535.6	90.10	312.16	5,149.6	198.1	-139.0	9.00	7.84	-16.23	-173.52	NAU 307H POE 11.10
12,277.2	90.10	312.16	5,137.8	4,722.9	-5,136.4	0.00	0.00	0.00	0.00	NAU 307H PBHL 11.1

Cathedral Energy Services

Planning Report

Database: USA EDM 5000 Multi Users DB
Company: EnCana Oil & Gas (USA) Inc
Project: Sandoval County, NM
Site: S34-T23N-R7W
Well: NORTH ALAMITO UNIT 307H
Wellbore: OH
Design: PLAN #2

Local Co-ordinate Reference: Well NORTH ALAMITO UNIT 307H
TVD Reference: 16' KB @ 6911.0ft
MD Reference: 16' KB @ 6911.0ft
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	
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	KOP @ 600'
700.0	2.00	125.72	700.0	-1.0	1.4	-1.7	2.00	2.00	
800.0	4.00	125.72	799.8	-4.1	5.7	-6.9	2.00	2.00	
900.0	6.00	125.72	899.5	-9.2	12.7	-15.6	2.00	2.00	
909.8	6.20	125.72	909.2	-9.8	13.6	-16.6	2.00	2.00	EOB; INC=6.2°
977.0	6.20	125.72	976.0	-14.0	19.5	-23.8	0.00	0.00	Ojo Alamo Ss.
1,000.0	6.20	125.72	998.9	-15.5	21.5	-26.3	0.00	0.00	
1,100.0	6.20	125.72	1,098.3	-21.8	30.3	-37.0	0.00	0.00	
1,163.2	6.20	125.72	1,161.1	-25.7	35.8	-43.8	0.00	0.00	Kirtland Shale
1,200.0	6.20	125.72	1,197.7	-28.1	39.0	-47.8	0.00	0.00	
1,300.0	6.20	125.72	1,297.1	-34.4	47.8	-58.5	0.00	0.00	
1,384.5	6.20	125.72	1,381.1	-39.7	55.2	-67.5	0.00	0.00	Fruitland Coal
1,400.0	6.20	125.72	1,396.5	-40.7	56.5	-69.2	0.00	0.00	
1,500.0	6.20	125.72	1,496.0	-47.0	65.3	-79.9	0.00	0.00	
1,507.2	6.20	125.72	1,503.1	-47.4	65.9	-80.7	0.00	0.00	Pictured Cliffs Ss.
1,600.0	6.20	125.72	1,595.4	-53.3	74.1	-90.7	0.00	0.00	
1,631.0	6.20	125.72	1,626.2	-55.2	76.8	-94.0	0.00	0.00	Lewis Shale
1,700.0	6.20	125.72	1,694.8	-59.6	82.8	-101.4	0.00	0.00	
1,800.0	6.20	125.72	1,794.2	-65.9	91.6	-112.1	0.00	0.00	
1,900.0	6.20	125.72	1,893.6	-72.2	100.4	-122.8	0.00	0.00	
2,000.0	6.20	125.72	1,993.0	-78.5	109.1	-133.6	0.00	0.00	
2,100.0	6.20	125.72	2,092.4	-84.8	117.9	-144.3	0.00	0.00	
2,200.0	6.20	125.72	2,191.9	-91.1	126.6	-155.0	0.00	0.00	
2,300.0	6.20	125.72	2,291.3	-97.4	135.4	-165.7	0.00	0.00	
2,332.2	6.20	125.72	2,323.3	-99.4	138.2	-169.2	0.00	0.00	Cliffhouse Ss.
2,400.0	6.20	125.72	2,390.7	-103.7	144.2	-176.5	0.00	0.00	
2,500.0	6.20	125.72	2,490.1	-110.0	152.9	-187.2	0.00	0.00	
2,600.0	6.20	125.72	2,589.5	-116.3	161.7	-197.9	0.00	0.00	
2,700.0	6.20	125.72	2,688.9	-122.6	170.5	-208.6	0.00	0.00	
2,800.0	6.20	125.72	2,788.4	-128.9	179.2	-219.4	0.00	0.00	
2,900.0	6.20	125.72	2,887.8	-135.2	188.0	-230.1	0.00	0.00	
3,000.0	6.20	125.72	2,987.2	-141.5	196.8	-240.8	0.00	0.00	
3,050.5	6.20	125.72	3,037.4	-144.7	201.2	-246.2	0.00	0.00	Menefee Fn.
3,100.0	6.20	125.72	3,086.6	-147.8	205.5	-251.5	0.00	0.00	
3,200.0	6.20	125.72	3,186.0	-154.1	214.3	-262.3	0.00	0.00	
3,300.0	6.20	125.72	3,285.4	-160.4	223.0	-273.0	0.00	0.00	
3,400.0	6.20	125.72	3,384.9	-166.7	231.8	-283.7	0.00	0.00	
3,500.0	6.20	125.72	3,484.3	-173.0	240.6	-294.4	0.00	0.00	
3,600.0	6.20	125.72	3,583.7	-179.3	249.3	-305.2	0.00	0.00	
3,700.0	6.20	125.72	3,683.1	-185.6	258.1	-315.9	0.00	0.00	
3,800.0	6.20	125.72	3,782.5	-191.9	266.9	-326.6	0.00	0.00	
3,900.0	6.20	125.72	3,881.9	-198.2	275.6	-337.3	0.00	0.00	
3,903.7	6.20	125.72	3,885.6	-198.4	275.9	-337.7	0.00	0.00	Point Lookout Ss.
4,000.0	6.20	125.72	3,981.4	-204.5	284.4	-348.1	0.00	0.00	
4,100.0	6.20	125.72	4,080.8	-210.8	293.1	-358.8	0.00	0.00	
4,111.9	6.20	125.72	4,092.6	-211.6	294.2	-360.1	0.00	0.00	Mancos Shale

