

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 Conditions of Approval
C-101 Application for Permit to Drill

Operator Signature Date: 11/30/2017

Well information;

Operator Enxana, Well Name and Number Nagari Unit 501H

API# 30-045-35860, 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
- ☒ 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. Catanach
NMOCD Approved by Signature

5-2-2018
Date

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

NMOCD

APR 20 2018

DISTRICT 111

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

1a. Type of work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		5. Lease Serial No. NMNM 8005
1b. Type of Well: <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other <input checked="" type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone		6. If Indian, Allottee or Tribe Name
2. Name of Operator ENCANA OIL & GAS (USA) INCORPORATED		7. If Unit or CA Agreement, Name and No. NMNM132981A
3a. Address 370 17TH STREET, SUITE 1700 DENVER CO		8. Lease Name and Well No. NAGEEZI UNIT 501H
3b. Phone No. (include area code) (970)285-2600		9. API Well No. 30-045-35860
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At surface SWNE / 2544 FNL / 1510 FEL / LAT 36.256239 / LONG -107.772492 At proposed prod. zone NENW / 90 FNL / 2339 FWL / LAT 36.248364 / LONG -107.759354		10. Field and Pool, or Exploratory MANCOS
14. Distance in miles and direction from nearest town or post office* 39.3 miles		11. Sec., T. R. M. or Blk. and Survey or Area SEC 3 / T23N / R9W / NMP
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) 1510 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, 30 feet applied for, on this lease, ft.	19. Proposed Depth 4955 feet / 9971 feet	20. BLM/BIA Bond No. on file FED: COB000235
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 6782 feet	22. Approximate date work will start* 05/01/2018	23. Estimated duration 10 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. | 4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above). |
| 2. A Drilling Plan. | 5. Operator certification |
| 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). | 6. Such other site specific information and/or plans as may be required by the BLM. |

25. Signature (Electronic Submission)	Name (Printed/Typed) Steven Merrell / Ph: (505)599-2411	Date 11/30/2017
Title Senior Regulatory Analyst		
Approved by (Signature) <i>[Signature]</i>	Name (Printed/Typed) AFM	Date 4/19/18
Title 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)

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

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

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

NMOCD

NMOCD

APR 30 2018

Form C-102

Revised August 1, 2011

DISTRICT III

Submit one copy to appropriate District Office

DISTRICT I

1825 N. French Dr., Hobbs, N.M. 88240
Phone: (505) 393-8181 Fax: (505) 393-8720

DISTRICT II

611 S. First St., Artesia, N.M. 88210
Phone: (505) 748-1585 Fax: (505) 748-9720

DISTRICT III

1000 Rio Grande Rd., Aztec, N.M. 87410
Phone: (505) 334-8178 Fax: (505) 334-8170

DISTRICT IV

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

State of New Mexico
Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION

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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

*API Number 30-045-35860		*Pool Code 98080	*Pool Name NAGEEZI UNIT manco3 HORIZONTAL OIL POOL
*Property Code 315244	*Property Name NAGEEZI UNIT		*Well Number 501H
*OGRID No. 282327	*Operator Name ENCANA OIL & GAS (USA) INC.		*Elevation 6782'

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
G	3	23N	9W		2544'	NORTH	1510'	EAST	SAN JUAN

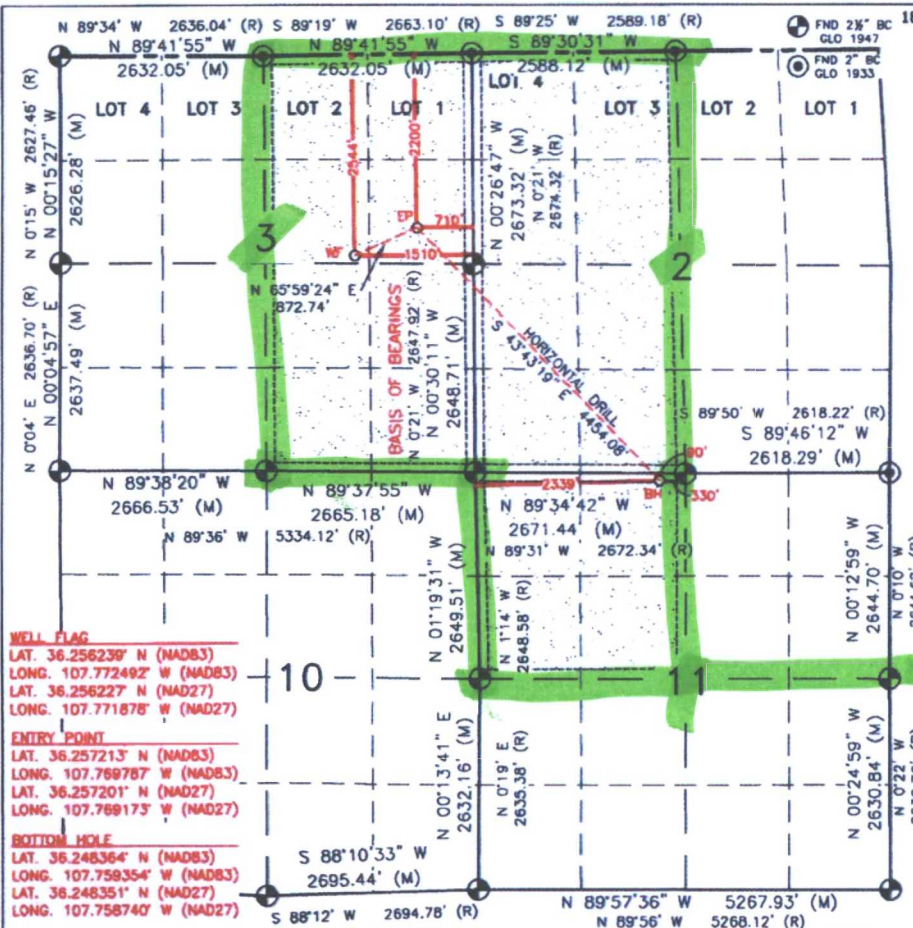
11 Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
C	11	23N	9W		90'	NORTH	2339'	WEST	SAN JUAN

*Dedicated Acres E/2 SEC. 5 (321.85 AC); W/2 SEC. 2 (321.80 AC); NW/4 SEC. 11 (160 AC) = 803.45 ACRES TOTAL		*Joint or Infill	*Consolidation Code	*Order No. R-13856-A (10,415.12 Acres)
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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.

Signature: Steven Merrell Date: 2/16/18

Printed Name: Steven Merrell
E-mail Address: Steven.Merrell@encana.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.

