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: 12/9/2016
Well information;
Operator Encana, Well Name and Number Nageezi Unit 405H

API# 30-045-35841, Section 3, Township 23 N/S, Range 9 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
- o Hold C-104 for NSL, NSP, DHC
- o Spacing rule violation. Operator must follow up with change of status notification on other well to be shut in or abandoned
- o 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 Perrin
NMOCD Approved by Signature

5-2-2017
Date

1220 South St. Francis Drive • Santa Fe, New Mexico 87505
Phone (505) 476-3441 • Fax (505) 476-3462 • www.emnrd.state.nm.us/ocd

Form 3160-3
(March 2012)

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

OIL CONS. DIV DIST. 3

APR 14 2017

1a. Type of work: ☑ DRILL ☐ REENTER	5. Lease Serial No. NMNM 8005
1b. Type of Well: ☑ Oil Well ☐ Gas Well ☐ Other ☑ Single Zone ☐ Multiple Zone	6. If Indian, Allotee or Tribe Name EASTERN NAVAJO
2. Name of Operator ENCANA OIL & GAS (USA) INC	7. If Unit or CA Agreement, Name and No. UA-NAGEEZI UNIT / NMNM132981A
3a. Address 370 17TH STREET, SUITE 1700 DENVER CO	8. Lease Name and Well No. NAGEEZI UNIT 405H
3b. Phone No. (include area code) (970)285-2600	9. API Well No. 30-045-35841
4. Location of Well (Report location clearly and in accordance with any State requirements.*) At surface K NESW / 1985 FSL / 1738 FWL / LAT 36.254185 / LONG -107.77947 At proposed prod. zone L NWSW / 2050 FSL / 850 FWL / LAT 36.268891 / LONG -107.800389	10. Field and Pool, or Exploratory NAGEEZI UNIT HZ OIL POOL
	11. Sec., T. R. M. or Blk. and Survey or Area SEC 3 / T23N / R9W / NMP
14. Distance in miles and direction from nearest town or post office* 39 miles	12. County or Parish SAN JUAN / 13. State NM
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) 850 feet	16. No. of acres in lease 2083.66 / 17. Spacing Unit dedicated to this well 10415.12
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 30 feet	19. Proposed Depth 4897 feet / 13203 feet / 20. BLM/BIA Bond No. on file FED: COB000235 / IND: 105073453
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 6765 feet	22. Approximate date work will start* 04/01/2017 / 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 12/09/2016
Title Regulatory Analyst		
Approved by (Signature)	Name (Printed/Typed)	Date 4/7/17
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)

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

BLM'S APPROVAL OR ACCEPTANCE OF THIS ACTION DOES NOT RELIEVE THE LESSEE AND OPERATOR FROM OBTAINING ANY OTHER AUTHORIZATION REQUIRED FOR OPERATIONS ON FEDERAL AND INDIAN LANDS

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

NMOCD

DISTRICT I
1625 N. French Dr., Hobbs, N.M. 88240
Phone: (575) 393-6161 Fax: (575) 393-0720

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

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

DISTRICT IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department

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

Form C-102
Revised August 1, 2011

Submit one copy to appropriate District Office

OIL CONS. DIV. DIST. 3
APR 25 2017

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

[1] API Number	[2] Pool Code	[3] Pool Name
30-045-35841	98080	NAGEEZI UNIT HZ (OIL)

[4] Property Code	[5] Property Name	[6] Well Number
315244	NAGEEZI UNIT	405H

[7] OGRID No.	[8] Operator Name	[9] Elevation
282327	ENCANA OIL & GAS (USA) INC.	6765'

[10] Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	WEST/West line	County
K	3	23N	9W		1985'	SOUTH	1738'	WEST	SAN JUAN

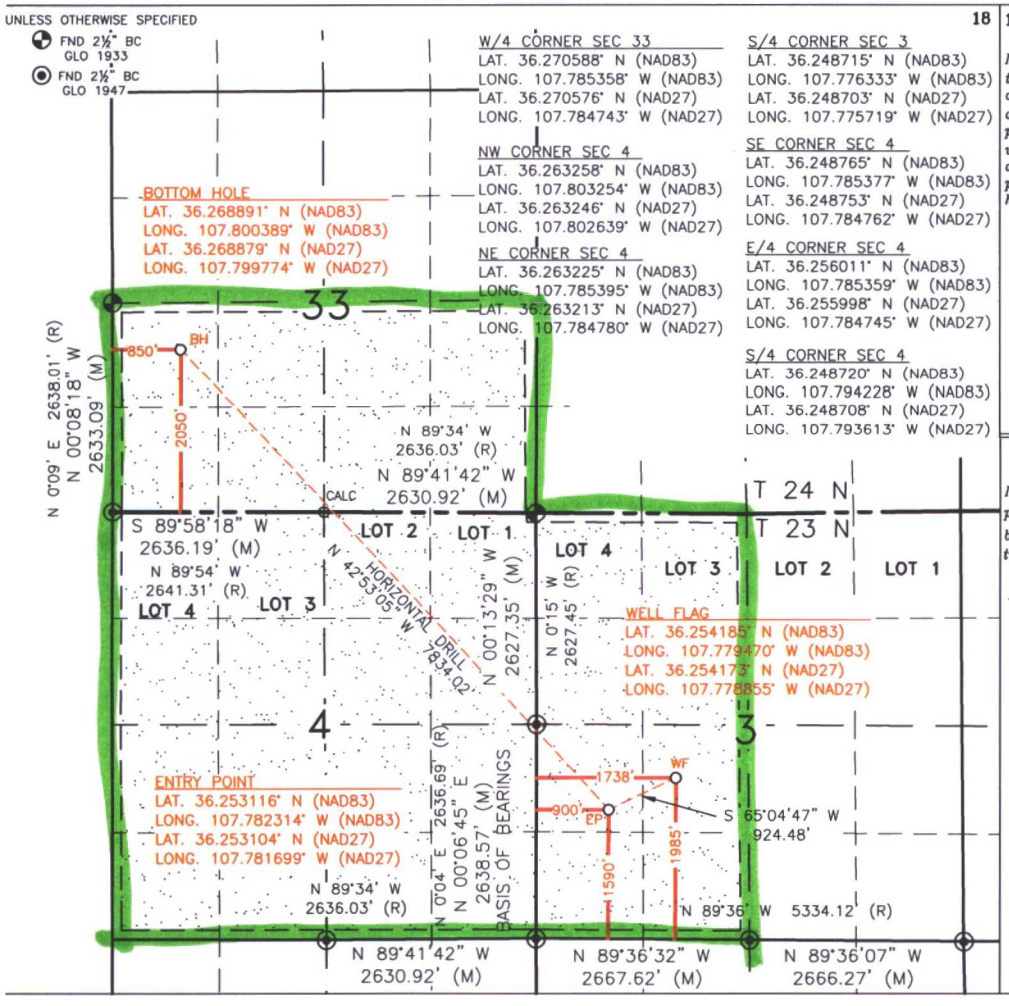
[11] Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	WEST/West line	County
L	33	24N	9W		2050'	SOUTH	850'	WEST	SAN JUAN

[12] Dedicated Acres	[13] Joint or Infill	[14] Consolidation Code	[15] Order No.
PENETRATED SPACING UNIT; S/2 SEC. 33 (320 ACRES), ALL SEC. 4 (643.84 ACRES), W/2 SEC. 3 (321.77 ACRES) Total = 1285.61 acres			R-13856-A (10,415.12 acres)

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

16



[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.

Holly Hill — 04/24/17
Signature — Date

Holly Hill
Printed Name

holly.hill@encana.com
E-mail Address

SURVEYOR CERTIFICATION

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

NOVEMBER 9, 2016
Date of Survey

Signature and Seal of Professional Surveyor:

HENRY P. BROADHURST, NEW MEXICO, 11393, 04/20/2017, PROFESSIONAL SURVEYOR

DISTRICT I
1625 N. French Dr., Hobbs, N.M. 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
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Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION

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

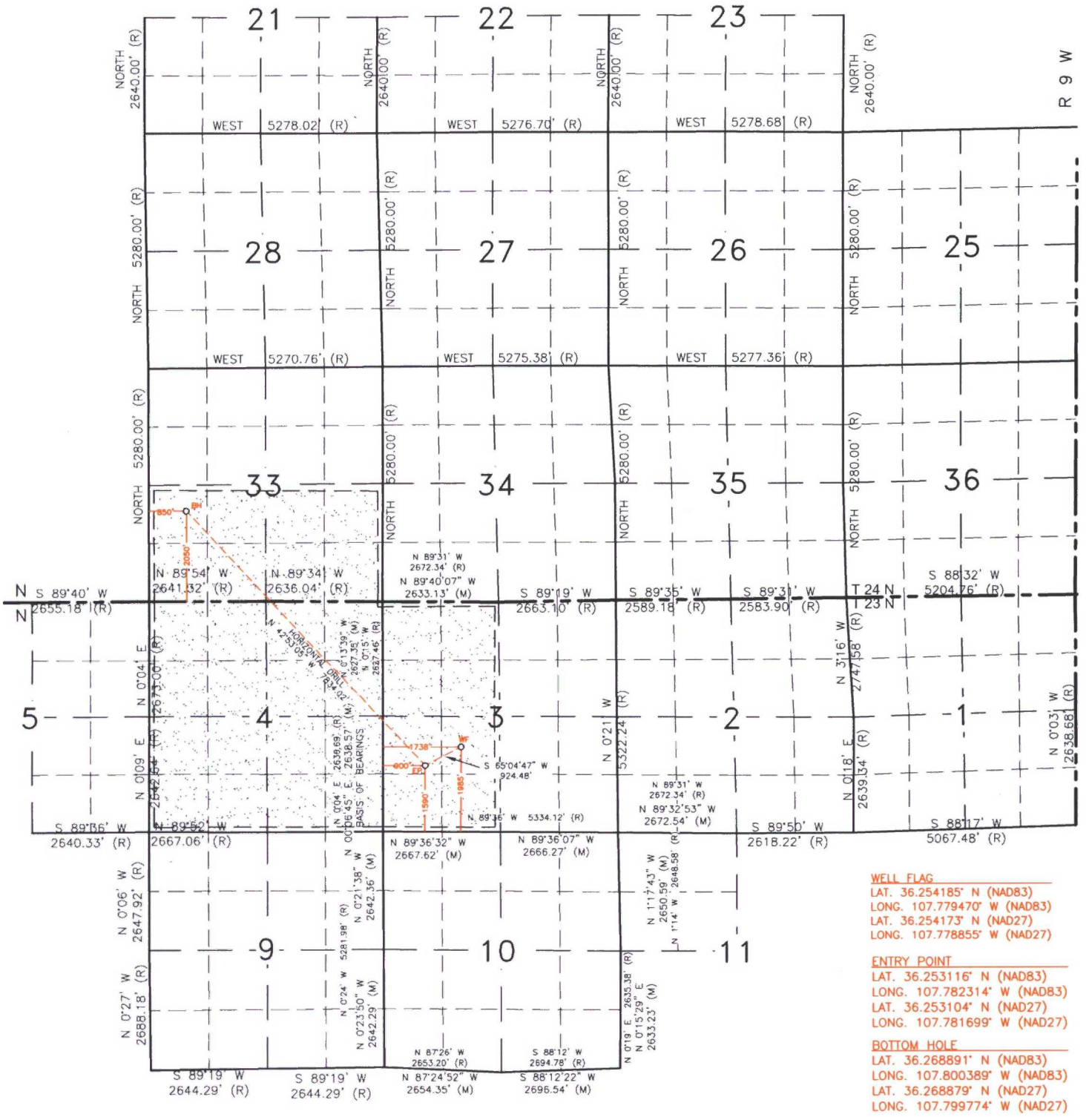
Form C-102
Revised August 1, 2011

Submit one copy to appropriate District Office

☐ AMENDED REPORT

ENCANA OIL & GAS (USA) INC.
NAGEEZI UNIT #405H

PENETRATED SPACING UNIT; S/2 SEC. 33 (320 ACRES), ALL SEC. 4 (643.84 ACRES), W/2 SEC. 3 (321.77 ACRES)
TOTAL 10,415.12 ACRES: SEC. 21-23 (S/2); 25-28, 33-36, 1-4, 9-10 (ALL); 5 (W/2); 11 (NW/4) – UNDIVIDED UNIT