Cathedral Energy Services

Planning Report

Database: USA EDM 5000 Multi Users DB
Company: EnCana Oil & Gas (USA) Inc
Project: Sandoval County, NM
Site: S34-T23N-R7W
Well: NORTH ALAMITO UNIT 307H
Wellbore: OH
Design: PLAN #2

Local Co-ordinate Reference: Well NORTH ALAMITO UNIT 307H
TVD Reference: 16' KB @ 6911.0ft
MD Reference: 16' KB @ 6911.0ft
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
4,200.0	6.20	125.72	4,180.2	-217.1	301.9	-369.5	0.00	0.00	
4,300.0	6.20	125.72	4,279.6	-223.4	310.7	-380.3	0.00	0.00	
4,400.0	6.20	125.72	4,379.0	-229.7	319.4	-391.0	0.00	0.00	
4,466.1	6.20	125.72	4,444.7	-233.9	325.2	-398.1	0.00	0.00	START BUILD/TURN
4,500.0	3.19	119.52	4,478.5	-235.4	327.5	-400.8	9.00	-8.89	
4,600.0	5.93	318.89	4,578.4	-232.9	326.5	-398.4	9.00	2.75	
4,643.8	9.85	316.18	4,621.7	-228.5	322.5	-392.4	9.00	8.96	Mancos Silt
4,700.0	14.91	314.78	4,676.6	-219.9	314.0	-380.4	9.00	8.98	
4,800.0	23.90	313.73	4,770.8	-196.8	290.2	-347.2	9.00	8.99	
4,900.0	32.90	313.24	4,858.7	-164.1	255.7	-299.7	9.00	9.00	
4,927.5	35.38	313.14	4,881.5	-153.5	244.4	-284.2	9.00	9.00	Gallup Fn.
5,000.0	41.90	312.94	4,938.1	-122.7	211.4	-239.0	9.00	9.00	
5,100.0	50.90	312.73	5,007.0	-73.5	158.3	-166.7	9.00	9.00	
5,200.0	59.89	312.56	5,063.7	-17.8	97.8	-84.5	9.00	9.00	
5,300.0	68.89	312.43	5,106.9	43.0	31.4	5.6	9.00	9.00	
5,400.0	77.89	312.31	5,135.4	107.6	-39.3	101.4	9.00	9.00	
5,500.0	86.89	312.20	5,148.7	174.1	-112.6	200.4	9.00	9.00	
5,535.6	90.10	312.16	5,149.6	198.1	-139.0	236.0	9.00	9.00	LP @ 5149' TVD; 90.1°
5,600.0	90.10	312.16	5,149.5	241.3	-186.7	300.4	0.00	0.00	
5,700.0	90.10	312.16	5,149.3	308.4	-260.9	400.4	0.00	0.00	
5,800.0	90.10	312.16	5,149.1	375.5	-335.0	500.4	0.00	0.00	
5,900.0	90.10	312.16	5,149.0	442.6	-409.1	600.4	0.00	0.00	
6,000.0	90.10	312.16	5,148.8	509.7	-483.2	700.4	0.00	0.00	
6,100.0	90.10	312.16	5,148.6	576.9	-557.4	800.4	0.00	0.00	
6,200.0	90.10	312.16	5,148.4	644.0	-631.5	900.4	0.00	0.00	