AUGUST 16, 2017

Date of Survey: 02/15/2018
Signature and Seal of Professional Surveyor: Henry P. Broadhurst

Certificate Number: 11393

APR 30 2018

DISTRICT I

1606 N. French Dr., Hobbs, N.M. 88240
Phone: (505) 393-8181 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 Rio Arriba Rd., Aztec, N.M. 87410
Phone: (505) 334-6178 Fax: (505) 334-6170

DISTRICT IV

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Phone: (505) 478-3480 Fax: (505) 478-3482

State of New Mexico
Energy, Minerals & Natural Resources Department

DISTRICT III Form C-102
Revised August 1, 2011

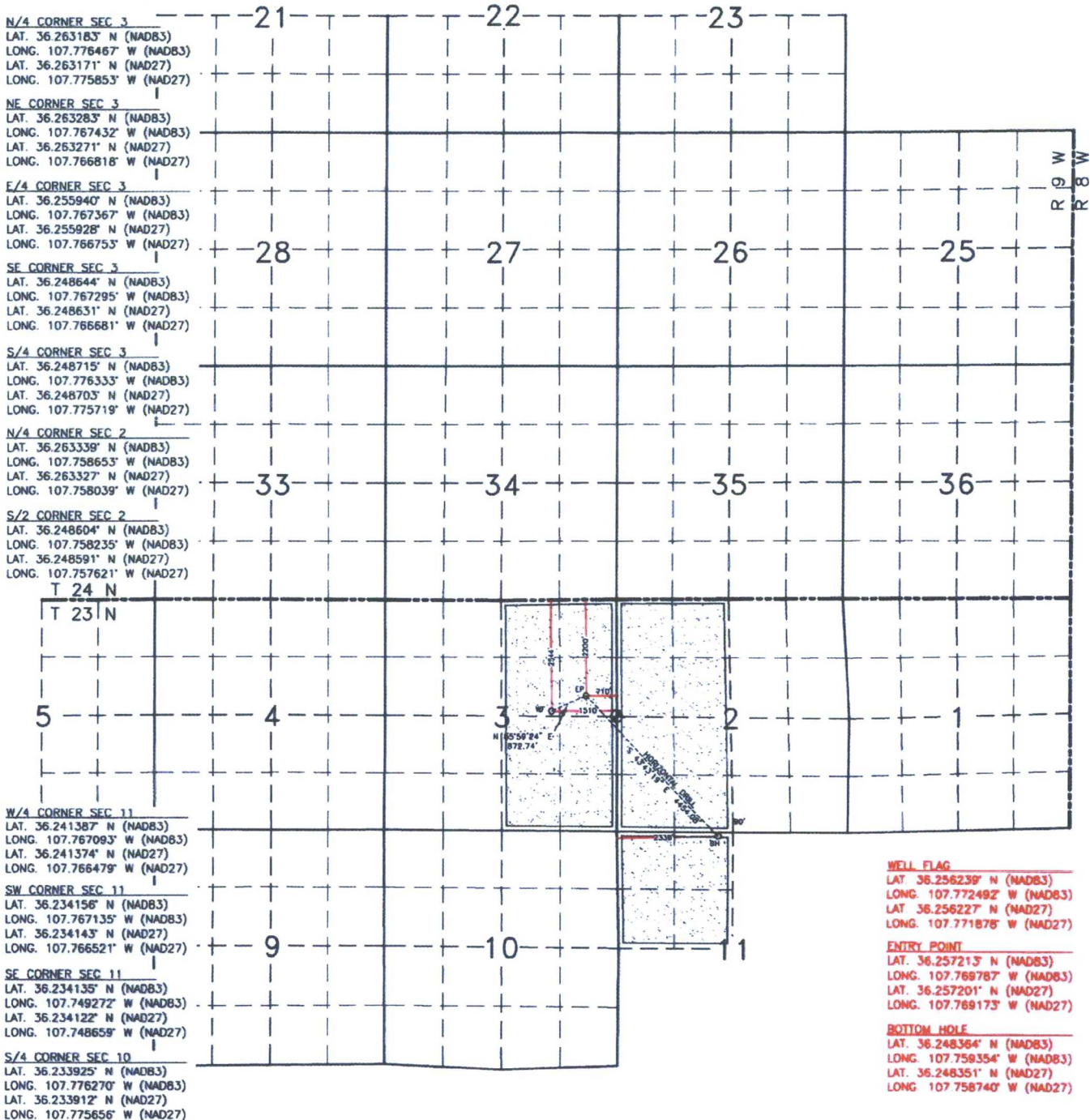
Submit one copy to appropriate
District Office

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

☐ AMENDED REPORT

ENCANA OIL & GAS (USA) INC.
NAGEEZI UNIT #501H

PENETRATED SPACING UNIT: E/2 SEC. 3 (321.65 AC);
W/2 SEC. 2 (321.80 AC); NW/4 SEC. 11 (160 AC)
803.45 ACRES TOTAL
TOTAL 10,415.12 ACRES: T24N R9W, SEC. 21-23 (5/2),
25-28, 33-36, 1-4, 9-10 (ALL); T23N R9W, SEC. 5 (W/2), 11
(NW/4) - UNDIVIDED UNIT



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	642
Kirtland Shale	771
Fruitland Coal	1,208
Pictured Cliffs Ss.	1,382
Lewis Shale	1,510
Cliffhouse Ss.	2,061
Menefee Fn.	2,777
Point Lookout Ss.	3,750
Mancos Shale	3,944
Mancos Silt	4,436
Gallup Fn.	4,712

The referenced surface elevation is 6783', KB 6799'

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

Substance	Formation	Depth (TVD) units = feet
Water/Gas	Fruitland Coal	1,208
Water/Gas	Pictured Cliffs Ss.	1,382
Water/Gas	Cliffhouse Ss.	2,061
Water/Gas	Menefee Fn.	2,777
Water/Gas	Point Lookout Ss.	3,750
Oil/Gas	Mancos Shale	3,944
Oil/Gas	Mancos Silt	4,436
Oil/Gas	Gallup Fn.	4,712

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.
- 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 higher grade of casing may be run at the Operator's discretion, but a lower grade will not be substituted without prior approval of the BLM.

- a) The proposed casing design is as follows:

Casing	Depth (MD)	Hole Size	Csg Size	Weight	Grade
Surface	0'-320'	12 1/4"	9 5/8"	32.3	H40, STC New
Intermediate	0'-5250'	8 3/4"	7"	26	J55, LTC New
Production Liner	5050'-9971'	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	H40	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.

- b) The proposed cementing program is as follows

Casing	Depth (MD)	Cement Volume (sacks)	Cement Type & Yield	Designed TOC	Centralizers
Surface	0'-320'	132 sks	Class V cement w/ 2% CaCl Weight 15.6ppg Yield: 1.21 ft ³ /sk	Surface	1 per joint on bottom 3 joints
Intermediate	0'-5250'	100% open hole excess Stage 1 Lead: 634 sks Stage 1 Tail: 237 sks	Lead: Extended Class G w/ 6% BWOC bentonite + 2.5 lb/sk Kol-Seal + 0.125 lb/sk Poly-flake Weight: 12.3ppg Yield: 1.952 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: 13.5ppg Yield: 1.305 ft ³ /sk	Surface	1 every 3 joints through water bearing zones
Production Liner	5050'-9971'	30% open hole excess Cement Vol: 447 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: 13.3ppg Yield: 1.36 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 4188'. Directional plans are attached.

Description	Proposed Depth (TVD/MD)	Formation
Horizontal Lateral TD	4955'/9971'	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)
12 1/4"	0'-320'/320'	Fresh Water	0	60-70	NC
8 3/4"	320'/320'-4940'/5250'	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"	4940'/5250'- 4955'/9971'	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
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 +/- 2334 psi based on a 9.0 ppg at 4988' 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 January 1st, 2018. 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.