WELL FLAG
LAT. 36.254185° N (NAD83)
LONG. 107.779470° W (NAD83)
LAT. 36.254173° N (NAD27)
LONG. 107.778855° W (NAD27)

ENTRY POINT
LAT. 36.253116° N (NAD83)
LONG. 107.782314° W (NAD83)
LAT. 36.253104° N (NAD27)
LONG. 107.781699° W (NAD27)

BOTTOM HOLE
LAT. 36.268891° N (NAD83)
LONG. 107.800389° W (NAD83)
LAT. 36.268879° N (NAD27)
LONG. 107.799774° W (NAD27)

ENCANA OIL & GAS (USA) INC.

NAGEEZI UNIT 405H (FKA K03-2309 01H)

1985' FSL & 1738' FWL
LOCATED IN THE NE/4 SW/4 OF SECTION 3,
T23N, R9W, N.M.P.M.,
SAN JUAN COUNTY, NEW MEXICO

DIRECTIONS

1) FROM THE INTERSECTION OF HWY 64 & HWY 550 IN BLOOMFIELD, GO SOUTH ON HWY 550, 36.0 MILES TO C.R. 7800 (ISR 450) NEAR M.P. 115.6 AT THE NEGEEZI POST OFFICE.
2) TURN RIGHT AT THE NAGEEZI POST OFFICE AND GO 3.0 MILES ON C.R. 7800 TO THE FLAGGED ACCESS ON THE LEFT SIDE OF THE ROAD.

WELL FLAG LOCATED AT LAT. 36.254185° N, LONG.107.779470° W (NAD 83).

ENCANA

JOB No.: ENC364
DATE: 11/09/2016

CCI

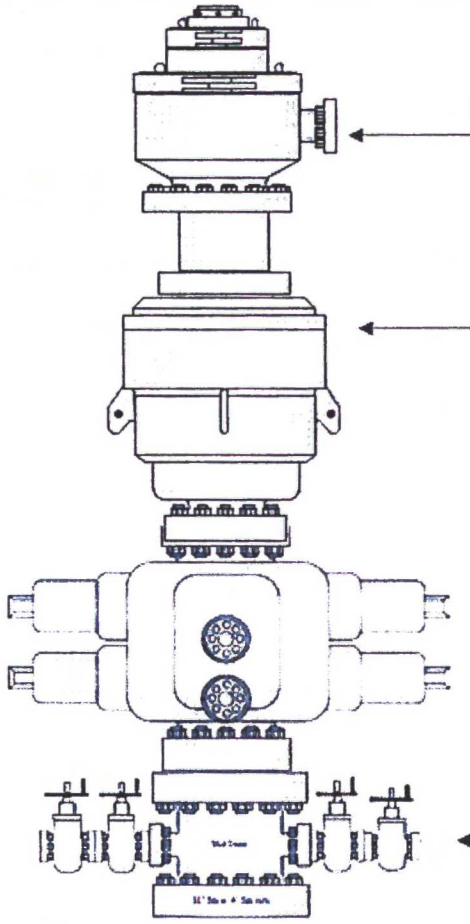
CHENAULT CONSULTING INC.

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

WELLHEAD BLOWOUT CONTROL SYSTEM

encana

Well Name and Number:
Nageezi Unit 405H

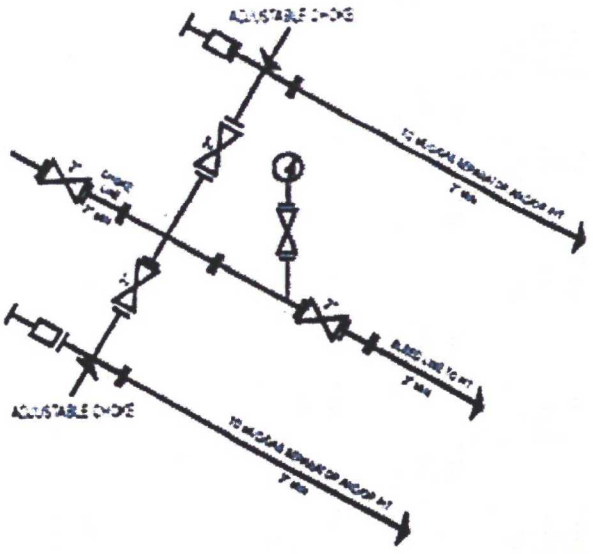


11" 3K Rotating Head

11" 3K Annular

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

3K Mud Cross 3" gate valves



Nageezi Unit 405H
SHL: NESW Section 3, T23N, R9W, 1985' FSL d 1738' FWL
BHL: NESE Section 10, T23N, R9W, 2400' FSL and 330' FEL
San Juan County, New Mexico
Unit Number: NMNM 132981A
Lease Numbers: NM 8005 BIA-NO-G-1403-1907

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	588
Kirtland Shale	717
Fruitland Coal	1,154
Pictured Cliffs Ss.	1,328
Lewis Shale	1,456
Cliffhouse Ss.	2,007
Menefee Fn.	2,723
Point Lookout Ss.	3,696
Mancos Shale	3,890
Mancos Silt	4,340
Gallup Fn.	4,616

The referenced surface elevation is 6765', KB 6781'

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

Substance	Formation	Depth (TVD) units = feet
Water/Gas	Fruitland Coal	1,154
Water/Gas	Pictured Cliffs Ss.	1,328
Water/Gas	Cliffhouse Ss.	2,007
Water/Gas	Menefee Fn.	2,723
Water/Gas	Point Lookout Ss.	3,696
Oil/Gas	Mancos Shale	3,890
Oil/Gas	Mancos Silt	4,340
Oil/Gas	Gallup Fn.	4,616

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

3. PRESSURE CONTROL

a) Pressure contol equipment and configuration will be designed to meet 2M standards.
b) Working pressure on rams and BOPE will be 3,000 psi.
c) Function test and visual inspection of the BOP will be conducted daily and noted in the IADC Daily Drilling Report.
d) The Annular BOP will be pressure tested to a minimum of 50 percent of its rated working pressure.
e) Blind and Pipe Rams/BOP will be tested against a test plug to 100 percent of rated working pressure.
f) Pressure tests are required before drilling out from under all casing strings set and cemented in place.

g) BOP controls must be installed prior to drilling the surface casing plug and will remain in use until the well is completed or abandoned.
h) BOP testing procedures and testing frequency will conform to Onshore Order No. 2.
i) BOP remote controls shall be located on the rig floor at a location readily accessible to the driller. Master controls shall be on the ground at the accumulator and shall have the capability to function all preventers.
j) The kill line shall be 2-inch minimum and contain two kill line valves, one of which shall be a check valve.
k) The choke line shall be a 2-inch minimum and contain two choke line valves (2-inch minimum).
l) The choke and manifold shall contain two adjustable chokes.
m) Hand wheels shall be installed on all ram preventers.
n) Safety valves and wrenches (with subs for drill string connections) shall be available on the rig floor at all
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'-5150'	8 3/4"	7"	26	J55, LTC New
Production Liner	4950'-13203'	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.

Nageezi Unit 405H
SHL: NESW Section 3, T23N, R9W, 1985' FSL and 1738' FWL
BHL: NESE Section 10, T23N, R9W, 2400' FSL and 330' FEL
San Juan County, New Mexico
Unit Number: NMNM 132981A
Lease Numbers: NM 8005 BIA-NO-G-1403-1907

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'-5150'	100% open hole excess Stage 1 Lead: 567 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	4950'-13203'	30% open hole excess Cement Vol: 780 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

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 4212'. Directional plans are attached.

Description	Proposed Depth (TVD/MD)	Formation
Horizontal Lateral TD	4897'/13203'	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'-4861'/5150'	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"	4861'/5150'-4897'/13203'	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 - Top Mancos to TD
d) Logging - See below

Cased Hole:
CBL/CCL/GR/VDL will be run as needed for perforating control

8. ABNORMAL PRESSURES & HYDROGEN SULFIDE

The anticipated bottom hole pressure is +/- 2290 psi based on a 9.0 ppg at 4894' TVD of the horizontal lateral target. No abnormal pressure or temperatures are anticipated.

No hydrogen sulfide gas is anticipated, however, if H_2S 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 April 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.

Nageezi Unit 405H
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1985' FSL and 1738' FWL
BHL: NESE Section 10, T23N, R9W
2400' FSL and 330' FEL
San Juan County, New Mexico
Unit Number: NMNM 132981A

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CASING & CEMENTING PROGRAM

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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.