6,300.0	90.10	312.16	5,148.3	711.1	-705.6	1,000.4	0.00	0.00	
6,400.0	90.10	312.16	5,148.1	778.2	-779.8	1,100.4	0.00	0.00	
6,500.0	90.10	312.16	5,147.9	845.3	-853.9	1,200.4	0.00	0.00	
6,600.0	90.10	312.16	5,147.7	912.4	-928.0	1,300.4	0.00	0.00	
6,700.0	90.10	312.16	5,147.6	979.6	-1,002.1	1,400.4	0.00	0.00	
6,800.0	90.10	312.16	5,147.4	1,046.7	-1,076.3	1,500.4	0.00	0.00	
6,900.0	90.10	312.16	5,147.2	1,113.8	-1,150.4	1,600.4	0.00	0.00	
7,000.0	90.10	312.16	5,147.0	1,180.9	-1,224.5	1,700.4	0.00	0.00	
7,100.0	90.10	312.16	5,146.9	1,248.0	-1,298.7	1,800.4	0.00	0.00	
7,200.0	90.10	312.16	5,146.7	1,315.2	-1,372.8	1,900.4	0.00	0.00	
7,300.0	90.10	312.16	5,146.5	1,382.3	-1,446.9	2,000.4	0.00	0.00	
7,400.0	90.10	312.16	5,146.3	1,449.4	-1,521.0	2,100.4	0.00	0.00	
7,500.0	90.10	312.16	5,146.2	1,516.5	-1,595.2	2,200.4	0.00	0.00	
7,600.0	90.10	312.16	5,146.0	1,583.6	-1,669.3	2,300.4	0.00	0.00	
7,700.0	90.10	312.16	5,145.8	1,650.8	-1,743.4	2,400.4	0.00	0.00	
7,800.0	90.10	312.16	5,145.6	1,717.9	-1,817.6	2,500.4	0.00	0.00	
7,900.0	90.10	312.16	5,145.5	1,785.0	-1,891.7	2,600.4	0.00	0.00	
8,000.0	90.10	312.16	5,145.3	1,852.1	-1,965.8	2,700.4	0.00	0.00	
8,100.0	90.10	312.16	5,145.1	1,919.2	-2,039.9	2,800.4	0.00	0.00	
8,200.0	90.10	312.16	5,144.9	1,986.4	-2,114.1	2,900.4	0.00	0.00	
8,300.0	90.10	312.16	5,144.8	2,053.5	-2,188.2	3,000.4	0.00	0.00	
8,400.0	90.10	312.16	5,144.6	2,120.6	-2,262.3	3,100.4	0.00	0.00	
8,500.0	90.10	312.16	5,144.4	2,187.7	-2,336.5	3,200.4	0.00	0.00	
8,600.0	90.10	312.16	5,144.2	2,254.8	-2,410.6	3,300.4	0.00	0.00	
8,700.0	90.10	312.16	5,144.1	2,321.9	-2,484.7	3,400.4	0.00	0.00	
8,800.0	90.10	312.16	5,143.9	2,389.1	-2,558.8	3,500.4	0.00	0.00	
8,900.0	90.10	312.16	5,143.7	2,456.2	-2,633.0	3,600.4	0.00	0.00	

Cathedral Energy Services

Planning Report

Database: USA EDM 5000 Multi Users DB
Company: EnCana Oil & Gas (USA) Inc
Project: Sandoval County, NM
Site: S34-T23N-R7W
Well: NORTH ALAMITO UNIT 307H
Wellbore: OH
Design: PLAN #2