EnCana Oil & Gas (USA) Inc

San Juan County, NM

S3-T23N-R9W

NU 501H (G03-2309 01H)

OH

PLAN #2

Anticollision Report

24 October, 2017

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well NU 501H (G03-2309 01H)
Project:	San Juan County, NM	TVD Reference:	KB @ 6799.00usft
Reference Site:	S3-T23N-R9W	MD Reference:	KB @ 6799.00usft
Site Error:	0.00usft	North Reference:	True
Reference Well:	NU 501H (G03-2309 01H)	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 #2	Offset TVD Reference:	Offset Datum

Reference	PLAN #2		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD + Stations Interval 100.00usft	Error Model:	Systematic Ellipse
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 1,176.98usft	Error Surface:	Pedal Curve
Warning Levels Evaluated at:	2.00 Sigma		

Survey Tool Program	Date 10/24/2017			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	950.00	PLAN #2 (OH)	INC-ONLY_A027Ua	OWSG Inclination Only Surveys
951.00	9,970.19	PLAN #2 (OH)	MWD+HDGM	OWSG MWD + HDGM

Summary						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
S3-T23N-R9W						
Federal D3 - Encana - No Surveys						Out of range
Federal D4 - Encana - No Surveys						Out of range
NAGEEZI UNIT 405H - OH - PLAN #6						Out of range
NAGEEZI UNIT 405H - OH - SURVEYS						Out of range
NAGEEZI UNIT 405H - STK #1 - FINAL						Out of range
NAGEEZI UNIT 406H - OH - FINAL						Out of range
NU 502H (G03-2309 02H) - OH - PLAN #2	950.00	950.00	30.19	-0.95	0.970	Level 1, CC
NU 502H (G03-2309 02H) - OH - PLAN #2	1,000.00	1,000.00	30.59	-1.86	0.943	Level 1, ES, SF
South Huerfano #1 - DUGAN WELL - NO SURVEYS						Out of range

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well NU 501H (G03-2309 01H)
Project:	San Juan County, NM	TVD Reference:	KB @ 6799.00usft
Reference Site:	S3-T23N-R9W	MD Reference:	KB @ 6799.00usft
Site Error:	0.00usft	North Reference:	True
Reference Well:	NU 501H (G03-2309 01H)	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 #2	Offset TVD Reference:	Offset Datum

Offset Design S3-T23N-R9W - NU 502H (G03-2309 02H) - OH - PLAN #2														Offset Site Error:	0.00 usft
Survey Program: 0-INC-ONLY_A027Ua, 1628-MWD+HDGM														Offset Well Error:	0.00 usft
Reference	Offset	Semi Major Axis		Distance		Total		Separation		Warning					
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N-S (usft)	+E/W (usft)	Between Centres (usft)	Between Ellipses (usft)	Uncertainty Axis	Factor			
0.00	0.00	0.00	0.00	0.00	0.00	-142.74	-24.03	-18.28	30.19						
100.00	100.00	100.00	100.00	0.73	0.73	-142.74	-24.03	-18.28	30.19	28.72	1.47	20.591			
200.00	200.00	200.00	200.00	2.48	2.48	-142.74	-24.03	-18.28	30.19	25.23	4.96	6.090			
300.00	300.00	300.00	300.00	4.22	4.22	-142.74	-24.03	-18.28	30.19	21.74	8.45	3.574			
400.00	400.00	400.00	400.00	5.97	5.97	-142.74	-24.03	-18.28	30.19	18.25	11.94	2.529			
500.00	500.00	500.00	500.00	7.71	7.71	-142.74	-24.03	-18.28	30.19	14.76	15.43	1.957			
600.00	600.00	600.00	600.00	9.46	9.46	-142.74	-24.03	-18.28	30.19	11.27	18.92	1.596			
700.00	700.00	700.00	700.00	11.21	11.21	-142.74	-24.03	-18.28	30.19	7.78	22.41	1.347 Level 3			
800.00	800.00	800.00	800.00	12.95	12.95	-142.74	-24.03	-18.28	30.19	4.29	25.90	1.166 Level 2			
900.00	900.00	900.00	900.00	14.70	14.70	-142.74	-24.03	-18.28	30.19	0.80	29.39	1.027 Level 2			
950.00	950.00	950.00	950.00	15.57	15.57	-142.74	-24.03	-18.28	30.19	-0.95	31.14	0.970 Level 1, CC			
1,000.00	1,000.00	1,000.00	1,000.00	16.00	16.44	-156.20	-24.03	-18.28	30.59	-1.86	32.45	0.943 Level 1, ES, SF			
1,100.00	1,099.93	1,100.07	1,099.93	16.01	18.19	-158.57	-24.03	-18.28	33.81	-0.39	34.20	0.989 Level 1			
1,200.00	1,199.68	1,200.32	1,199.68	16.03	19.94	-162.14	-24.03	-18.28	40.38	4.42	35.96	1.123 Level 2			
1,300.00	1,299.13	1,300.87	1,299.13	16.05	21.69	-165.74	-24.03	-18.28	50.44	12.70	37.74	1.336 Level 3			
1,400.00	1,398.15	1,401.85	1,398.15	16.08	23.45	-168.75	-24.03	-18.28	64.02	24.49	39.54	1.619			
1,500.00	1,496.63	1,503.37	1,496.63	16.13	25.23	-171.09	-24.03	-18.28	81.13	39.78	41.35	1.962			
1,600.00	1,594.44	1,594.44	1,594.44	16.19	26.82	-172.85	-24.03	-18.28	101.73	58.74	42.99	2.366			
1,699.78	1,691.25	1,690.48	1,690.48	16.26	27.94	-173.84	-23.99	-18.98	125.91	81.74	44.17	2.851			
1,700.00	1,691.46	1,690.69	1,690.69	16.26	27.94	-173.84	-23.99	-18.99	125.97	81.80	44.17	2.852			
1,800.00	1,788.06	1,785.74	1,785.66	16.36	28.03	-173.49	-23.80	-22.67	152.75	108.43	44.32	3.446			
1,900.00	1,884.65	1,880.14	1,879.81	16.46	28.03	-172.25	-23.45	-29.44	180.47	136.08	44.40	4.065			
2,000.00	1,981.25	1,973.71	1,972.86	16.58	28.05	-170.51	-22.95	-39.21	209.28	164.80	44.47	4.706			
2,100.00	2,077.84	2,066.24	2,064.52	16.72	28.06	-168.50	-22.29	-51.84	239.33	194.78	44.55	5.372			
2,200.00	2,174.43	2,157.58	2,154.55	16.87	28.09	-166.33	-21.50	-67.21	270.81	226.18	44.63	6.069			
2,300.00	2,271.03	2,247.55	2,242.71	17.03	28.12	-164.12	-20.58	-85.14	303.86	259.17	44.69	6.799			
2,400.00	2,367.62	2,336.03	2,328.81	17.20	28.15	-161.91	-19.53	-105.46	338.62	293.88	44.75	7.567			
2,500.00	2,464.22	2,425.90	2,415.69	17.39	28.20	-159.72	-18.34	-128.40	375.00	330.16	44.84	8.363			
2,600.00	2,560.81	2,518.02	2,504.68	17.59	28.26	-157.83	-17.11	-152.21	411.96	366.97	44.99	9.156			
2,700.00	2,657.41	2,610.14	2,593.66	17.80	28.33	-156.25	-15.89	-176.01	449.25	404.09	45.17	9.947			
2,800.00	2,754.00	2,702.26	2,682.64	18.02	28.40	-154.91	-14.66	-199.82	486.80	441.44	45.36	10.732			
2,900.00	2,850.60	2,805.62	2,771.63	18.26	28.49	-153.76	-13.43	-223.62	524.54	478.95	45.58	11.508			
3,000.00	2,947.19	2,886.50	2,860.61	18.50	28.58	-152.76	-12.20	-247.43	562.44	516.63	45.80	12.279			
3,100.00	3,043.79	2,978.62	2,949.59	18.76	28.68	-151.88	-10.97	-271.24	600.47	554.41	46.05	13.039			
3,200.00	3,140.38	3,070.74	3,038.58	19.02	28.78	-151.12	-9.74	-295.04	638.60	592.28	46.32	13.788			
3,300.00	3,236.97	3,162.86	3,127.56	19.29	28.90	-150.43	-8.52	-318.85	676.82	630.23	46.60	14.525			
3,400.00	3,333.57	3,254.98	3,216.54	19.58	29.03	-149.82	-7.29	-342.65	715.12	668.23	46.89	15.251			
3,500.00	3,430.16	3,347.10	3,305.52	19.87	29.16	-149.27	-6.06	-366.46	753.48	706.28	47.20	15.963			
3,600.00	3,526.76	3,439.23	3,394.51	20.17	29.30	-148.78	-4.83	-390.27	791.89	744.37	47.52	16.663			
3,700.00	3,623.35	3,531.35	3,483.49	20.47	29.45	-148.33	-3.60	-414.07	830.35	782.49	47.86	17.349			
3,800.00	3,719.95	3,623.47	3,572.47	20.79	29.60	-147.92	-2.37	-437.88	868.85	820.64	48.21	18.021			
3,900.00	3,816.54	3,715.59	3,661.46	21.11	29.77	-147.54	-1.15	-461.68	907.38	858.81	48.57	18.680			
4,000.00	3,913.14	3,807.71	3,750.44	21.44	29.94	-147.20	0.08	-485.49	945.95	897.00	48.95	19.325			
4,100.00	4,009.73	3,900.17	3,839.42	21.77	30.11	-146.88	1.31	-509.30	984.54	935.20	49.34	19.955			
4,200.00	4,106.33	4,008.05	3,928.41	22.11	30.33	-146.58	2.54	-533.10	1,023.15	973.39	49.76	20.560			
4,285.00	4,188.43	4,070.25	4,004.04	22.41	30.46	-146.35	3.58	-553.34	1,055.99	1,005.90	50.09	21.084			
4,300.00	4,202.94	4,084.06	4,017.38	22.46	30.49	-150.76	3.77	-556.91	1,061.79	1,011.64	50.15	21.174			
4,350.00	4,251.54	4,129.88	4,061.63	22.63	30.59	-167.60	4.38	-568.75	1,081.16	1,030.82	50.34	21.476			
4,400.00	4,300.31	4,175.19	4,105.41	22.78	30.69	173.60	4.98	-580.46	1,100.55	1,050.02	50.53	21.782			
4,450.00	4,349.01	4,218.90	4,147.82	22.92	30.78	155.73	4.68	-590.96	1,119.96	1,069.28	50.68	22.098			
4,500.00	4,397.42	4,263.04	4,191.01	23.05	30.86	141.04	2.39	-599.77	1,139.35	1,088.53	50.83	22.416			
4,550.00	4,445.29	4,307.78	4,234.97	23.16	30.94	129.83	-1.97	-606.82	1,158.65	1,107.69	50.97	22.733			