ENCANA™

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	
3	1174.94	13.50	201.67	1168.71	-73.55	-29.22	2.00	201.67	-26.16	
4	4305.04	13.50	201.67	4212.34	-752.57	-298.97	0.00	0.00	-267.64	
5	5369.08	90.00	317.15	4897.00	-389.13	-838.52	9.00	114.86	378.05	NAGEEZI UNIT 405H POE
6	13203.03	90.00	317.15	4897.00	5354.00	-6166.50	0.00	0.00	8166.46	NAGEEZI UNIT 405H PBHL

PLAN #1
NAGEEZI UNIT 405H
16001, LR
16' KB @ 6784.00usft
Ground Level @ 6768.00
North American Datum 1983
Well NAGEEZI UNIT 405H, True North

Type	Target	Azimuth	Origin Type	N/S	E/W	From TVD
TD	No Target (Freehand)	310.97	Slot	0.00	0.00	0.00

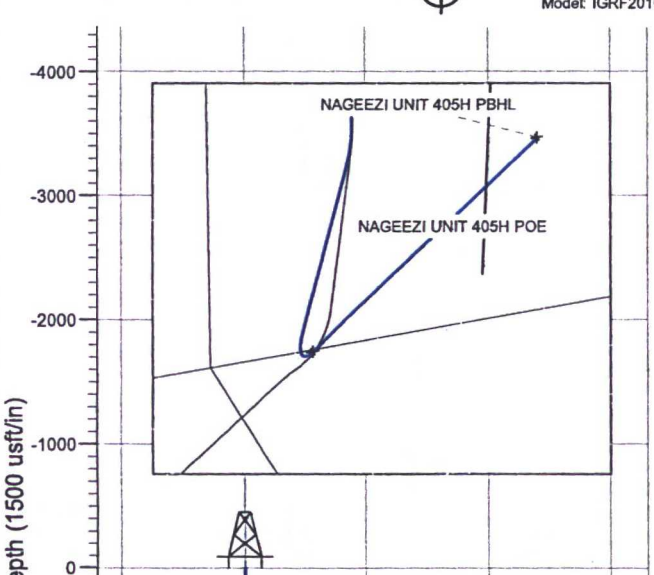
Name	TVD	+N/-S	+E/-W	Latitude	Longitude
NAGEEZI UNIT 405H PBHL	4897.00	5354.00	-6166.50	36.268891	-107.800389
NAGEEZI UNIT 405H POE	4897.00	-389.13	-838.52	36.253116	-107.782314

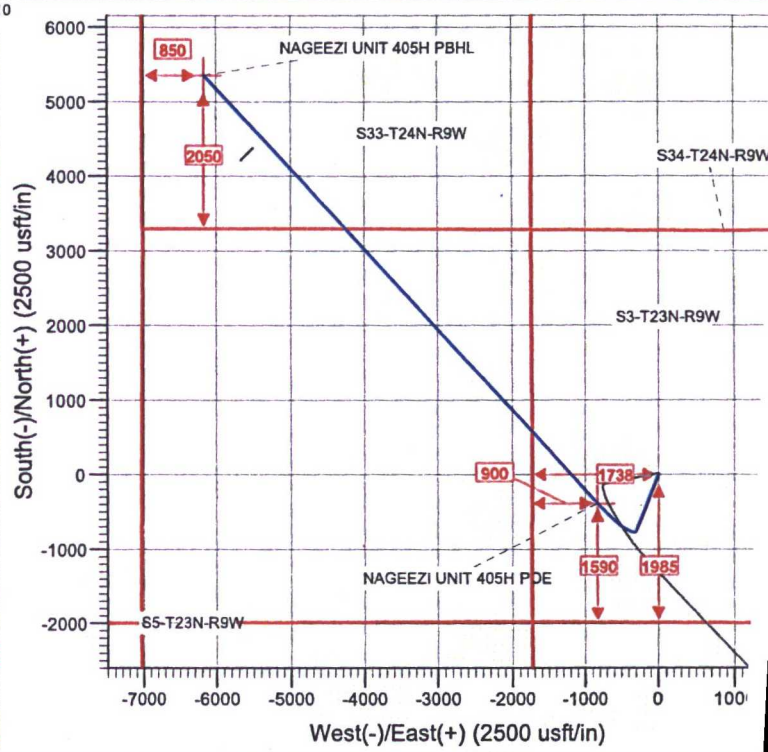
Project: San Juan County, NM
Site: S3-T23N-R9W
Well: NAGEEZI UNIT 405H
Wellbore: OH
Design: PLAN #1

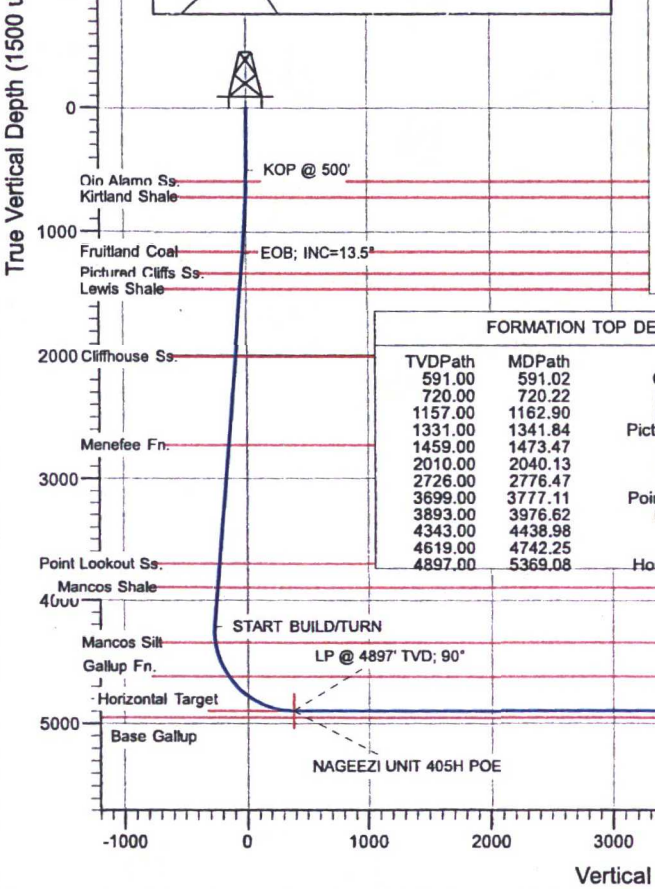
T M

Azimuths to True North
Magnetic North: 9.18°

Magnetic Field
Strength: 49913.8snT
Dip Angle: 62.91°
Date: 11/29/2016
Model: IGRF2010

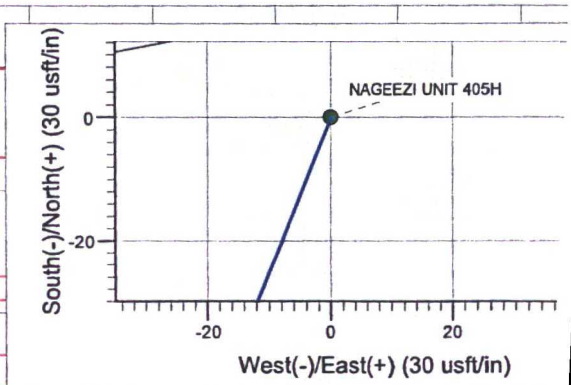






FORMATION TOP DETAILS

TVDPath	MDPath	Formation
591.00	591.02	Ojo Alamo Ss.
720.00	720.22	Kirtland Shale
1157.00	1162.90	Fruitland Coal
1331.00	1341.84	Pictured Cliffs Ss.
1459.00	1473.47	Lewis Shale
2010.00	2040.13	Cliffhouse Ss.
2726.00	2776.47	Menefee Fn.
3699.00	3777.11	Point Lookout Ss.
3893.00	3976.62	Mancos Shale
4343.00	4438.98	Mancos Silt
4619.00	4742.25	Gallup Fn.
4897.00	5369.08	Horizontal Target



Vertical Section at 310.97° (1500 usft/in)

CATHEDRAL

WELL DETAILS: NAGEEZI UNIT 405H

+N/-S	+E/-W	Northing	Ground Level: 6768.00 Easting	Latitude	Longitude
0.00	0.00	1911826.36	2738972.48	36.254185	-107.779470

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well NAGEEZI UNIT 405H
Company:	EnCana Oil & Gas (USA) Inc	**TVD Reference:**	16' KB @ 6784.00usft
Project:	San Juan County, NM	**MD Reference:**	16' KB @ 6784.00usft
Site:	S3-T23N-R9W	**North Reference:**	True
Well:	NAGEEZI UNIT 405H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #1		

Project	San Juan County, NM		
Map System:	US State Plane 1983	**System Datum:**	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Western Zone		

Site	S3-T23N-R9W				
Site Position:		**Northing:**	1,911,826.36 usft	**Latitude:**	36.254185
From:	Lat/Long	**Easting:**	2,738,972.48 usft	**Longitude:**	-107.779470
Position Uncertainty:	0.00 usft	**Slot Radius:**	13-3/16"	**Grid Convergence:**	0.03 °

Well	NAGEEZI UNIT 405H					
Well Position	**+N/-S**	0.00 usft	**Northing:**	1,911,826.36 usft	**Latitude:**	36.254185
	+E/-W	0.00 usft	**Easting:**	2,738,972.48 usft	**Longitude:**	-107.779470
Position Uncertainty		0.00 usft	**Wellhead Elevation:**	0.00 usft	**Ground Level:**	6,768.00 usft

Wellbore	OH				
Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF2010	11/29/2016	9.18	62.91	49,914

Design	PLAN #1				
Audit Notes:					
Version:		**Phase:**	PLAN	**Tie On Depth:**	0.00
Vertical Section:	**Depth From (TVD) (usft)**	**+N/-S (usft)**	**+E/-W (usft)**	**Direction (°)**	
	0.00	0.00	0.00	310.97	

Plan Sections

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,174.94	13.50	201.67	1,168.71	-73.55	-29.22	2.00	2.00	0.00	201.67	
4,305.04	13.50	201.67	4,212.34	-752.57	-298.97	0.00	0.00	0.00	0.00	
5,369.08	90.00	317.15	4,897.00	-389.13	-838.52	9.00	7.19	10.85	114.86	NAGEEZI UNIT 405H
13,203.03	90.00	317.15	4,897.00	5,354.00	-6,166.50	0.00	0.00	0.00	0.00	NAGEEZI UNIT 405H