Local Co-ordinate Reference: Well NORTH ALAMITO UNIT 307H
TVD Reference: 16' KB @ 6911.0ft
MD Reference: 16' KB @ 6911.0ft
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
9,000.0	90.10	312.16	5,143.5	2,523.3	-2,707.1	3,700.4	0.00	0.00	
9,100.0	90.10	312.16	5,143.4	2,590.4	-2,781.2	3,800.4	0.00	0.00	
9,200.0	90.10	312.16	5,143.2	2,657.5	-2,855.4	3,900.4	0.00	0.00	
9,300.0	90.10	312.16	5,143.0	2,724.7	-2,929.5	4,000.4	0.00	0.00	
9,400.0	90.10	312.16	5,142.8	2,791.8	-3,003.6	4,100.4	0.00	0.00	
9,500.0	90.10	312.16	5,142.7	2,858.9	-3,077.8	4,200.4	0.00	0.00	
9,600.0	90.10	312.16	5,142.5	2,926.0	-3,151.9	4,300.4	0.00	0.00	
9,700.0	90.10	312.16	5,142.3	2,993.1	-3,226.0	4,400.4	0.00	0.00	
9,800.0	90.10	312.16	5,142.2	3,060.3	-3,300.1	4,500.4	0.00	0.00	
9,900.0	90.10	312.16	5,142.0	3,127.4	-3,374.3	4,600.4	0.00	0.00	
10,000.0	90.10	312.16	5,141.8	3,194.5	-3,448.4	4,700.4	0.00	0.00	
10,100.0	90.10	312.16	5,141.6	3,261.6	-3,522.5	4,800.4	0.00	0.00	
10,200.0	90.10	312.16	5,141.5	3,328.7	-3,596.7	4,900.4	0.00	0.00	
10,300.0	90.10	312.16	5,141.3	3,395.8	-3,670.8	5,000.4	0.00	0.00	
10,400.0	90.10	312.16	5,141.1	3,463.0	-3,744.9	5,100.4	0.00	0.00	
10,500.0	90.10	312.16	5,140.9	3,530.1	-3,819.0	5,200.4	0.00	0.00	
10,600.0	90.10	312.16	5,140.8	3,597.2	-3,893.2	5,300.4	0.00	0.00	
10,700.0	90.10	312.16	5,140.6	3,664.3	-3,967.3	5,400.4	0.00	0.00	
10,800.0	90.10	312.16	5,140.4	3,731.4	-4,041.4	5,500.4	0.00	0.00	
10,900.0	90.10	312.16	5,140.2	3,798.6	-4,115.6	5,600.4	0.00	0.00	
11,000.0	90.10	312.16	5,140.1	3,865.7	-4,189.7	5,700.4	0.00	0.00	
11,100.0	90.10	312.16	5,139.9	3,932.8	-4,263.8	5,800.4	0.00	0.00	
11,200.0	90.10	312.16	5,139.7	3,999.9	-4,337.9	5,900.4	0.00	0.00	
11,300.0	90.10	312.16	5,139.5	4,067.0	-4,412.1	6,000.4	0.00	0.00	
11,400.0	90.10	312.16	5,139.4	4,134.2	-4,486.2	6,100.4	0.00	0.00	
11,500.0	90.10	312.16	5,139.2	4,201.3	-4,560.3	6,200.4	0.00	0.00	
11,600.0	90.10	312.16	5,139.0	4,268.4	-4,634.5	6,300.4	0.00	0.00	
11,700.0	90.10	312.16	5,138.8	4,335.5	-4,708.6	6,400.4	0.00	0.00	
11,800.0	90.10	312.16	5,138.7	4,402.6	-4,782.7	6,500.4	0.00	0.00	
11,900.0	90.10	312.16	5,138.5	4,469.8	-4,856.8	6,600.4	0.00	0.00	
12,000.0	90.10	312.16	5,138.3	4,536.9	-4,931.0	6,700.4	0.00	0.00	
12,100.0	90.10	312.16	5,138.1	4,604.0	-5,005.1	6,800.4	0.00	0.00	
12,200.0	90.10	312.16	5,138.0	4,671.1	-5,079.2	6,900.4	0.00	0.00	
12,277.2	90.10	312.16	5,137.8	4,722.9	-5,136.4	6,977.5	0.00	0.00	TD at 12277.2