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 NU 501H (G03-2309 01H)
Project:	San Juan County, NM	TVD Reference:	KB @ 6799.00usft
Reference Site:	S3-T23N-R9W	MD Reference:	KB @ 6799.00usft
Site Error:	0.00usft	North Reference:	True
Reference Well:	NU 501H (G03-2309 01H)	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 #2	Offset TVD Reference:	Offset Datum

Reference Depths are relative to KB @ 6799.00usft

Offset Depths are relative to Offset Datum

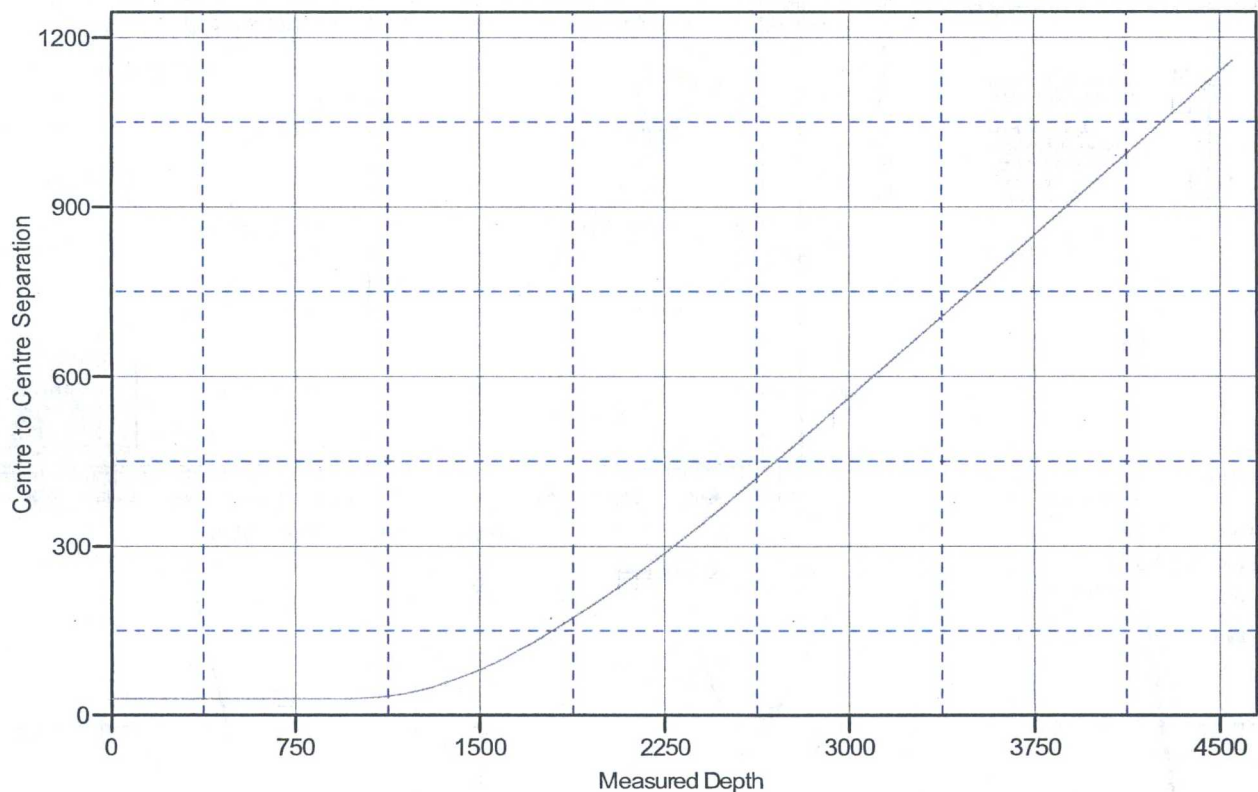
Central Meridian is -107.833333 °

Coordinates are relative to: NU 501H (G03-2309 01H)

Coordinate System is US State Plane 1983, New Mexico Western Zone

Grid Convergence at Surface is: 0.04°

Ladder Plot



LEGEND

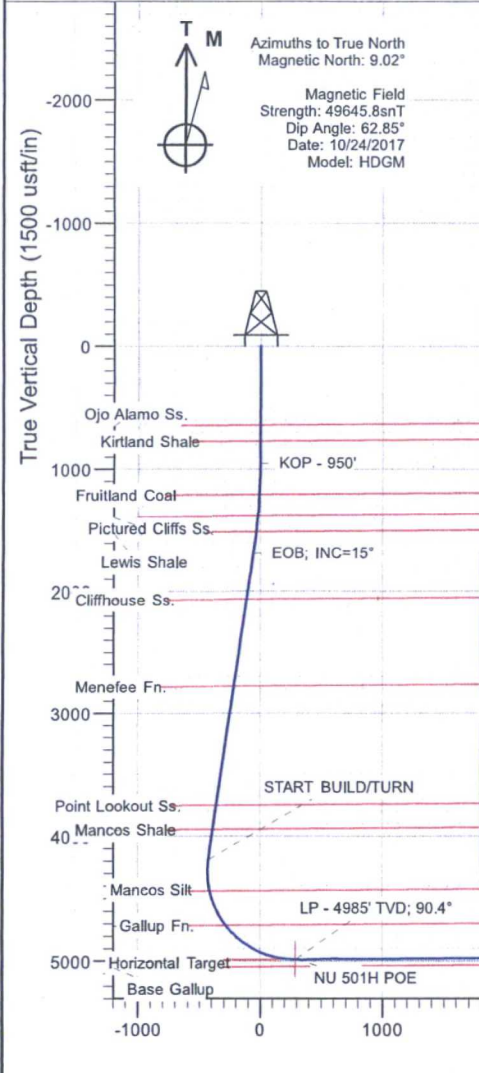
3- NU 502H (G03-2309 02H), OH, PLAN #2 V0

