

State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

David Martin
Cabinet Secretary

Tony Delfin
Deputy Cabinet Secretary

David R. Catanach, Division Director
Oil Conservation Division



New Mexico Oil Conservation Division approval and conditions listed below are made in accordance with OCD Rule 19.15.7.11 and are in addition to the actions approved by BLM on the following 3160-3 APD form.

Operator Signature Date: 2-26-16

Well information;

Operator Encana, Well Name and Number Nageezi Unit # 514H

API# 30045-35763 Section 9, 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 Hen
NMOCD Approved by Signature

6-10-2016
Date KC

RECEIVED

FEB 29 2016

FORM APPROVED
OMB No. 1004-0137
Expires: January 31, 2018

Farmington Field Office
Bureau of Land Management

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of work: ☒ DRILL ☐ REENTER		7. If Unit or CA Agreement, Name and No. NMNM 132981X
1b. Type of Well: ☒ Oil Well ☐ Gas Well ☐ Other		8. Lease Name and Well No. NAGEEZI UNIT 514H
1c. Type of Completion: ☒ Hydraulic Fracturing ☐ Single Zone ☐ Multiple Zone		9. API Well No. 30-045-35763
2. Name of Operator Encana Oil & Gas (USA) Inc.		10. Field and Pool, or Exploratory Nageezi Unit HZ (OIL)
3a. Address 370 17th Street, Suite 1700, Denver, CO 80202	3b. Phone No. (include area code) 720-876-3533	11. Sec., T. R. M. or Blk. and Survey or Area Section 9, T23N, R9W NMPM
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At surface 1,246' FSL, 808' FEL, Section 9, T23N, R9W At proposed prod. zone 1915' FSL, 170' FEL, Section 5, T23N, R9W		12. County or Parish San Juan
14. Distance in miles and direction from nearest town or post office* +/- 38 miles south from the intersection of US HWY 64 & US HWY 550 in Bloomfield, NM		13. State NM
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any)	BHL is 1915' FSL Section 5, T23N, R9W	17. Spacing Unit dedicated to this well 10,415.12 acres - Sec 1-4, 9-10, E2 5, NW4 11, T23N, R9W; Sec 25-28, 33-36, S2 21, S2 22, S2 23 T24N R9W
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.	SHL is +/- 30' from Nageezi Unit 513H SHL	20. BLM/BIA Bond No. in file COB-000235
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 6802' GL; 6818' KB	22. Approximate date work will start* 06/01/2016	23. Estimated duration 20 days

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, and the Hydraulic Fracturing rule per 43 CFR 3162.3-3 (as applicable)

- | | |
|--|---|
| 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 requested by the BLM. |

25. Signature 	Name (Printed/Typed) Katie Wegner	Date 02/26/16
Title Regulatory Analyst		
Approved by (Signature) 	Name (Printed/Typed)	Date 5/16/16
Title AFM	Office FEO	

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.

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

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

OIL CONS. DIV DIST. 3
MAY 18 2016

NMOCD
AV

NM'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

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹⁰ Surface Location¹¹ Bottom Hole Location If Different From Surface

¹³ Dedicated Acres PENETRATED SPACING UNIT; ALL SEC. 9 (640 ACRES), W/2 SEC. 4 (320 ACRES), E/2 SEC. 5 (320 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	¹⁵ Joint or Infill	¹⁴ Consolidation Code	¹⁶ Order No. R-13856 (10,415.12 ACRES)
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NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED
 Total, 95,000,000 = OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

18	17	OPERATOR CERTIFICATION
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Signature _____

Katie Wegner

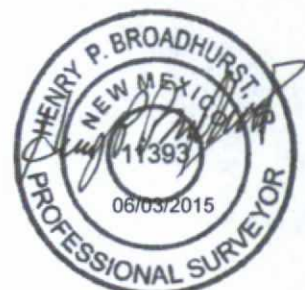
Printed Name
Katie.wegner@encana.com
E-mail Address

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.