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
NAU 307H PBHL 11.10 - plan hits target center - Point	0.00	0.00	5,137.8	4,722.9	-5,136.4	1,892,138.12	1,246,273.06	36.192734	-107.585775
NAU 307H POE 11.10 - plan hits target center - Point	0.00	0.00	5,149.6	198.1	-139.0	1,887,545.79	1,251,208.55	36.180307	-107.568841

Cathedral Energy Services

Planning Report

Database: USA EDM 5000 Multi Users DB
Company: EnCana Oil & Gas (USA) Inc
Project: Sandoval County, NM
Site: S34-T23N-R7W
Well: NORTH ALAMITO UNIT 307H
Wellbore: OH
Design: PLAN #2

Local Co-ordinate Reference: Well NORTH ALAMITO UNIT 307H
TVD Reference: 16' KB @ 6911.0ft
MD Reference: 16' KB @ 6911.0ft
North Reference: True
Survey Calculation Method: Minimum Curvature

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
977.0	976.0	Ojo Alamo Ss.		-0.10	312.16
1,163.2	1,161.0	Kirtland Shale		-0.10	312.16
1,384.5	1,381.0	Fruitland Coal		-0.10	312.16
1,507.2	1,503.0	Pictured Cliffs Ss.		-0.10	312.16
1,631.0	1,626.0	Lewis Shale		-0.10	312.16
2,332.2	2,323.0	Cliffhouse Ss.		-0.10	312.16
3,050.5	3,037.0	Menefee Fn.		-0.10	312.16
3,903.7	3,885.0	Point Lookout Ss.		-0.10	312.16
4,111.9	4,092.0	Mancos Shale		-0.10	312.16
4,643.8	4,621.0	Mancos Silt		-0.10	312.16
4,927.5	4,881.0	Gallup Fn.		-0.10	312.16

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
600.0	600.0	0.0	0.0	KOP @ 600'
909.8	909.2	-9.8	13.6	EOB; INC=6.2°
4,466.1	4,444.7	-233.9	325.2	START BUILD/TURN
5,535.6	5,149.6	198.1	-139.0	LP @ 5149' TVD; 90.1°
12,277.2	5,137.8	4,722.9	-5,136.4	TD at 12277.2



Project: Sandoval County, NM
 Site: S34-T23N-R7W
 Well: NORTH ALAMITO UNIT 307H
 Wellbore: OH
 Design: PLAN #2