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

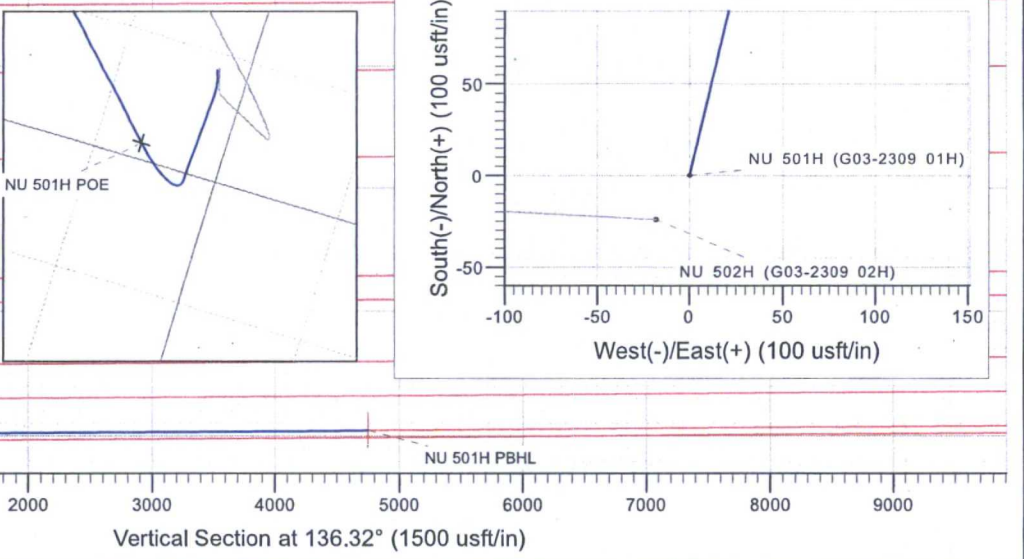
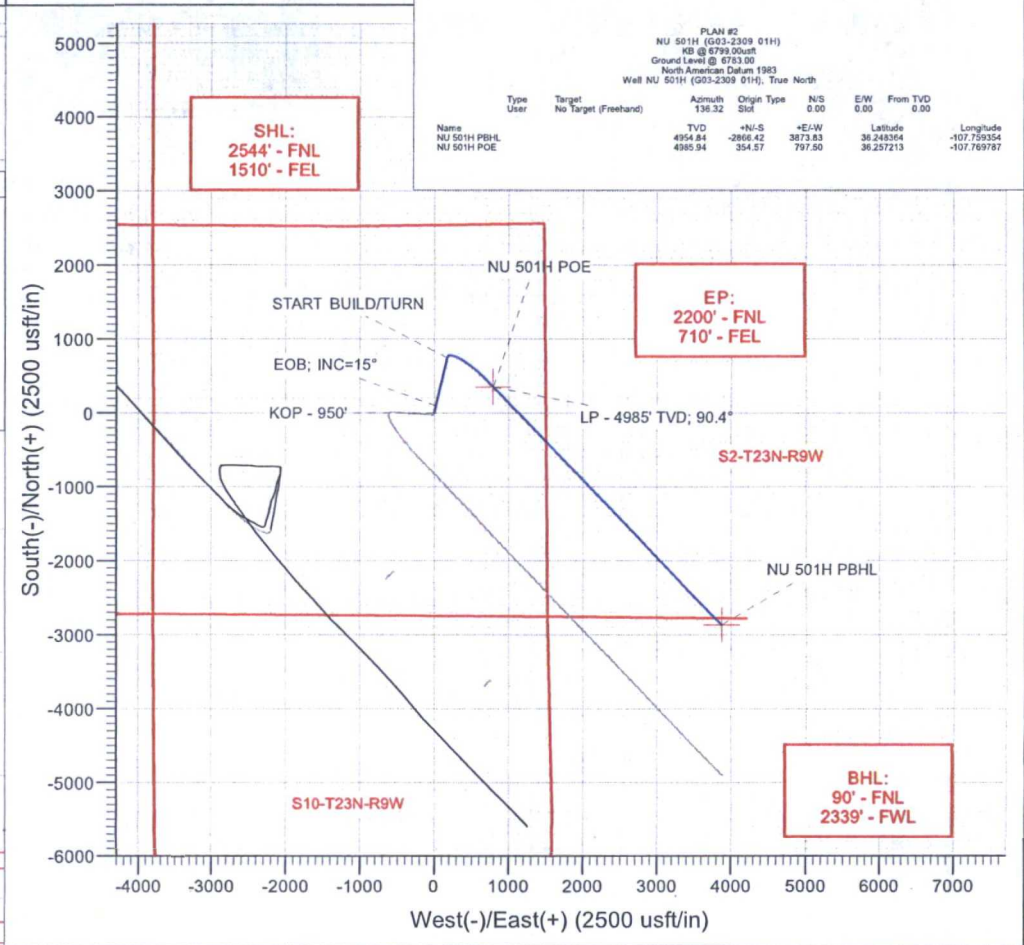


Project: San Juan County, NM
Site: S3-T23N-R9W
Well: NU 501H (G03-2309 01H)
Wellbore: OH
Design: PLAN #2

FORMATION TOP DETAILS		
TVDPath	MDPath	Formation
642.00	642.00	Ojo Alamo Ss.
771.00	771.00	Kirtland Shale
1208.04	1208.39	Fruitland Coal
1382.13	1383.78	Pictured Cliffs Ss.
1510.21	1513.84	Lewis Shale
2061.75	2083.34	Cliffhouse Ss.
2778.49	2825.35	Menefee Fn.
3752.48	3833.68	Point Lookout Ss.
3946.68	4034.73	Mancos Shale
4438.86	4543.25	Mancos Silt
4713.94	4857.05	Gallup Fn.



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	950.00	0.00	0.00	950.00	0.00	0.00	0.00	0.00	0.00	
3	1699.78	15.00	13.14	1691.25	95.01	22.17	2.00	13.14	-53.39	
4	4285.00	15.00	13.14	4188.43	746.41	174.21	0.00	0.00	-419.50	
5	5516.63	90.40	136.32	4985.94	354.57	797.50	8.00	122.19	294.35	NU 501H POE
6	9970.80	90.40	136.32	4954.84	-2866.42	3873.83	0.00	0.00	4748.41	NU 501H PBHL



WELL DETAILS: NU 501H (G03-2309 01H)

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.00	0.00	1912575.29	2741029.37	36.256239	-107.772492

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well NU 501H (G03-2309 01H)
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KB @ 6799.00usft
Project:	San Juan County, NM	MD Reference:	KB @ 6799.00usft
Site:	S3-T23N-R9W	North Reference:	True
Well:	NU 501H (G03-2309 01H)	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #2		

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	NU 501H (G03-2309 01H)					
Well Position	+N/-S	0.00 usft	Northing:	1,912,575.29 usft	Latitude:	36.256239
	+E/-W	0.00 usft	Easting:	2,741,029.37 usft	Longitude:	-107.772492
Position Uncertainty	0.00 usft	Wellhead Elevation:	usft	Ground Level:	6,783.00 usft	