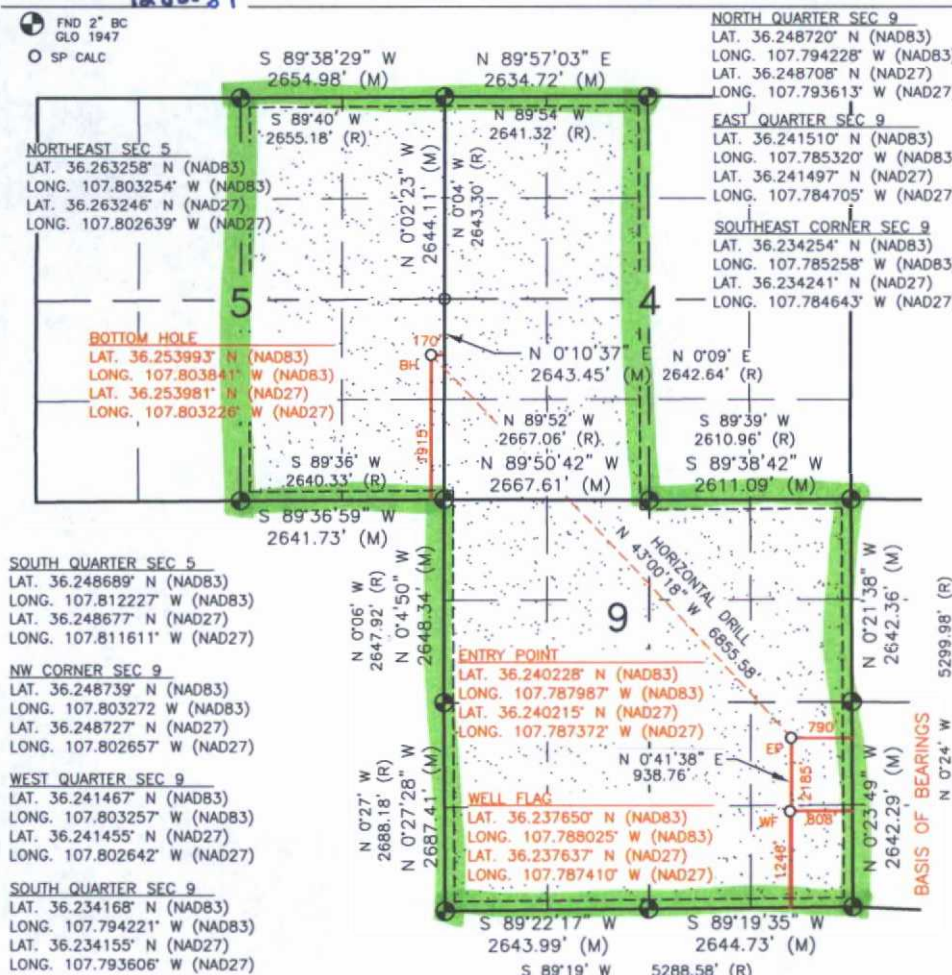
Date of Survey

Signature and Seal of Professional Surveyor:



Certificate Number

11.39.3



Nageezi Unit 514H**SHL: SE/4 SE/4 Sec 09 T23N R9W, 1246' FSL, 808' FEL****BHL: NE/4 SE/4 Sec 05 T23N R9W, 1915' FSL, 170' FEL****San Juan, New Mexico****Lease Number: NM 8005, BIA-NO-G-1402-1884, BIA-NO-G-1401-1831 & BIA-NO-G-1403-1920****Encana Oil & Gas (USA) Inc.
Drilling Plan****1. ESTIMATED TOPS OF GEOLOGICAL MARKERS (TVD)**

The estimated tops of important geologic markers are as follows:

Formation	Depth (TVD) units = feet
San Jose Fn.	n/a
Nacimiento Fn.	surface
Ojo Alamo Ss.	473
Kirtland Shale	643
Fruitland Coal	1,023
Pictured Cliffs Ss.	1,194
Lewis Shale	1,332
Cliffhouse Ss.	1,873
Menefee Fn.	2,603
Point Lookout Ss.	3,573
Mancos Shale	3,726
Mancos Silt	4,281
Gallup Fn.	4,554
Base Gallup	4,880

The referenced surface elevation is 6802', KB 6818'

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

Substance	Formation	Depth (TVD) units = feet
Water/Gas	Fruitland Coal	1,023
Oil/Gas	Pictured Cliffs Ss.	1,194
Oil/Gas	Cliffhouse Ss.	1,873
Gas	Menefee Fn.	2,603
Oil/Gas	Point Lookout Ss.	3,573
Oil/Gas	Mancos Shale	3,726
Oil/Gas	Mancos Silt	4,281
Oil/Gas	Gallup Fn.	4,554

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

Nageezi Unit 514H**SHL: SE/4 SE/4 Sec 09 T23N R9W, 1246' FSL, 808' FEL****BHL: NE/4 SE/4 Sec 05 T23N R9W, 1915' FSL, 170' FEL****San Juan, New Mexico****Lease Number: NM 8005, BIA-NO-G-1402-1884, BIA-NO-G-1401-1831 & BIA-NO-G-1403-1920****3. PRESSURE CONTROL**