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well NAGEEZI UNIT 405H
Company:	EnCana Oil & Gas (USA) Inc	**TVD Reference:**	16' KB @ 6784.00usft
Project:	San Juan County, NM	**MD Reference:**	16' KB @ 6784.00usft
Site:	S3-T23N-R9W	**North Reference:**	True
Well:	NAGEEZI UNIT 405H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft	Build Rate (°/100u	Comments / Formations
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	KOP @ 500'
591.02	1.82	201.67	591.00	-1.34	-0.53	-0.48	2.00	2.00	Ojo Alamo Ss.
600.00	2.00	201.67	599.98	-1.62	-0.64	-0.58	2.00	2.00	
700.00	4.00	201.67	699.84	-6.49	-2.58	-2.31	2.00	2.00	
720.22	4.40	201.67	720.00	-7.86	-3.12	-2.80	2.00	2.00	Kirtland Shale
800.00	6.00	201.67	799.45	-14.58	-5.79	-5.19	2.00	2.00	
900.00	8.00	201.67	898.70	-25.91	-10.29	-9.21	2.00	2.00	
1,000.00	10.00	201.67	997.47	-40.45	-16.07	-14.38	2.00	2.00	
1,100.00	12.00	201.67	1,095.62	-58.18	-23.11	-20.69	2.00	2.00	
1,162.90	13.26	201.67	1,157.00	-70.96	-28.19	-25.24	2.00	2.00	Fruitland Coal
1,174.94	13.50	201.67	1,168.71	-73.55	-29.22	-26.16	2.00	2.00	EOB; INC=13.5°
1,200.00	13.50	201.67	1,193.08	-78.99	-31.38	-28.09	0.00	0.00	
1,300.00	13.50	201.67	1,290.32	-100.68	-40.00	-35.80	0.00	0.00	
1,341.84	13.50	201.67	1,331.00	-109.75	-43.60	-39.03	0.00	0.00	Pictured Cliffs Ss.
1,400.00	13.50	201.67	1,387.56	-122.37	-48.61	-43.52	0.00	0.00	
1,473.47	13.50	201.67	1,459.00	-138.31	-54.95	-49.19	0.00	0.00	Lewis Shale
1,500.00	13.50	201.67	1,484.79	-144.07	-57.23	-51.23	0.00	0.00	
1,600.00	13.50	201.67	1,582.03	-165.76	-65.85	-58.95	0.00	0.00	
1,700.00	13.50	201.67	1,679.27	-187.45	-74.47	-66.66	0.00	0.00	
1,800.00	13.50	201.67	1,776.51	-209.15	-83.09	-74.38	0.00	0.00	
1,900.00	13.50	201.67	1,873.74	-230.84	-91.70	-82.09	0.00	0.00	
2,000.00	13.50	201.67	1,970.98	-252.53	-100.32	-89.81	0.00	0.00	
2,040.13	13.50	201.67	2,010.00	-261.24	-103.78	-92.91	0.00	0.00	Cliffhouse Ss.
2,100.00	13.50	201.67	2,068.22	-274.23	-108.94	-97.52	0.00	0.00	
2,200.00	13.50	201.67	2,165.46	-295.92	-117.56	-105.24	0.00	0.00	
2,300.00	13.50	201.67	2,262.69	-317.61	-126.18	-112.95	0.00	0.00	
2,400.00	13.50	201.67	2,359.93	-339.31	-134.79	-120.67	0.00	0.00	
2,500.00	13.50	201.67	2,457.17	-361.00	-143.41	-128.38	0.00	0.00	
2,600.00	13.50	201.67	2,554.41	-382.69	-152.03	-136.10	0.00	0.00	
2,700.00	13.50	201.67	2,651.64	-404.39	-160.65	-143.81	0.00	0.00	
2,776.47	13.50	201.67	2,726.00	-420.97	-167.24	-149.71	0.00	0.00	Menefee Fn.
2,800.00	13.50	201.67	2,748.88	-426.08	-169.26	-151.53	0.00	0.00	
2,900.00	13.50	201.67	2,846.12	-447.77	-177.88	-159.24	0.00	0.00	
3,000.00	13.50	201.67	2,943.36	-469.47	-186.50	-166.96	0.00	0.00	
3,100.00	13.50	201.67	3,040.59	-491.16	-195.12	-174.67	0.00	0.00	
3,200.00	13.50	201.67	3,137.83	-512.85	-203.74	-182.39	0.00	0.00	
3,300.00	13.50	201.67	3,235.07	-534.55	-212.35	-190.10	0.00	0.00	
3,400.00	13.50	201.67	3,332.31	-556.24	-220.97	-197.82	0.00	0.00	
3,500.00	13.50	201.67	3,429.54	-577.93	-229.59	-205.53	0.00	0.00	
3,600.00	13.50	201.67	3,526.78	-599.63	-238.21	-213.25	0.00	0.00	
3,700.00	13.50	201.67	3,624.02	-621.32	-246.83	-220.96	0.00	0.00	
3,777.11	13.50	201.67	3,699.00	-638.05	-253.47	-226.91	0.00	0.00	Point Lookout Ss.
3,800.00	13.50	201.67	3,721.26	-643.01	-255.44	-228.68	0.00	0.00	
3,900.00	13.50	201.67	3,818.49	-664.71	-264.06	-236.39	0.00	0.00	
3,976.62	13.50	201.67	3,893.00	-681.33	-270.67	-242.30	0.00	0.00	Mancos Shale
4,000.00	13.50	201.67	3,915.73	-686.40	-272.68	-244.11	0.00	0.00	
4,100.00	13.50	201.67	4,012.97	-708.09	-281.30	-251.82	0.00	0.00	

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well NAGEEZI UNIT 405H
Company:	EnCana Oil & Gas (USA) Inc	**TVD Reference:**	16' KB @ 6784.00usft
Project:	San Juan County, NM	**MD Reference:**	16' KB @ 6784.00usft
Site:	S3-T23N-R9W	**North Reference:**	True
Well:	NAGEEZI UNIT 405H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft	Build Rate (°/100u	Comments / Formations
4,200.00	13.50	201.67	4,110.21	-729.79	-289.92	-259.54	0.00	0.00	
4,300.00	13.50	201.67	4,207.44	-751.48	-298.53	-267.25	0.00	0.00	
4,305.04	13.50	201.67	4,212.34	-752.57	-298.97	-267.64	0.00	0.00	START BUILD/TURN
4,400.00	12.54	240.08	4,305.03	-768.04	-312.02	-267.93	9.00	-1.01	
4,438.98	13.73	254.65	4,343.00	-771.38	-320.14	-263.98	9.00	3.06	Mancos Silt
4,500.00	16.92	271.71	4,401.88	-773.03	-336.01	-253.08	9.00	5.23	
4,600.00	23.98	287.98	4,495.59	-766.31	-369.95	-223.05	9.00	7.06	
4,700.00	31.98	296.84	4,583.87	-748.04	-412.99	-178.57	9.00	8.01	
4,742.25	35.50	299.46	4,619.00	-736.95	-433.66	-155.69	9.00	8.32	Gallup Fn.
4,800.00	40.37	302.38	4,664.54	-718.68	-464.08	-120.74	9.00	8.45	
4,900.00	48.95	306.27	4,735.61	-678.94	-521.95	-50.99	9.00	8.58	
5,000.00	57.63	309.25	4,795.34	-629.81	-585.19	28.96	9.00	8.68	
5,100.00	66.37	311.71	4,842.25	-572.50	-652.22	117.16	9.00	8.74	
5,200.00	75.14	313.85	4,875.19	-508.41	-721.41	211.42	9.00	8.77	
5,300.00	83.92	315.83	4,893.34	-439.13	-791.05	309.43	9.00	8.79	
5,369.08	90.00	317.15	4,897.00	-389.13	-838.52	378.05	9.00	8.80	LP @ 4897' TVD; 90° - Horizontal Target
5,400.00	90.00	317.15	4,897.00	-366.46	-859.56	408.80	0.00	0.00	
5,500.00	90.00	317.15	4,897.00	-293.15	-927.57	508.22	0.00	0.00	
5,600.00	90.00	317.15	4,897.00	-219.84	-995.58	607.64	0.00	0.00	
5,700.00	90.00	317.15	4,897.00	-146.53	-1,063.59	707.05	0.00	0.00	
5,800.00	90.00	317.15	4,897.00	-73.21	-1,131.60	806.47	0.00	0.00	
5,900.00	90.00	317.15	4,897.00	0.10	-1,199.61	905.89	0.00	0.00	
6,000.00	90.00	317.15	4,897.00	73.41	-1,267.62	1,005.31	0.00	0.00	
6,100.00	90.00	317.15	4,897.00	146.72	-1,335.63	1,104.73	0.00	0.00	
6,200.00	90.00	317.15	4,897.00	220.03	-1,403.65	1,204.15	0.00	0.00	
6,300.00	90.00	317.15	4,897.00	293.34	-1,471.66	1,303.57	0.00	0.00	
6,400.00	90.00	317.15	4,897.00	366.65	-1,539.67	1,402.98	0.00	0.00	
6,500.00	90.00	317.15	4,897.00	439.96	-1,607.68	1,502.40	0.00	0.00	
6,600.00	90.00	317.15	4,897.00	513.27	-1,675.69	1,601.82	0.00	0.00	
6,700.00	90.00	317.15	4,897.00	586.58	-1,743.70	1,701.24	0.00	0.00	
6,800.00	90.00	317.15	4,897.00	659.89	-1,811.71	1,800.66	0.00	0.00	
6,900.00	90.00	317.15	4,897.00	733.20	-1,879.73	1,900.08	0.00	0.00	
7,000.00	90.00	317.15	4,897.00	806.51	-1,947.74	1,999.50	0.00	0.00	
7,100.00	90.00	317.15	4,897.00	879.82	-2,015.75	2,098.91	0.00	0.00	
7,200.00	90.00	317.15	4,897.00	953.13	-2,083.76	2,198.33	0.00	0.00	
7,300.00	90.00	317.15	4,897.00	1,026.45	-2,151.77	2,297.75	0.00	0.00	
7,400.00	90.00	317.15	4,897.00	1,099.76	-2,219.78	2,397.17	0.00	0.00	
7,500.00	90.00	317.15	4,897.00	1,173.07	-2,287.79	2,496.59	0.00	0.00	
7,600.00	90.00	317.15	4,897.00	1,246.38	-2,355.81	2,596.01	0.00	0.00	
7,700.00	90.00	317.15	4,897.00	1,319.69	-2,423.82	2,695.43	0.00	0.00	
7,800.00	90.00	317.15	4,897.00	1,393.00	-2,491.83	2,794.84	0.00	0.00	
7,900.00	90.00	317.15	4,897.00	1,466.31	-2,559.84	2,894.26	0.00	0.00	
8,000.00	90.00	317.15	4,897.00	1,539.62	-2,627.85	2,993.68	0.00	0.00	
8,100.00	90.00	317.15	4,897.00	1,612.93	-2,695.86	3,093.10	0.00	0.00	
8,200.00	90.00	317.15	4,897.00	1,686.24	-2,763.87	3,192.52	0.00	0.00	
8,300.00	90.00	317.15	4,897.00	1,759.55	-2,831.88	3,291.94	0.00	0.00	
8,400.00	90.00	317.15	4,897.00	1,832.86	-2,899.90	3,391.35	0.00	0.00	
8,500.00	90.00	317.15	4,897.00	1,906.17	-2,967.91	3,490.77	0.00	0.00	
8,600.00	90.00	317.15	4,897.00	1,979.48	-3,035.92	3,590.19	0.00	0.00	
8,700.00	90.00	317.15	4,897.00	2,052.79	-3,103.93	3,689.61	0.00	0.00	
8,800.00	90.00	317.15	4,897.00	2,126.11	-3,171.94	3,789.03	0.00	0.00	
8,900.00	90.00	317.15	4,897.00	2,199.42	-3,239.95	3,888.45	0.00	0.00	