Azimuths to True North
 Magnetic North: 8.98°

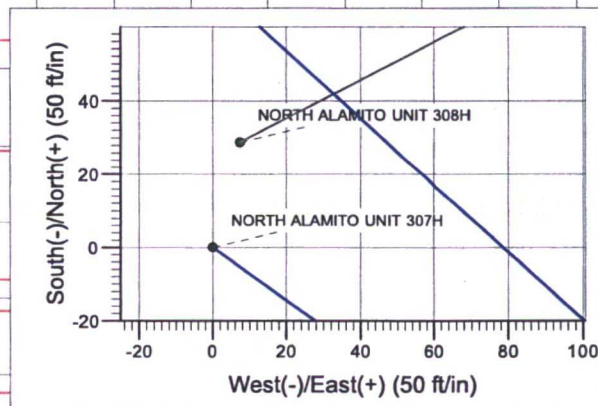
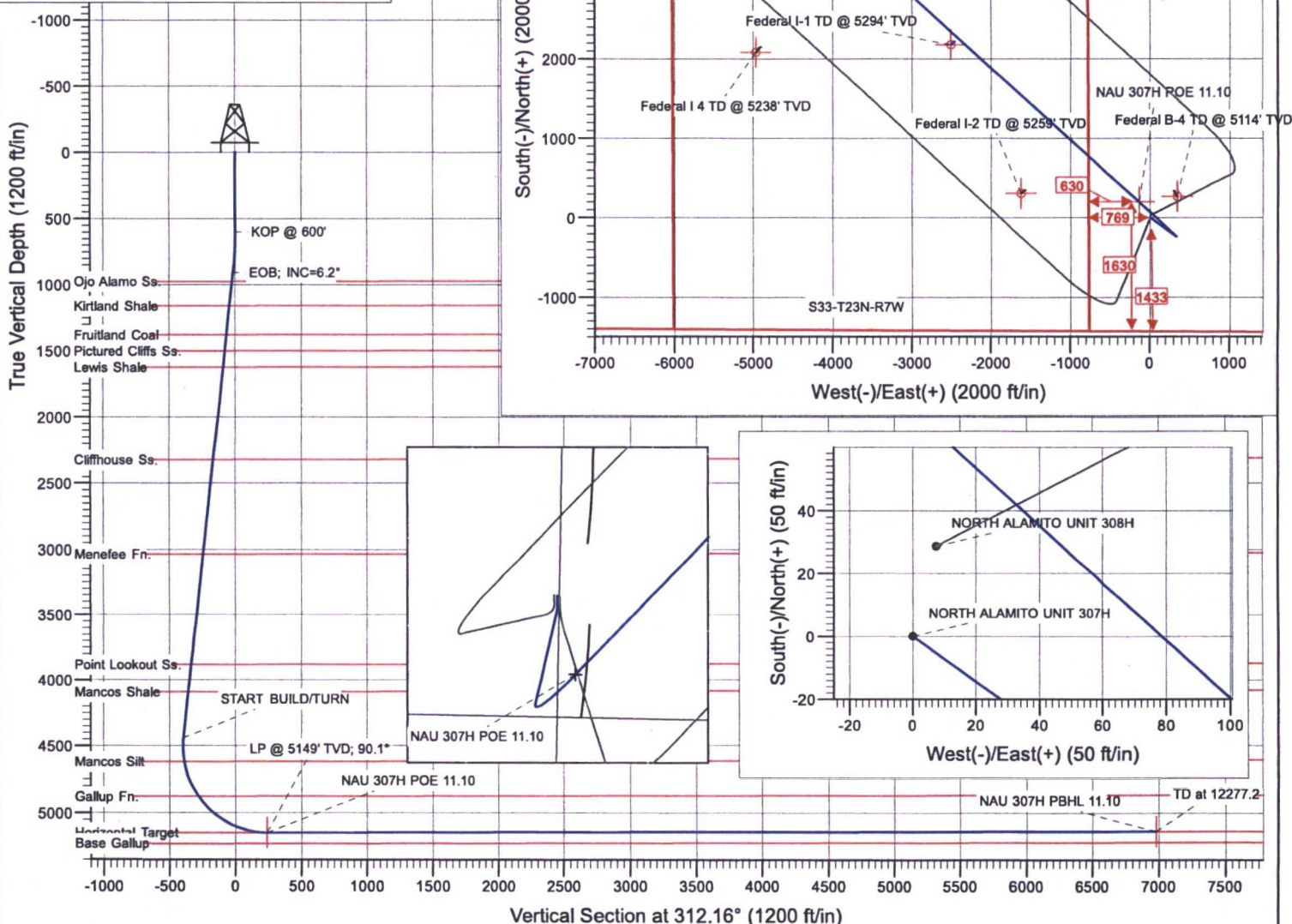
Magnetic Field
 Strength: 49646.4snT
 Dip Angle: 62.90°
 Date: 11/10/2016
 Model: HDGM

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	600.0	0.00	0.00	600.0	0.0	0.0	0.00	0.00	0.0	
3	909.8	6.20	125.72	909.2	-9.8	13.6	2.00	125.72	-16.6	
4	4466.1	6.20	125.72	4444.7	-233.9	325.2	0.00	0.00	-398.1	
5	5535.6	90.10	312.16	5149.6	198.1	-139.0	9.00	-173.52	236.0	NAU 307H POE 11.10
6	12277.2	90.10	312.16	5137.8	4722.9	-5136.4	0.00	0.00	6977.5	NAU 307H PBHL 11.10

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
976.0	977.0	Ojo Alamo Ss.
1161.1	1163.2	Kirtland Shale
1381.1	1384.5	Fruitland Coal
1503.1	1507.2	Pictured Cliffs Ss.
1626.2	1631.0	Lewis Shale
2323.3	2332.2	Cliffhouse Ss.
3037.4	3050.5	Menefee Fn.
3885.6	3903.7	Point Lookout Ss.
4092.6	4111.9	Mancos Shale
4621.7	4643.8	Mancos Silt
4881.5	4927.5	Gallup Fn.