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	10/24/2017	9.02	62.85	49,645.80000000

Design	PLAN #2			
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	136.32

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	
950.00	0.00	0.00	950.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,699.78	15.00	13.14	1,691.25	95.01	22.17	2.00	2.00	0.00	13.14	
4,285.00	15.00	13.14	4,188.43	746.41	174.21	0.00	0.00	0.00	0.00	
5,516.63	90.40	136.32	4,985.94	354.57	797.50	8.00	6.12	10.00	122.19	NU 501H POE
9,970.80	90.40	136.32	4,954.84	-2,866.42	3,873.83	0.00	0.00	0.00	0.00	NU 501H PBHL

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well NU 501H (G03-2309 01H)
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KB @ 6799.00usft
Project:	San Juan County, NM	MD Reference:	KB @ 6799.00usft
Site:	S3-T23N-R9W	North Reference:	True
Well:	NU 501H (G03-2309 01H)	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #2		

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	
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	
642.00	0.00	0.00	642.00	0.00	0.00	0.00	0.00	0.00	Ojo Alamo Ss.
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	
771.00	0.00	0.00	771.00	0.00	0.00	0.00	0.00	0.00	Kirtland Shale
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	
950.00	0.00	0.00	950.00	0.00	0.00	0.00	0.00	0.00	KOP - 950'
1,000.00	1.00	13.14	1,000.00	0.42	0.10	-0.24	2.00	2.00	
1,100.00	3.00	13.14	1,099.93	3.82	0.89	-2.15	2.00	2.00	
1,200.00	5.00	13.14	1,199.68	10.62	2.48	-5.97	2.00	2.00	
1,208.39	5.17	13.14	1,208.04	11.34	2.65	-6.37	2.00	2.00	Fruitland Coal
1,300.00	7.00	13.14	1,299.13	20.79	4.85	-11.69	2.00	2.00	
1,383.78	8.68	13.14	1,382.13	31.92	7.45	-17.94	2.00	2.00	Pictured Cliffs Ss.
1,400.00	9.00	13.14	1,398.15	34.35	8.02	-19.30	2.00	2.00	
1,500.00	11.00	13.14	1,496.63	51.26	11.96	-28.81	2.00	2.00	
1,513.84	11.28	13.14	1,510.21	53.86	12.57	-30.27	2.00	2.00	Lewis Shale
1,600.00	13.00	13.14	1,594.44	71.50	16.69	-40.19	2.00	2.00	
1,699.78	15.00	13.14	1,691.25	95.01	22.17	-53.39	2.00	2.00	EOB; INC=15°
1,700.00	15.00	13.14	1,691.46	95.06	22.19	-53.43	0.00	0.00	
1,800.00	15.00	13.14	1,788.06	120.26	28.07	-67.59	0.00	0.00	
1,900.00	15.00	13.14	1,884.65	145.46	33.95	-81.75	0.00	0.00	
2,000.00	15.00	13.14	1,981.25	170.65	39.83	-95.91	0.00	0.00	
2,083.34	15.00	13.14	2,061.75	191.65	44.73	-107.71	0.00	0.00	Cliffhouse Ss.
2,100.00	15.00	13.14	2,077.84	195.85	45.71	-110.07	0.00	0.00	
2,200.00	15.00	13.14	2,174.43	221.05	51.59	-124.23	0.00	0.00	
2,300.00	15.00	13.14	2,271.03	246.24	57.47	-138.39	0.00	0.00	
2,400.00	15.00	13.14	2,367.62	271.44	63.35	-152.56	0.00	0.00	
2,500.00	15.00	13.14	2,464.22	296.64	69.23	-166.72	0.00	0.00	
2,600.00	15.00	13.14	2,560.81	321.84	75.11	-180.88	0.00	0.00	
2,700.00	15.00	13.14	2,657.41	347.03	81.00	-195.04	0.00	0.00	
2,800.00	15.00	13.14	2,754.00	372.23	86.88	-209.20	0.00	0.00	
2,825.35	15.00	13.14	2,778.49	378.62	88.37	-212.79	0.00	0.00	Menefee Fn.
2,900.00	15.00	13.14	2,850.60	397.43	92.76	-223.36	0.00	0.00	
3,000.00	15.00	13.14	2,947.19	422.63	98.64	-237.52	0.00	0.00	
3,100.00	15.00	13.14	3,043.79	447.82	104.52	-251.69	0.00	0.00	
3,200.00	15.00	13.14	3,140.38	473.02	110.40	-265.85	0.00	0.00	
3,300.00	15.00	13.14	3,236.97	498.22	116.28	-280.01	0.00	0.00	
3,400.00	15.00	13.14	3,333.57	523.42	122.16	-294.17	0.00	0.00	
3,500.00	15.00	13.14	3,430.16	548.61	128.04	-308.33	0.00	0.00	
3,600.00	15.00	13.14	3,526.76	573.81	133.92	-322.49	0.00	0.00	
3,700.00	15.00	13.14	3,623.35	599.01	139.80	-336.65	0.00	0.00	
3,800.00	15.00	13.14	3,719.95	624.20	145.69	-350.82	0.00	0.00	
3,833.68	15.00	13.14	3,752.48	632.69	147.67	-355.59	0.00	0.00	Point Lookout Ss.
3,900.00	15.00	13.14	3,816.54	649.40	151.57	-364.98	0.00	0.00	
4,000.00	15.00	13.14	3,913.14	674.60	157.45	-379.14	0.00	0.00	
4,034.73	15.00	13.14	3,946.68	683.35	159.49	-384.06	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: San Juan County, NM
Site: S3-T23N-R9W
Well: NU 501H (G03-2309 01H)
Wellbore: OH
Design: PLAN #2

Local Co-ordinate Reference: Well NU 501H (G03-2309 01H)
TVD Reference: KB @ 6799.00usft
MD Reference: KB @ 6799.00usft
North Reference: True
Survey Calculation Method: Minimum Curvature