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well NAGEEZI UNIT 405H
Company:	EnCana Oil & Gas (USA) Inc	**TVD Reference:**	16' KB @ 6784.00usft
Project:	San Juan County, NM	**MD Reference:**	16' KB @ 6784.00usft
Site:	S3-T23N-R9W	**North Reference:**	True
Well:	NAGEEZI UNIT 405H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft	Build Rate (°/100u	Comments / Formations
9,000.00	90.00	317.15	4,897.00	2,272.73	-3,307.96	3,987.87	0.00	0.00	
9,100.00	90.00	317.15	4,897.00	2,346.04	-3,375.98	4,087.28	0.00	0.00	
9,200.00	90.00	317.15	4,897.00	2,419.35	-3,443.99	4,186.70	0.00	0.00	
9,300.00	90.00	317.15	4,897.00	2,492.66	-3,512.00	4,286.12	0.00	0.00	
9,400.00	90.00	317.15	4,897.00	2,565.97	-3,580.01	4,385.54	0.00	0.00	
9,500.00	90.00	317.15	4,897.00	2,639.28	-3,648.02	4,484.96	0.00	0.00	
9,600.00	90.00	317.15	4,897.00	2,712.59	-3,716.03	4,584.38	0.00	0.00	
9,700.00	90.00	317.15	4,897.00	2,785.90	-3,784.04	4,683.80	0.00	0.00	
9,800.00	90.00	317.15	4,897.00	2,859.21	-3,852.06	4,783.21	0.00	0.00	
9,900.00	90.00	317.15	4,897.00	2,932.52	-3,920.07	4,882.63	0.00	0.00	
10,000.00	90.00	317.15	4,897.00	3,005.83	-3,988.08	4,982.05	0.00	0.00	
10,100.00	90.00	317.15	4,897.00	3,079.14	-4,056.09	5,081.47	0.00	0.00	
10,200.00	90.00	317.15	4,897.00	3,152.45	-4,124.10	5,180.89	0.00	0.00	
10,300.00	90.00	317.15	4,897.00	3,225.77	-4,192.11	5,280.31	0.00	0.00	
10,400.00	90.00	317.15	4,897.00	3,299.08	-4,260.12	5,379.73	0.00	0.00	
10,500.00	90.00	317.15	4,897.00	3,372.39	-4,328.14	5,479.14	0.00	0.00	
10,600.00	90.00	317.15	4,897.00	3,445.70	-4,396.15	5,578.56	0.00	0.00	
10,700.00	90.00	317.15	4,897.00	3,519.01	-4,464.16	5,677.98	0.00	0.00	
10,800.00	90.00	317.15	4,897.00	3,592.32	-4,532.17	5,777.40	0.00	0.00	
10,900.00	90.00	317.15	4,897.00	3,665.63	-4,600.18	5,876.82	0.00	0.00	
11,000.00	90.00	317.15	4,897.00	3,738.94	-4,668.19	5,976.24	0.00	0.00	
11,100.00	90.00	317.15	4,897.00	3,812.25	-4,736.20	6,075.66	0.00	0.00	
11,200.00	90.00	317.15	4,897.00	3,885.56	-4,804.21	6,175.07	0.00	0.00	
11,300.00	90.00	317.15	4,897.00	3,958.87	-4,872.23	6,274.49	0.00	0.00	
11,400.00	90.00	317.15	4,897.00	4,032.18	-4,940.24	6,373.91	0.00	0.00	
11,500.00	90.00	317.15	4,897.00	4,105.49	-5,008.25	6,473.33	0.00	0.00	
11,600.00	90.00	317.15	4,897.00	4,178.80	-5,076.26	6,572.75	0.00	0.00	
11,700.00	90.00	317.15	4,897.00	4,252.11	-5,144.27	6,672.17	0.00	0.00	
11,800.00	90.00	317.15	4,897.00	4,325.42	-5,212.28	6,771.59	0.00	0.00	
11,900.00	90.00	317.15	4,897.00	4,398.74	-5,280.29	6,871.00	0.00	0.00	
12,000.00	90.00	317.15	4,897.00	4,472.05	-5,348.31	6,970.42	0.00	0.00	
12,100.00	90.00	317.15	4,897.00	4,545.36	-5,416.32	7,069.84	0.00	0.00	
12,200.00	90.00	317.15	4,897.00	4,618.67	-5,484.33	7,169.26	0.00	0.00	
12,300.00	90.00	317.15	4,897.00	4,691.98	-5,552.34	7,268.68	0.00	0.00	
12,400.00	90.00	317.15	4,897.00	4,765.29	-5,620.35	7,368.10	0.00	0.00	
12,500.00	90.00	317.15	4,897.00	4,838.60	-5,688.36	7,467.52	0.00	0.00	
12,600.00	90.00	317.15	4,897.00	4,911.91	-5,756.37	7,566.93	0.00	0.00	
12,700.00	90.00	317.15	4,897.00	4,985.22	-5,824.39	7,666.35	0.00	0.00	
12,800.00	90.00	317.15	4,897.00	5,058.53	-5,892.40	7,765.77	0.00	0.00	
12,900.00	90.00	317.15	4,897.00	5,131.84	-5,960.41	7,865.19	0.00	0.00	
13,000.00	90.00	317.15	4,897.00	5,205.15	-6,028.42	7,964.61	0.00	0.00	
13,100.00	90.00	317.15	4,897.00	5,278.46	-6,096.43	8,064.03	0.00	0.00	
13,200.00	90.00	317.15	4,897.00	5,351.77	-6,164.44	8,163.44	0.00	0.00	
13,203.03	90.00	317.15	4,897.00	5,354.00	-6,166.50	8,166.46	0.00	0.00	TD at 13203.03

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well NAGEEZI UNIT 405H
Company:	EnCana Oil & Gas (USA) Inc	**TVD Reference:**	16' KB @ 6784.00usft
Project:	San Juan County, NM	**MD Reference:**	16' KB @ 6784.00usft
Site:	S3-T23N-R9W	**North Reference:**	True
Well:	NAGEEZI UNIT 405H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #1		

Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
NAGEEZI UNIT 405H PI - plan hits target center - Point	0.00	0.00	4,897.00	5,354.00	-6,166.50	1,917,176.93	2,732,803.00	36.268891	-107.800389
NAGEEZI UNIT 405H P(- plan hits target center - Point	0.00	0.00	4,897.00	-389.13	-838.52	1,911,436.77	2,738,134.17	36.253116	-107.782314

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
591.02	591.00	Ojo Alamo Ss.			
720.22	720.00	Kirtland Shale			
1,162.90	1,157.00	Fruitland Coal			
1,341.84	1,331.00	Pictured Cliffs Ss.			
1,473.47	1,459.00	Lewis Shale			
2,040.13	2,010.00	Cliffhouse Ss.			
2,776.47	2,726.00	Menefee Fn.			
3,777.11	3,699.00	Point Lookout Ss.			
3,976.62	3,893.00	Mancos Shale			
4,438.98	4,343.00	Mancos Silt			
4,742.25	4,619.00	Gallup Fn.			
5,369.08	4,897.00	Horizontal Target			

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
500.00	500.00	0.00	0.00	KOP @ 500'
1,174.94	1,168.71	-73.55	-29.22	EOB; INC=13.5°
4,305.04	4,212.34	-752.57	-298.97	START BUILD/TURN
5,369.08	4,897.00	-389.13	-838.52	LP @ 4897' TVD; 90°
13,203.03	4,897.00	5,354.00	-6,166.50	TD at 13203.03

EnCana Oil & Gas (USA) Inc

San Juan County, NM
S3-T23N-R9W
NAGEEZI UNIT 405H
OH
PLAN #1

Anticollision Report

01 December, 2016

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well NAGEEZI UNIT 405H
Project:	San Juan County, NM	**TVD Reference:**	16' KB @ 6784.00usft
Reference Site:	S3-T23N-R9W	**MD Reference:**	16' KB @ 6784.00usft
Site Error:	0.00usft	**North Reference:**	True
Reference Well:	NAGEEZI UNIT 405H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #1	**Offset TVD Reference:**	Offset Datum

Reference	PLAN #1		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	**Error Model:**	Systematic Ellipse
Depth Range:	Unlimited	**Scan Method:**	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 1,500.00usft	**Error Surface:**	Elliptical Conic
Warning Levels Evaluated at:	2.00 **Sigma**		

Survey Tool Program **Date** 12/1/2016

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	13,203.03	PLAN #1 (OH)	MWD+HDGM	OWSG MWD + HDGM

Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
S3-T23N-R9W						
NAGEEZI UNIT 406H - OH - PLAN #2	500.00	500.00	19.90	16.73	6.279	CC, ES
NAGEEZI UNIT 406H - OH - PLAN #2	5,100.00	5,124.21	63.21	24.25	1.622	SF
South Huerfano #1 - DUGAN WELL - NO SURVEYS	12,028.08	4,994.08	329.72	136.92	1.710	CC, ES, SF

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well NAGEEZI UNIT 405H
Project:	San Juan County, NM	**TVD Reference:**	16' KB @ 6784.00usft
Reference Site:	S3-T23N-R9W	**MD Reference:**	16' KB @ 6784.00usft
Site Error:	0.00usft	**North Reference:**	True
Reference Well:	NAGEEZI UNIT 405H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #1	**Offset TVD Reference:**	Offset Datum

Offset Design S3-T23N-R9W - NAGEEZI UNIT 406H - OH - PLAN #2 — **Offset Site Error:** 0.00 usft