WELL DETAILS: NORTH ALAMITO UNIT 307H

+N/-S	+E/-W	Northing	Ground Level:	6895.0	Latitude	Longitude
0.0	0.0	1887345.86	Easting	1251344.87	36.179763	-107.568370

CATHEDRAL



North Alamito Unit 307H (FKA Lybrook L34-2307 02H)

SHL: NWSW Section 34, T23N, R7W
1433' FSL and 769' FWL

BHL: SWSW Section 28, T23N, R7W
815' FSL and 925' FWL

Sandoval County, New Mexico

Lease Number: NMNM 16586, NMNM 6682 & NMNM 58878

C. Pipeline

1. The pipeline will be designed and constructed in accordance with the BLM Gold Book Standards. After completion of clearing and grading activities and trenching activities will be conducted using a trencher or track hoe. The pipeline trench will be a minimum of 4 feet in depth. Under watercourses, the trenches will be deep enough to allow for 6 feet of soil cover between the pipes and the wash. The trenches will be a minimum of 16 inches in width. Soft plugs will be placed every quarter of a mile within the trench. No more than half a mile of open trench or the amount of trench that can be worked in a day will be opened at a time. Backfilling operations will be performed within a reasonable amount of time to ensure that the trench is not left open for more than 24 hours. If a trench is left open overnight, it will be fenced with a temporary fence or a night watchman will be utilized. After the pipe has been welded and coated a side-boom tractor will be used to place the pipe into the trench. After trenching and pipe placement in the trench, the soils excavated from the trenches will be returned and compacted to prevent subsidence.
2. There will be no fence cuts or cattle guards required for the installation of this pipeline.
3. Any trees larger than 3-inches in diameter will be cut at ground level and delimbed. The trunks will be stacked whole along the access road, well pad, and/or pipeline for wood gathering. Stumps will be cut as close to the ground as possible. Stumps and root balls will be hauled to an approved disposal site or stockpiled at the edge of the well pad and buried in the cut slopes of the pad during interim reclamation.

Any trees smaller than 3-inches in diameter, slash and brush will be chipped, shredded or mulched and incorporated into the topsoil for later use in interim reclamation.

Remaining brush will be brush-hogged or scalped at ground-level prior to ground disturbance.

4. After removal of vegetation, topsoil will be segregated and windrowed on the edge of the access road. Topsoil will be defined as the top six (6) inches of soil. The stockpiled topsoil will be free of brush and tree limbs, trunks and root balls, but may include chipped or mulched material so long as it is incorporated into the topsoil stockpile.

Topsoil will not be stripped when soils are moisture-saturated or frozen below the stripping depth.

5. All construction materials for the pipeline will consist of native borrow and subsoil accumulated during pipeline 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.
6. Construction equipment may include chain saws, a brush hog, scraper, maintainer, excavator, dozer, backhoe, hydrovac, welder, trencher, side-boom, and misc. specialty equipment. Construction of the pipeline will take approximately 2-4 weeks.

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

ENCANA OIL & GAS (USA) INC.
NORTH ALAMITO UNIT 307H (FKA LYBROOK L34-2307 02H)

1433' FSL & 769' FWL
LOCATED IN THE NW/4 SW/4 OF SECTION 34,
T23N, R7W, 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, 39.0 MILES TO INDIAN ROUTE 7061 (M.P. 112.6).
- 2) TURN RIGHT AND GO 5.4 MILES.
- 3) TURN LEFT AND GO 6.3 MILES TO WHERE ACCESS IS STAKED ON 2-TRACK ON RIGHT SIDE OF ROAD.

WELL FLAG LOCATED AT LAT. 36.179763° N, LONG. 107.568370° W (NAD 83).



JOB No.: NAU #307H_REV4
DATE: 11/01/16

CCI

CHENAULT CONSULTING INC.

4800 COLLEGE BLVD.
SUITE 201
FARMINGTON, NM 87402
(505) 325-7707

encana

11" 3K Rotating Head

11" 3K Annular

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

3K Mud Cross 3" gate valves

11" x 4" x 4"