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
4,100.00	15.00	13.14	4,009.73	699.80	163.33	-393.30	0.00	0.00	
4,200.00	15.00	13.14	4,106.33	724.99	169.21	-407.46	0.00	0.00	
4,285.00	15.00	13.14	4,188.43	746.41	174.21	-419.50	0.00	0.00	START BUILD/TURN
4,300.00	14.39	17.23	4,202.94	750.08	175.20	-421.47	8.00	-4.03	
4,400.00	12.69	51.14	4,300.31	768.88	187.46	-426.59	8.00	-1.70	
4,500.00	15.53	82.35	4,397.42	777.57	209.31	-417.78	8.00	2.83	
4,543.25	17.74	91.67	4,438.86	778.14	221.64	-409.69	8.00	5.11	Mancos Silt
4,600.00	21.14	100.75	4,492.38	775.98	240.35	-395.21	8.00	5.99	
4,700.00	27.90	111.15	4,583.35	764.16	279.95	-359.30	8.00	6.76	
4,800.00	35.16	117.64	4,668.56	742.32	327.35	-310.77	8.00	7.25	
4,857.05	39.41	120.38	4,713.94	725.53	357.54	-277.78	8.00	7.46	Gallup Fn.
4,900.00	42.65	122.13	4,746.34	710.90	381.64	-250.56	8.00	7.54	
5,000.00	50.27	125.48	4,815.18	670.50	441.74	-179.83	8.00	7.62	
5,100.00	57.98	128.16	4,873.75	621.91	506.49	-99.97	8.00	7.70	
5,200.00	65.72	130.42	4,920.89	566.08	574.64	-12.53	8.00	7.75	
5,300.00	73.50	132.41	4,955.71	504.09	644.85	80.79	8.00	7.78	
5,400.00	81.30	134.26	4,977.51	437.15	715.76	178.17	8.00	7.80	
5,500.00	89.10	136.02	4,985.87	366.57	785.98	277.72	8.00	7.80	
5,516.63	90.40	136.32	4,985.94	354.57	797.50	294.35	8.00	7.81	LP - 4985' TVD; 90.4°
5,600.00	90.40	136.32	4,985.36	294.28	855.08	377.72	0.00	0.00	
5,700.00	90.40	136.32	4,984.66	221.97	924.14	477.71	0.00	0.00	
5,800.00	90.40	136.32	4,983.96	149.65	993.21	577.71	0.00	0.00	
5,900.00	90.40	136.32	4,983.26	77.34	1,062.28	677.71	0.00	0.00	
6,000.00	90.40	136.32	4,982.57	5.03	1,131.34	777.71	0.00	0.00	
6,100.00	90.40	136.32	4,981.87	-67.29	1,200.41	877.70	0.00	0.00	
6,200.00	90.40	136.32	4,981.17	-139.60	1,269.48	977.70	0.00	0.00	
6,300.00	90.40	136.32	4,980.47	-211.92	1,338.54	1,077.70	0.00	0.00	
6,400.00	90.40	136.32	4,979.77	-284.23	1,407.61	1,177.70	0.00	0.00	
6,500.00	90.40	136.32	4,979.07	-356.54	1,476.68	1,277.69	0.00	0.00	
6,600.00	90.40	136.32	4,978.38	-428.86	1,545.74	1,377.69	0.00	0.00	
6,700.00	90.40	136.32	4,977.68	-501.17	1,614.81	1,477.69	0.00	0.00	
6,800.00	90.40	136.32	4,976.98	-573.49	1,683.88	1,577.69	0.00	0.00	
6,900.00	90.40	136.32	4,976.28	-645.80	1,752.94	1,677.68	0.00	0.00	
7,000.00	90.40	136.32	4,975.58	-718.11	1,822.01	1,777.68	0.00	0.00	
7,100.00	90.40	136.32	4,974.88	-790.43	1,891.08	1,877.68	0.00	0.00	
7,200.00	90.40	136.32	4,974.19	-862.74	1,960.14	1,977.68	0.00	0.00	
7,300.00	90.40	136.32	4,973.49	-935.06	2,029.21	2,077.67	0.00	0.00	
7,400.00	90.40	136.32	4,972.79	-1,007.37	2,098.28	2,177.67	0.00	0.00	
7,500.00	90.40	136.32	4,972.09	-1,079.69	2,167.34	2,277.67	0.00	0.00	
7,600.00	90.40	136.32	4,971.39	-1,152.00	2,236.41	2,377.67	0.00	0.00	
7,700.00	90.40	136.32	4,970.70	-1,224.31	2,305.47	2,477.66	0.00	0.00	
7,800.00	90.40	136.32	4,970.00	-1,296.63	2,374.54	2,577.66	0.00	0.00	
7,900.00	90.40	136.32	4,969.30	-1,368.94	2,443.61	2,677.66	0.00	0.00	
8,000.00	90.40	136.32	4,968.60	-1,441.26	2,512.67	2,777.66	0.00	0.00	
8,100.00	90.40	136.32	4,967.90	-1,513.57	2,581.74	2,877.65	0.00	0.00	
8,200.00	90.40	136.32	4,967.20	-1,585.88	2,650.81	2,977.65	0.00	0.00	
8,300.00	90.40	136.32	4,966.51	-1,658.20	2,719.87	3,077.65	0.00	0.00	
8,400.00	90.40	136.32	4,965.81	-1,730.51	2,788.94	3,177.65	0.00	0.00	
8,500.00	90.40	136.32	4,965.11	-1,802.83	2,858.01	3,277.64	0.00	0.00	
8,600.00	90.40	136.32	4,964.41	-1,875.14	2,927.07	3,377.64	0.00	0.00	
8,700.00	90.40	136.32	4,963.71	-1,947.45	2,996.14	3,477.64	0.00	0.00	
8,800.00	90.40	136.32	4,963.01	-2,019.77	3,065.21	3,577.64	0.00	0.00	

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well NU 501H (G03-2309 01H)
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KB @ 6799.00usft
Project:	San Juan County, NM	MD Reference:	KB @ 6799.00usft
Site:	S3-T23N-R9W	North Reference:	True
Well:	NU 501H (G03-2309 01H)	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #2		

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
8,900.00	90.40	136.32	4,962.32	-2,092.08	3,134.27	3,677.63	0.00	0.00	
9,000.00	90.40	136.32	4,961.62	-2,164.40	3,203.34	3,777.63	0.00	0.00	
9,100.00	90.40	136.32	4,960.92	-2,236.71	3,272.41	3,877.63	0.00	0.00	
9,200.00	90.40	136.32	4,960.22	-2,309.03	3,341.47	3,977.63	0.00	0.00	
9,300.00	90.40	136.32	4,959.52	-2,381.34	3,410.54	4,077.62	0.00	0.00	
9,400.00	90.40	136.32	4,958.83	-2,453.65	3,479.61	4,177.62	0.00	0.00	
9,500.00	90.40	136.32	4,958.13	-2,525.97	3,548.67	4,277.62	0.00	0.00	
9,600.00	90.40	136.32	4,957.43	-2,598.28	3,617.74	4,377.62	0.00	0.00	
9,700.00	90.40	136.32	4,956.73	-2,670.60	3,686.80	4,477.62	0.00	0.00	
9,800.00	90.40	136.32	4,956.03	-2,742.91	3,755.87	4,577.61	0.00	0.00	
9,900.00	90.40	136.32	4,955.33	-2,815.22	3,824.94	4,677.61	0.00	0.00	
9,970.80	90.40	136.32	4,954.84	-2,866.42	3,873.83	4,748.41	0.00	0.00	TD at 9970.80

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
NU 501H PBHL - plan hits target center - Point	0.00	0.00	4,954.84	-2,866.42	3,873.83	1,909,711.30	2,744,905.00	36.248364	-107.759354
NU 501H POE - plan hits target center - Point	0.00	0.00	4,985.94	354.57	797.50	1,912,930.36	2,741,826.65	36.257213	-107.769787

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
642.00	642.00	Ojo Alamo Ss.		-0.40	136.32
771.00	771.00	Kirtland Shale		-0.40	136.32
1,208.39	1,208.00	Fruitland Coal		-0.40	136.32
1,383.78	1,382.00	Pictured Cliffs Ss.		-0.40	136.32
1,513.84	1,510.00	Lewis Shale		-0.40	136.32
2,083.34	2,061.00	Cliffhouse Ss.		-0.40	136.32
2,825.35	2,777.00	Menefee Fn.		-0.40	136.32
3,833.68	3,750.00	Point Lookout Ss.		-0.40	136.32
4,034.73	3,944.00	Mancos Shale		-0.40	136.32
4,543.25	4,436.00	Mancos Silt		-0.40	136.32
4,857.05	4,712.00	Gallup Fn.		-0.40	136.32

Cathedral Energy Services

Planning Report

Database: USA EDM 5000 Multi Users DB
 Company: EnCana Oil & Gas (USA) Inc
 Project: San Juan County, NM
 Site: S3-T23N-R9W
 Well: NU 501H (G03-2309 01H)
 Wellbore: OH
 Design: PLAN #2

Local Co-ordinate Reference: Well NU 501H (G03-2309 01H)
 TVD Reference: KB @ 6799.00usft
 MD Reference: KB @ 6799.00usft
 North Reference: True
 Survey Calculation Method: Minimum Curvature

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
950.00	950.00	0.00	0.00	KOP - 950'
1,699.78	1,691.25	95.01	22.17	EOB; INC=15°
4,285.00	4,188.43	746.41	174.21	START BUILD/TURN
5,516.63	4,985.94	354.57	797.50	LP - 4985' TVD; 90.4°
9,970.80	4,954.84	-2,866.42	3,873.83	TD at 9970.80

Operator Name: ENCANA OIL & GAS (USA) INCORPORATED

Well Name: NAGEEZI UNIT

Well Number: 501H

Well Production type:

Completion Method:

Water well additional information:

State appropriation permit:

Additional information attachment:

Section 6 - Construction Materials

Construction Materials description: All construction materials for the access road will consist of native borrow and subsoil accumulated during road construction. If additional fill material is required to build up the access during road construction, BLM has approved fill material from the pad construction to be utilized. Surfacing material will consist of a base of 3-inch road base and will be capped with ¾-inch road base which will be hauled in by trucks from either Paul & Sons, Four Corners Material, or Mesa gravel depending on which pit has the material needed to complete construction of the new access.