Survey Program: 0-MWD+HDGM — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	-42.97	14.56	-13.56	19.90				
100.00	100.00	100.00	100.00	0.15	0.15	-42.97	14.56	-13.56	19.90	19.60	0.30	66.083	
200.00	200.00	200.00	200.00	0.51	0.51	-42.97	14.56	-13.56	19.90	18.88	1.02	19.546	
300.00	300.00	300.00	300.00	0.87	0.87	-42.97	14.56	-13.56	19.90	18.16	1.74	11.469	
400.00	400.00	400.00	400.00	1.23	1.23	-42.97	14.56	-13.56	19.90	17.45	2.45	8.115	
500.00	500.00	500.00	500.00	1.58	1.58	-42.97	14.56	-13.56	19.90	16.73	3.17	6.279	CC, ES
600.00	599.98	599.60	599.58	1.93	1.93	115.62	14.24	-15.26	21.57	17.71	3.87	5.578	
700.00	699.84	699.04	698.88	2.26	2.28	116.16	13.27	-20.35	26.59	22.03	4.56	5.826	
800.00	799.45	798.14	797.61	2.61	2.63	116.70	11.66	-28.79	34.94	29.66	5.28	6.615	
900.00	898.70	896.75	895.49	2.97	2.99	117.08	9.42	-40.51	46.60	40.58	6.02	7.744	
1,000.00	997.47	994.71	992.26	3.34	3.37	117.30	6.58	-55.42	61.54	54.77	6.77	9.084	
1,100.00	1,095.62	1,091.88	1,087.67	3.74	3.76	117.38	3.15	-73.41	79.71	72.16	7.55	10.552	
1,174.94	1,168.71	1,164.92	1,159.07	4.05	4.07	117.64	0.27	-88.55	95.19	87.05	8.15	11.686	
1,200.00	1,193.08	1,189.40	1,183.00	4.16	4.17	117.95	-0.71	-93.65	100.53	92.19	8.35	12.047	
1,300.00	1,290.32	1,287.08	1,278.46	4.59	4.59	118.89	-4.58	-113.98	121.86	112.70	9.15	13.315	
1,400.00	1,387.56	1,384.77	1,373.93	5.04	5.03	119.55	-8.46	-134.32	143.20	133.22	9.98	14.352	
1,500.00	1,484.79	1,482.45	1,469.39	5.50	5.46	120.04	-12.34	-154.65	164.56	153.74	10.82	15.211	
1,600.00	1,582.03	1,580.13	1,564.86	5.96	5.91	120.41	-16.21	-174.99	185.93	174.26	11.67	15.932	
1,700.00	1,679.27	1,677.82	1,660.32	6.42	6.35	120.71	-20.09	-195.32	207.31	194.77	12.53	16.543	
1,800.00	1,776.51	1,775.50	1,755.79	6.89	6.80	120.96	-23.97	-215.66	228.68	215.28	13.40	17.067	
1,900.00	1,873.74	1,873.18	1,851.25	7.36	7.26	121.16	-27.84	-236.00	250.07	235.79	14.27	17.520	
2,000.00	1,970.98	1,970.87	1,946.71	7.83	7.71	121.33	-31.72	-256.33	271.45	256.30	15.15	17.916	
2,100.00	2,068.22	2,068.55	2,042.18	8.31	8.17	121.47	-35.60	-276.67	292.84	276.80	16.03	18.264	
2,200.00	2,165.46	2,166.24	2,137.64	8.79	8.62	121.60	-39.47	-297.00	314.23	297.31	16.92	18.573	
2,300.00	2,262.69	2,263.92	2,233.11	9.27	9.08	121.71	-43.35	-317.34	335.62	317.81	17.81	18.847	
2,400.00	2,359.93	2,361.60	2,328.57	9.75	9.54	121.80	-47.23	-337.68	357.01	338.31	18.70	19.094	
2,500.00	2,457.17	2,459.29	2,424.04	10.23	10.00	121.89	-51.11	-358.01	378.40	358.81	19.59	19.316	
2,600.00	2,554.41	2,556.97	2,519.50	10.71	10.46	121.97	-54.98	-378.35	399.79	379.31	20.48	19.517	
2,700.00	2,651.64	2,654.66	2,614.97	11.19	10.93	122.03	-58.86	-398.68	421.18	399.80	21.38	19.699	
2,800.00	2,748.88	2,752.34	2,710.43	11.68	11.39	122.10	-62.74	-419.02	442.58	420.30	22.28	19.866	
2,900.00	2,846.12	2,850.02	2,805.90	12.16	11.85	122.15	-66.61	-439.36	463.97	440.79	23.18	20.019	
3,000.00	2,943.36	2,947.71	2,901.36	12.65	12.32	122.20	-70.49	-459.69	485.36	461.29	24.08	20.160	
3,100.00	3,040.59	3,045.39	2,996.83	13.13	12.78	122.25	-74.37	-480.03	506.76	481.78	24.98	20.290	
3,200.00	3,137.83	3,143.07	3,092.29	13.62	13.24	122.29	-78.24	-500.36	528.15	502.28	25.88	20.410	
3,300.00	3,235.07	3,240.76	3,187.76	14.11	13.71	122.33	-82.12	-520.70	549.55	522.77	26.78	20.521	
3,400.00	3,332.31	3,338.44	3,283.22	14.59	14.17	122.37	-86.00	-541.03	570.94	543.26	27.68	20.625	
3,500.00	3,429.54	3,436.13	3,378.69	15.08	14.64	122.40	-89.87	-561.37	592.34	563.75	28.59	20.722	
3,600.00	3,526.78	3,533.81	3,474.15	15.57	15.10	122.43	-93.75	-581.71	613.73	584.25	29.49	20.812	
3,700.00	3,624.02	3,631.49	3,569.62	16.05	15.57	122.46	-97.63	-602.04	635.13	604.74	30.39	20.897	
3,800.00	3,721.26	3,729.18	3,665.08	16.54	16.04	122.49	-101.50	-622.38	656.53	625.23	31.30	20.976	
3,900.00	3,818.49	3,826.86	3,760.55	17.03	16.50	122.52	-105.38	-642.71	677.92	645.72	32.20	21.051	
4,000.00	3,915.73	3,924.54	3,856.01	17.52	16.97	122.54	-109.26	-663.05	699.32	666.21	33.11	21.122	
4,100.00	4,012.97	4,022.23	3,951.48	18.01	17.43	122.57	-113.14	-683.39	720.71	686.70	34.02	21.188	
4,200.00	4,110.21	4,119.91	4,046.94	18.50	17.90	122.59	-117.01	-703.72	742.11	707.19	34.92	21.251	
4,305.04	4,212.34	5,485.25	4,892.50	19.01	23.20	127.20	-831.53	-401.87	692.42	681.76	10.66	64.940	
4,350.00	4,256.18	5,489.08	4,892.47	19.22	23.26	127.40	-834.65	-399.65	647.63	636.97	10.67	60.722	
4,400.00	4,305.03	5,489.65	4,892.47	19.44	23.27	-145.19	-835.12	-399.32	597.67	587.04	10.63	56.226	
4,450.00	4,353.70	5,486.33	4,892.49	19.65	23.22	-136.67	-832.41	-401.25	547.83	537.28	10.55	51.942	
4,500.00	4,401.88	5,479.14	4,892.54	19.83	23.12	-144.52	-826.55	-405.41	498.43	488.01	10.42	47.832	
4,550.00	4,449.27	5,468.12	4,892.62	20.00	22.96	-151.82	-817.57	-411.79	449.80	439.54	10.26	43.848	
4,600.00	4,495.59	5,453.35	4,892.72	20.14	22.75	-157.66	-805.53	-420.35	402.24	392.16	10.07	39.927	
4,650.00	4,540.55	5,434.90	4,892.85	20.28	22.49	-162.43	-790.49	-431.04	356.07	346.18	9.90	35.980	

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

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well NAGEEZI UNIT 405H
Project:	San Juan County, NM	**TVD Reference:**	16' KB @ 6784.00usft
Reference Site:	S3-T23N-R9W	**MD Reference:**	16' KB @ 6784.00usft
Site Error:	0.00usft	**North Reference:**	True
Reference Well:	NAGEEZI UNIT 405H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #1	**Offset TVD Reference:**	Offset Datum

Offset Design S3-T23N-R9W - NAGEEZI UNIT 406H - OH - PLAN #2 — **Offset Site Error:** 0.00 usft

Survey Program: 0-MWD+HDGM — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
4,700.00	4,583.87	5,412.91	4,893.01	20.39	22.19	-166.57	-772.57	-443.78	311.63	301.86	9.77	31.882	
4,750.00	4,625.26	5,367.49	4,893.18	20.49	21.85	-170.45	-751.85	-458.50	269.26	259.46	9.80	27.474	
4,800.00	4,664.54	5,358.82	4,893.38	20.58	21.48	-174.42	-728.48	-475.11	229.32	219.19	10.13	22.643	
4,850.00	4,701.39	5,316.82	4,892.76	20.66	20.97	179.60	-694.14	-499.29	191.59	180.21	11.38	16.843	
4,900.00	4,735.61	5,274.07	4,889.37	20.72	20.55	171.93	-659.00	-523.37	155.06	141.14	13.92	11.143	
4,950.00	4,766.99	5,233.93	4,883.65	20.78	20.54	162.03	-625.95	-545.41	120.58	102.56	18.02	6.693	
5,000.00	4,795.34	5,195.83	4,875.96	20.83	20.54	148.39	-594.66	-565.72	90.08	65.57	24.51	3.676	
5,050.00	4,820.48	5,159.36	4,866.56	20.88	20.53	129.48	-564.88	-584.55	68.19	34.62	33.58	2.031	
5,086.95	4,836.90	5,133.27	4,858.63	20.93	20.52	112.52	-543.74	-597.61	62.49	23.98	38.51	1.623	
5,100.00	4,842.25	5,124.21	4,855.64	20.95	20.52	106.33	-536.43	-602.07	63.21	24.25	38.96	1.622 SF	
5,150.00	4,860.52	5,090.13	4,843.35	21.05	20.51	84.38	-509.17	-618.41	77.32	41.52	35.80	2.160	
5,200.00	4,875.19	5,056.93	4,829.79	21.24	20.50	67.88	-483.00	-633.68	102.00	70.42	31.58	3.230	
5,250.00	4,886.15	5,024.47	4,815.06	21.58	20.48	56.61	-457.84	-647.94	130.62	101.40	29.22	4.471	
5,300.00	4,893.34	4,992.62	4,799.23	22.07	20.46	48.94	-433.64	-661.27	160.41	132.15	28.26	5.676	
5,350.00	4,896.72	4,961.30	4,782.37	22.67	20.43	43.56	-410.35	-673.69	190.21	162.08	28.13	6.762	
5,369.08	4,897.00	4,950.00	4,775.98	22.92	20.42	41.97	-402.09	-678.00	201.45	173.19	28.27	7.127	
5,400.00	4,897.00	4,930.78	4,764.74	23.34	20.40	40.53	-388.22	-685.11	219.99	191.56	28.43	7.738	
5,500.00	4,897.00	4,875.97	4,730.25	24.86	20.34	36.93	-349.99	-703.86	284.75	255.29	29.46	9.664	
5,600.00	4,897.00	4,828.92	4,697.90	26.54	20.28	34.35	-318.92	-718.05	355.64	325.00	30.64	11.608	
5,700.00	4,897.00	4,788.51	4,668.25	28.36	20.22	32.44	-293.67	-728.77	431.37	399.63	31.74	13.589	
5,800.00	4,897.00	4,750.00	4,638.48	30.28	20.16	30.83	-270.92	-737.69	510.96	478.40	32.56	15.693	
5,900.00	4,897.00	4,723.56	4,617.26	32.28	20.11	29.84	-256.10	-743.07	593.57	560.02	33.55	17.693	
6,000.00	4,897.00	4,700.00	4,597.84	34.35	20.06	29.01	-243.46	-747.33	678.68	644.35	34.33	19.770	
6,100.00	4,897.00	4,674.36	4,576.20	36.49	20.00	28.18	-230.34	-751.39	765.78	730.94	34.84	21.979	
6,200.00	4,897.00	4,650.00	4,555.17	38.67	19.95	27.44	-218.49	-754.70	854.56	819.30	35.25	24.241	
6,300.00	4,897.00	4,650.00	4,555.17	40.89	19.95	27.44	-218.49	-754.70	944.90	908.88	36.02	26.234	
6,400.00	4,897.00	4,620.28	4,528.95	43.14	19.88	26.60	-204.89	-758.00	1,035.91	999.79	36.13	28.675	
6,500.00	4,897.00	4,600.00	4,510.74	45.42	19.83	26.07	-196.16	-759.78	1,128.18	1,091.83	36.35	31.037	
6,600.00	4,897.00	4,600.00	4,510.74	47.73	19.83	26.07	-196.16	-759.78	1,221.22	1,184.43	36.80	33.190	
6,700.00	4,897.00	4,581.56	4,493.96	50.06	19.78	25.61	-188.62	-761.06	1,314.90	1,277.96	36.94	35.596	
6,800.00	4,897.00	4,571.03	4,484.29	52.41	19.75	25.35	-184.49	-761.66	1,409.23	1,372.09	37.15	37.938	

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well NAGEEZI UNIT 405H
Project:	San Juan County, NM	**TVD Reference:**	16' KB @ 6784.00usft
Reference Site:	S3-T23N-R9W	**MD Reference:**	16' KB @ 6784.00usft
Site Error:	0.00usft	**North Reference:**	True
Reference Well:	NAGEEZI UNIT 405H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #1	**Offset TVD Reference:**	Offset Datum

Offset Design S3-T23N-R9W - South Huerfano #1 - DUGAN WELL - NO SURVEYS — **Offset Site Error:** 0.00 usft

Survey Program: 600-ISCWSA MWD — **Offset Well Error:** 0.00 usft

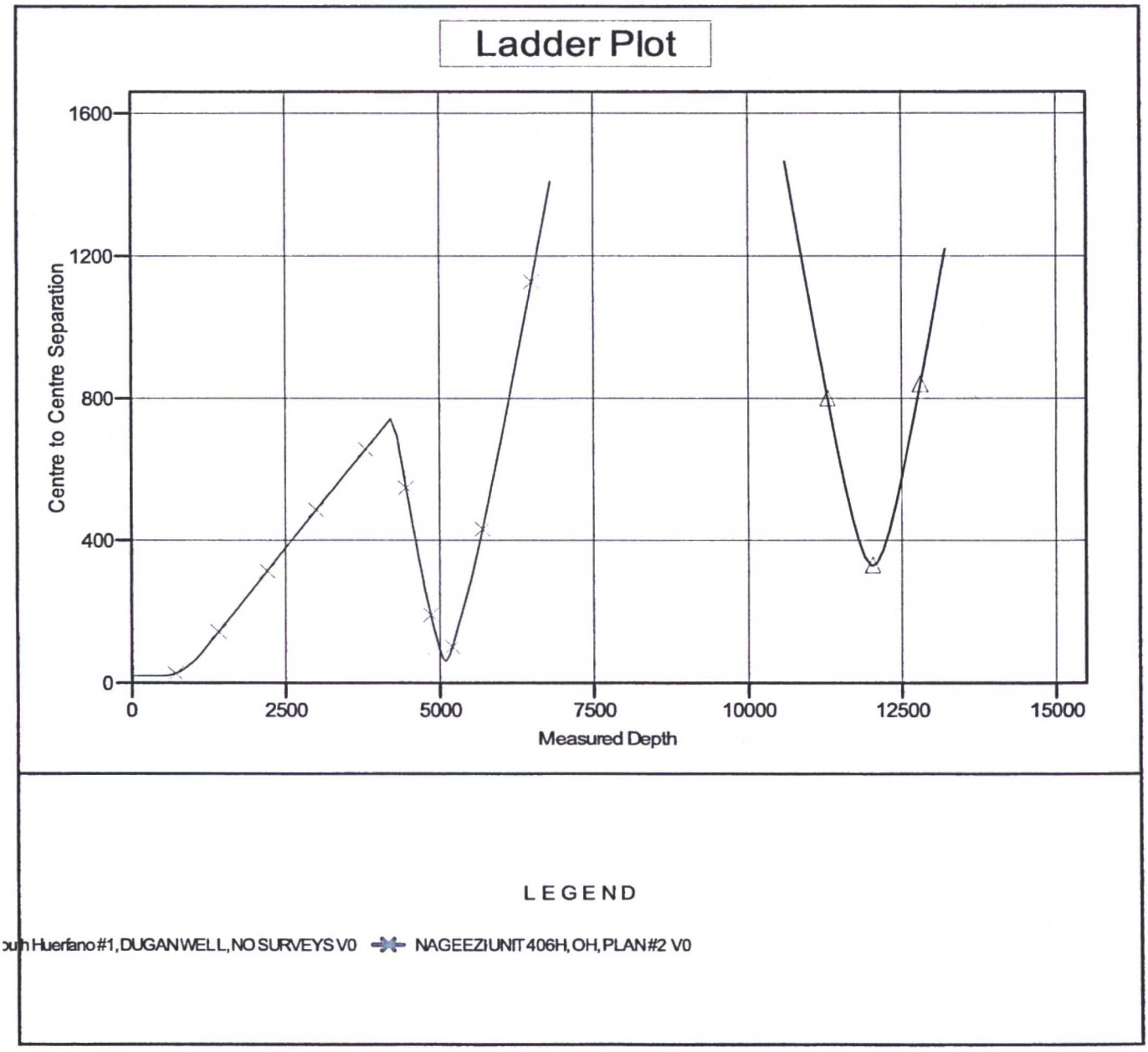
Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor	Warning
10,600.00	4,897.00	4,995.94	4,993.36	146.38	11.00	-88.32	4,268.47	-5,609.02	1,465.64	1,421.08	44.57	32.886	
10,700.00	4,897.00	4,995.81	4,993.23	148.89	11.00	-88.30	4,268.47	-5,609.02	1,368.39	1,321.48	46.92	29.167	
10,800.00	4,897.00	4,995.68	4,993.10	151.41	11.00	-88.28	4,268.48	-5,609.01	1,271.57	1,221.86	49.71	25.579	
10,900.00	4,897.00	4,995.55	4,992.97	153.92	11.00	-88.26	4,268.48	-5,609.01	1,175.27	1,122.21	53.06	22.150	
11,000.00	4,897.00	4,995.42	4,992.84	156.44	11.00	-88.23	4,268.48	-5,609.01	1,079.65	1,022.56	57.10	18.909	
11,100.00	4,897.00	4,995.29	4,992.71	158.96	11.00	-88.21	4,268.49	-5,609.00	984.91	922.90	62.00	15.884	
11,200.00	4,897.00	4,995.16	4,992.58	161.48	11.00	-88.19	4,268.49	-5,609.00	891.30	823.28	68.02	13.103	
11,300.00	4,897.00	4,995.03	4,992.45	164.00	11.00	-88.17	4,268.49	-5,609.00	799.26	723.77	75.48	10.589	
11,400.00	4,897.00	4,994.90	4,992.32	166.52	11.00	-88.14	4,268.50	-5,609.00	709.36	624.54	84.82	8.363	
11,500.00	4,897.00	4,994.77	4,992.19	169.04	11.00	-88.12	4,268.50	-5,608.99	622.56	525.93	96.63	6.443	
11,600.00	4,897.00	4,994.64	4,992.06	171.56	11.00	-88.10	4,268.50	-5,608.99	540.34	428.74	111.60	4.842	
11,700.00	4,897.00	4,994.51	4,991.93	174.08	11.00	-88.08	4,268.51	-5,608.99	465.13	334.80	130.34	3.569	
11,800.00	4,897.00	4,994.38	4,991.80	176.60	11.00	-88.05	4,268.51	-5,608.98	400.92	248.36	152.56	2.628	
11,900.00	4,897.00	4,994.25	4,991.67	179.12	11.00	-88.03	4,268.51	-5,608.98	353.72	178.49	175.23	2.019	
12,000.00	4,897.00	4,994.12	4,991.54	181.64	11.00	-88.01	4,268.51	-5,608.98	330.92	140.03	190.88	1.734	
12,028.08	4,897.00	4,994.08	4,991.50	182.35	11.00	-88.00	4,268.52	-5,608.97	329.72	136.92	192.80	1.710	CC, ES, SF
12,100.00	4,897.00	4,993.99	4,991.41	184.16	11.00	-87.99	4,268.52	-5,608.97	337.48	145.57	191.91	1.759	
12,200.00	4,897.00	4,993.86	4,991.28	186.69	11.00	-87.96	4,268.52	-5,608.97	371.85	192.33	179.52	2.071	
12,300.00	4,897.00	4,993.73	4,991.15	189.21	11.00	-87.94	4,268.52	-5,608.97	427.39	265.80	161.59	2.645	
12,400.00	4,897.00	4,993.60	4,991.02	191.73	11.00	-87.92	4,268.53	-5,608.96	497.04	353.00	144.04	3.451	
12,500.00	4,897.00	4,993.47	4,990.89	194.26	10.99	-87.89	4,268.53	-5,608.96	575.70	446.67	129.03	4.462	
12,600.00	4,897.00	4,993.34	4,990.76	196.78	10.99	-87.87	4,268.53	-5,608.96	660.16	543.37	116.79	5.653	
12,700.00	4,897.00	4,993.21	4,990.63	199.31	10.99	-87.85	4,268.54	-5,608.95	748.46	641.56	106.91	7.001	
12,800.00	4,897.00	4,993.08	4,990.50	201.83	10.99	-87.83	4,268.54	-5,608.95	839.40	740.50	98.90	8.488	
12,900.00	4,897.00	4,992.95	4,990.37	204.36	10.99	-87.80	4,268.54	-5,608.95	932.18	839.84	92.34	10.095	
13,000.00	4,897.00	4,992.82	4,990.24	206.88	10.99	-87.78	4,268.55	-5,608.94	1,026.33	939.41	86.92	11.807	
13,100.00	4,897.00	4,992.69	4,990.11	209.41	10.99	-87.76	4,268.55	-5,608.94	1,121.49	1,039.10	82.39	13.612	
13,203.03	4,897.00	4,992.55	4,989.97	212.01	10.99	-87.74	4,268.55	-5,608.94	1,220.34	1,141.89	78.45	15.555	

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well NAGEEZI UNIT 405H
Project:	San Juan County, NM	**TVD Reference:**	16' KB @ 6784.00usft
Reference Site:	S3-T23N-R9W	**MD Reference:**	16' KB @ 6784.00usft
Site Error:	0.00usft	**North Reference:**	True
Reference Well:	NAGEEZI UNIT 405H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	PLAN #1	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to 16' KB @ 6784.00usft	Coordinates are relative to: NAGEEZI UNIT 405H
Offset Depths are relative to Offset Datum	Coordinate System is US State Plane 1983, New Mexico Western Zone
Central Meridian is -107.833333 °	Grid Convergence at Surface is: 0.03°



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 similar absorbent material, and disposed of at the Envirotech, Inc. and/or Industrial Ecosystem, Inc. waste disposal facilities.

2. The closed-loop system storage tanks will be adequately sized to ensure confinement of all fluids and will provide sufficient freeboard to prevent uncontrolled releases.

3. A 20-mil liner will be installed under tanks, pumps, ancillary facilities, and truck loading/unloading areas associated with the closed-loop system.

B. Drilling Fluids

1. A closed-loop system will be used. Drilling fluids will be stored onsite in above-ground storage tanks. Upon termination of drilling operations, the drilling fluids will be recycled and transferred to other permitted closed-loop systems or returned to the vendor for reuse, as practical. Residual fluids will be vacuumed from the storage tanks and disposed of at Basin Disposal, Inc. and/or Industrial Ecosystem, Inc. waste disposal facilities.

2. The closed-loop system storage tanks will be adequately sized to ensure confinement of all fluids and will provide sufficient freeboard to prevent uncontrolled releases.

3. The closed-loop system storage tanks will be placed in bermed secondary containment sized to accommodate a minimum of 110 percent of the volume of the largest storage tank.