Construction Materials source location attachment:

Section 7 - Methods for Handling Waste

Waste type: SEWAGE

Waste content description: Sewer waste generated from onsite living accommodations on drill pad. Sewage – self-contained, chemical toilets will be provided for human waste disposal. The toilet holding tanks will be pumped, as needed, and the contents thereof disposed of in an approved sewage disposal facility. The toilets will be onsite during all operations. Please note, the volumes provided are estimates only.

Amount of waste: 1000 gallons

Waste disposal frequency : Weekly

Safe containment description: Will be stored in above ground tank that includes secondary containment in the form of berms or similar.

Safe containmant attachment:

Waste disposal type: HAUL TO COMMERCIAL FACILITY **Disposal location ownership:** PRIVATE

Disposal type description:

Disposal location description: Sewage will be disposed of at an authorized sanitary landfill.

✓ **Waste type:** DRILLING

Waste content description: Water-based mud drill cuttings produced from drilling the well bore. 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. Please note, the volumes provided are estimates only.

Amount of waste: 2500 barrels

Waste disposal frequency : Weekly

Safe containment description: Cuttings will be stored in above ground steel storage tanks. Cuttings will be mixed with sawdust or other absorbent material and disposed of at a commercial facility.

Safe containmant attachment:

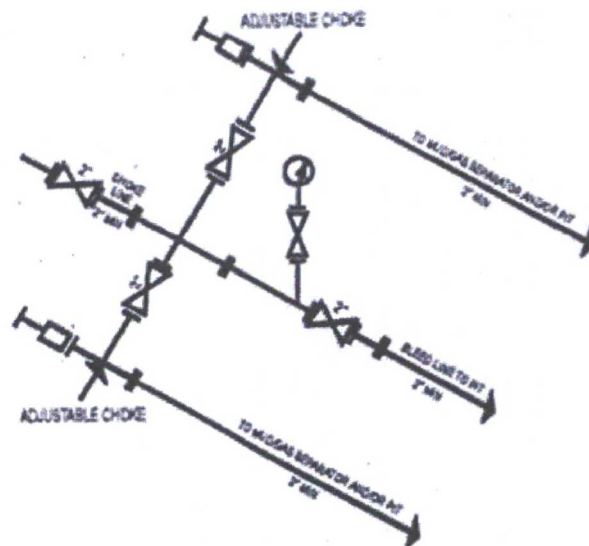
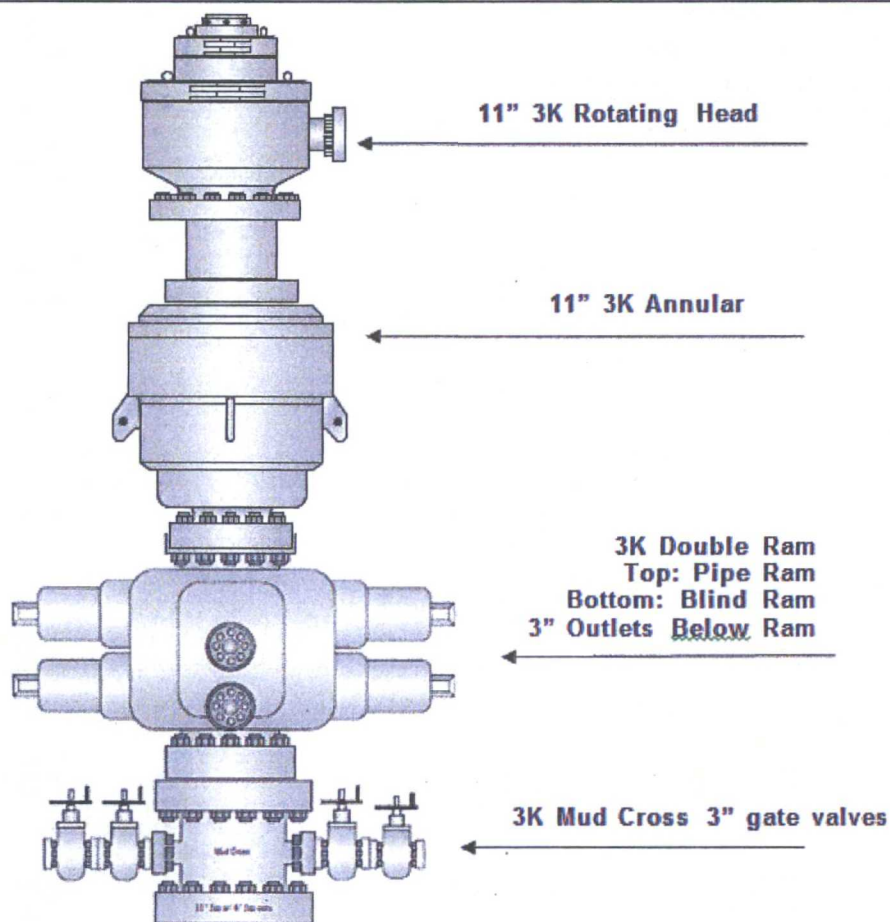
Waste disposal type: HAUL TO COMMERCIAL FACILITY **Disposal location ownership:** PRIVATE

Disposal type description:

WELLHEAD BLOWOUT CONTROL SYSTEM

encana

Well Name and Number:
NU 501H



ENCANA OIL & GAS (USA) INC.

NAGEEZI UNIT #501H

2543' FNL & 1510' FEL

LOCATED IN THE SW/4 NE/4 OF SECTION 03,

T23N, R9W, N.M.P.M.,

SAN JUAN COUNTY, NEW MEXICO

DIRECTIONS

- 1) FROM THE INTERSECTION OF HIGHWAY 64 & HIGHWAY 550 IN BLOOMFIELD, GO SOUTH ON HIGHWAY 550 FOR 36.0 MILES TO ROAD 7800 (M.P. 115.6).
- 2) TURN RIGHT ONTO ROAD 7800 AND GO 3 MILES TO A DIRT ROAD ON LEFT, BEFORE THE WASH.
- 3) TURN LEFT AND GO 0.3 MILES TO THE NAGEEZI UNIT #405H WELL PAD.
- 4) TRAVEL THROUGH WELL PAD TO THE NORTH SIDE WHERE THE NEW ACCESS IS STAKED.

WELL FLAG LOCATED AT LAT. 36.256239° N, LONG. 107.772492° W (NAD 83).

CCI

CHENAULT CONSULTING INC.

4800 COLLEGE BLVD.
SUITE 301
FARMINGTON, NM 87402
(505) 325-7707



DATE: 08/24/17
DRAWN BY: GRR