Appendix D:
Standard Deep Anode Bed Procedure

Deep Anode Bed Procedure

I. Anode Bed Procedure

1. Location

The deep anode placement shall be determined and verified in the field.
A 40 X 110 Right-of-way will be requested for placement of Cathodic Bore adjacent to pipeline ROW. Area will cleared by brush hogging all affected areas will be seeded. Solar panels and rectifier poles will be located near roadway to prevent damage to vegetation during maintenance.

2. Anode Hole Drilling

The anode hole shall be 7 7/8-inches diameter to the depth shown on the Drawings (top 20-feet shall be drilled to accommodate 8" casing). Drilling shall be accomplished with rotary bit. Driller shall use standard techniques (i.e. trough and vacuum truck) to capture and contain the drilling fluids, mud and cuttings at the top of the hole. The driller shall select the type and consistency of drilling fluids to be consistent with soil characteristics (bentonite and water). The drilling rig shall be leveled to provide a round, straight and plumb anode hole. If artesian H20 flow is encountered depth will be recorded and casing will be installed and cemented. If any levels of H2S are encountered, drilling will stop to record and analyse and determined mitigation.

3. Casing

Install a 8" diameter casing to a depth of 20-feet.

4. Anode Hole Geological Logs

As the hole is drilled, the driller shall maintain a record describing the depth and type of the geological formations encountered.

5. Anode Hole Resistance Log

Record electric log of the hole using one of the anodes. The anode lead wire shall be manually lowered into hole, with a counter reel, while taking measurements every 5 feet. The anode lead wire shall be marked for a distance equaling or exceeding the maximum anticipated depth of the hole. As the anode is lowered into the hole, measure the resistance by temporarily impressing a minimum of 12-volts DC between the anode and a very well-grounded structure. A volt meter shall be used to perform this test. A recommended 12-volt DC power source is a heavy-duty, lead acid, automobile battery. Lower the anode into the hole and at ten-foot increments, hold in place while the voltage and current output of the DC current source are measured and recorded. This information shall be recorded and submitted.

6. Vent Pipe Installation

The vent pipe (1-inch Allvent to the top of the coke breeze column) shall be installed in the hole with the first anode. One-inch PVC non-perforated pipe will be installed from the top of the coke breeze column to five feet above the top of the hole. The bottom of the vent pipe shall be capped. The top of the vent pipe shall be capped throughout the anode and coke breeze backfill installation procedure to prevent intrusion of foreign material. Drilling mud shall not be allowed to enter in the vent pipe.

7. Anode Installation

The deep anode shall consist of 10 - 2.2" x 84" long high silicon cast iron anodes spaced at 10-foot intervals. The anodes shall be centered in the hole. The anodes shall be installed by lowering them individually into the hole by the lead wire. The final depth shall be recorded with the first

anode in the hole (i.e. the bottom anode) identified as anode number one. The anode lead wires shall not be damaged during handling or lowering into the hole. Under no circumstances shall the anode lead wires be c tamped or pinched around another object while lowering. If the insulation for any anode lead wires are cut, broken, or nicked, the complete anode shall be rejected and shall be removed from the job site.

8. **Anode Column Coke Backfill**
   The coke backfill shall be top loaded. A sufficient amount of backfill shall be used such that the coke breeze column will extend a minimum of 10-feet above the top of the uppermost anode and no closer than 30-feet from the top of the hole. Installation of the coke backfill shall be uniform with no voids around the anodes.

9. **Vent Pipe Conditions**
   The 1-inch diameter internal vent pipe shall terminate with a glued slip-fit fitting then secured with a threaded vented plug. The top end of the vent pipe shall be left open to allow gases from the anode hole to exit.

10. **Mud and Cuttings:**
    Drilling mud, cuttings and other waste shall be disposed of offsite at a licensed disposal facility in a manner which complies with the rules and regulations of the State, City and County.

II. ANODE LEAD JUNCTION BOX

1. **Location:**
   Install anode lead junction box immediately adjacent to the deep anode. Place to allow ready access for testing with the bottom of the box at a minimum height of 3-feet above grade. Box will be kept locked when unattended.

2. **Concrete Pad:**
   Junction box support (post or unistrut) shall be set in a Portland cement concrete anchor. Pour a minimum 4 inch thick by roughly 3-foot square concrete pad around the junction box.

III. HEADER CABLE

1. **Installation:**
   Dig minimum 18-inch deep trench and up to 24-inches deep from the junction box to the power unit pole. Install the DC positive cable in the bottom of the trench. Leave slack in the cable and avoid damage to the cable during installation.

IV. NEGATIVE CABLE AND TEST LEAD

1. **Installation:**
   Dig minimum 18-inch deep trench and up to 24-inches deep from the power unit to the structure. Install the DC negative cable in the bottom of the trench. Leave slack in the cable and avoid damage to the cable during installation, and attach to structure.

2. **Method:**
   Attach negative DC cables to the structure by a mechanical clamp at the location shown on the Drawings.

3. **Preparation:**
   Clean and dry the structure surface to which the negative cable is to be attached. Technician will remove all dirt, coating, oxide and mill scale from the structure surface. Use a solvent to remove oil and grease, if necessary. Clean the surface to bright metal.

NOTE: All cable connections will not be performed without the assistance of a certified/licensed low-voltage technician.

V. PLUG AND ABANDON - DEEP ANODE GROUND BED

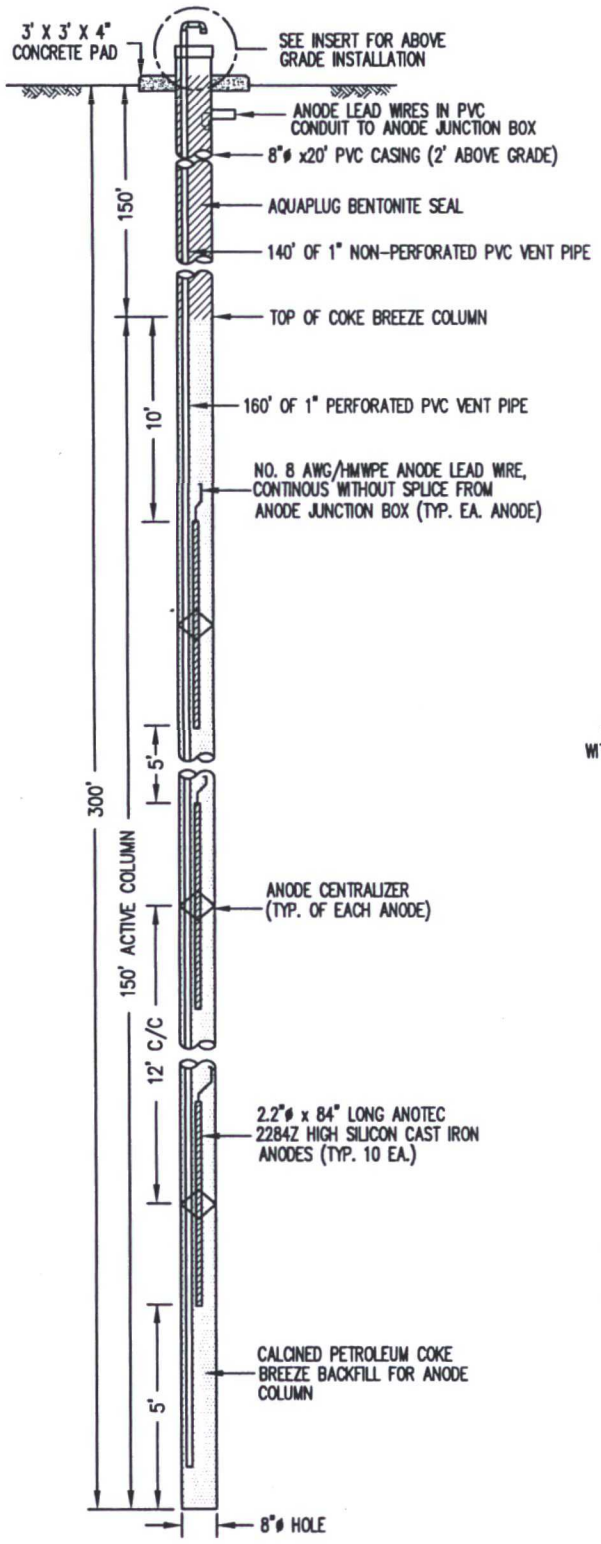
1. **Anode Hole/Surface Casing:**
   At the surface of the anode bed the surface casing shall be excavated or hydro-excavated at a depth of 4' below grade. All conduits and wires shall be terminated and removed. The surface casing and vent pipe will be cut down flush at 4' below grade. Anode leads, after terminated, will be removed 20-feet below grade down hole of anode bore. The anode bore shall be back filled with a cement mixture of Portland cement of a class determined by water characteristics testing. The excavation shall then be backfilled to grade with native soil.

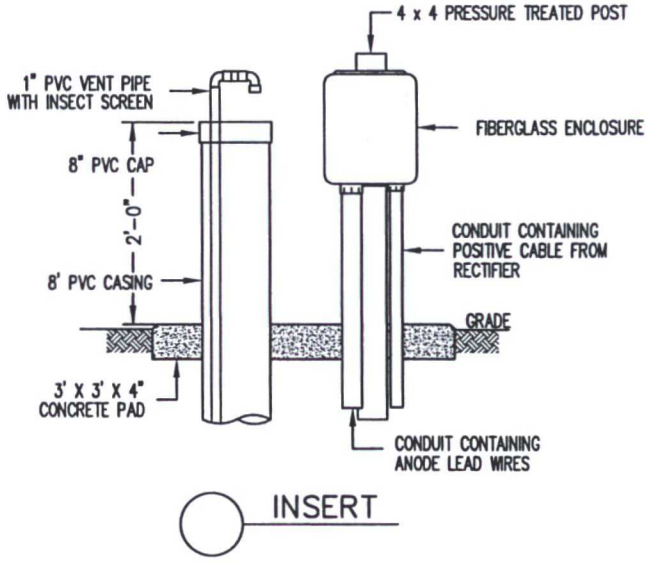
VI. ANODE LEAD JUNCTION BOX

1. **Removal:**
   The anode lead junction box immediately adjacent to the deep anode bed will be removed along with all remaining conduits and wiring. The 4x4 post will be removed along with the concrete pad and backfilled to grade with native soil.

VII. NEGATIVE/POSITIVE CABLE

1. Terminated negative/positive leads will be removed from location after termination of anode bed back to power source.





INSERT

NOTE: CATHODIC PROTECTION SYSTEM TO BE INSTALLED AT

REVISED NO.	REVISED DATE:	REVISIONS	REV.	CHK.	APP.	
△						DRAWN BY:
△						DESIGNED BY:
△						DATE:
△						SCALE:
△						JOB NO.
△						DWG. NO.

ENCANA OIL & GAS (USA) INC.

CATHODIC PROTECTION SYSTEM
DEEP ANODE GROUNDBED DETAILS