- a) Pressure control equipment and configuration will be designed to meet 2M standards.
- b) Working pressure on rams and BOPE will be 3,000 psi.
- c) Function test and visual inspection of the BOP will be conducted daily and noted in the IADC Daily Drilling Report.
- d) The Annular BOP will be pressure tested to a minimum of 50 percent of its rated working pressure.
- e) Blind and Pipe Rams/BOP will be tested against a test plug to 100 percent of rated working pressure.
- f) Pressure tests are required before drilling out from under all casing strings set and cemented in place.
- g) BOP controls must be installed prior to drilling the surface casing plug and will remain in use until the well is completed or abandoned.
- h) BOP testing procedures and testing frequency will conform to Onshore Order No. 2.
- i) BOP remote controls shall be located on the rig floor at a location readily accessible to the driller. Master controls shall be on the ground at the accumulator and shall have the capability to function all preventers.
- j) The kill line shall be 2-inch minimum and contain two kill line valves, one of which shall be a check valve.
- k) The choke line shall be a 2-inch minimum and contain two choke line valves (2-inch minimum).
- l) The choke and manifold shall contain two adjustable chokes.
- m) Hand wheels shall be installed on all ram preventers.
- n) Safety valves and wrenches (with subs for drill string connections) shall be available on the rig floor at all times.
- o) Inside BOP or float sub shall also be available on the rig floor at all times.

Proposed BOP and choke manifold arrangements are attached.

4. CASING & CEMENTING PROGRAM

The proposed casing and cementing program has been designed to protect and/or isolate all usable water zones, potentially productive zones, lost circulation zones, abnormally pressured zones, and any prospectively valuable deposits of minerals. Any isolating medium other than cement shall receive approval prior to use. The casing setting depth shall be calculated to position the casing seat opposite a competent formation which will contain the maximum pressure to which it will be exposed during normal drilling operations. All indications of useable water shall be reported.

- a) The proposed casing design is as follows:

Casing	Depth (MD)	Hole Size	Csg Size	Weight	Grade
Conductor	0'-60'	26"	16"	42.09#	
Surface	0'-500'	12 1/4"	9 5/8"	36#	J55, STC New
Intermediate	0'-5224'	8 3/4"	7"	26#	J55, LTC New
Production Liner	5124'-12077'	6 1/8"	4 1/2"	11.6#	B80*, LTC New

Casing String				Casing Strength Properties			Minimum Design Factors		
Size	Weight (ppf)	Grade	Connection	Collapse (psi)	Burst (psi)	Tensile (1000lbs)	Collapse	Burst	Tension
9 5/8"	36	J55	STC	2020	3520	394	1.125	1.1	1.5
7"	26	J55	LTC	4320	4980	367	1.125	1.1	1.5
4.5"	11.6	B80	LTC	6350	7780	201	1.125	1.1	1.5

*B80 pipe specifications are attached.

Casing design is subject to revision based on geologic conditions encountered.

Nageezi Unit 514H**SHL: SE/4 SE/4 Sec 09 T23N R9W, 1246' FSL, 808' FEL****BHL: NE/4 SE/4 Sec 05 T23N R9W, 1915' FSL, 170' FEL****San Juan, New Mexico****Lease Number: NM 8005, BIA-NO-G-1402-1884, BIA-NO-G-1401-1831 & BIA-NO-G-1403-1920**

All casing strings below the conductor shall be pressure tested to 0.22 psi per foot of casing string length or 1,500 psi, whichever is greater, but not to exceed 70 percent of the minimum internal yield. If pressure declines more than 10 percent in 30 minutes, corrective action shall be taken.

b) The proposed cementing program is as follows:

Casing	Depth (MD)	Cement Volume (sacks)	Cement Type & Yield	Designed TOC	Centralizers
Conductor	0'-60'	100 sks	Type I Neat 16 ppg	Surface	None
Surface	0'-500'	228 sks	Type III Cement + 1% bwoc Calcium Chloride + 0.25 lbs/sack Cello Flake + 0.2% bwoc FL-52A + 58.9% Fresh Water	Surface	1 per joint on bottom 3 joints
Intermediate	0'-5224'	100% open hole excess Stage 1 Lead: 485 sks Stage 1 Tail: 372 sks	Lead: PremLite + 3% CaCl + 0.25lb/sk CelloFlake + 5lb/sk LCM, 12.1ppg 2.13cuft/sk Tail: Type III Cmt + 1% CaCl + 0.25lb/sk Cello Flake 14.5ppg 1.38cuft/sk	Surface	1 every 3 joints through water bearing zones
Production Liner	5124'- 12077'	50% OH excess Stage 1 Blend Total: 388sks	Blend: Premium Lite High Strength FM + 0.7% bwoc R-3 + 3% bwow Potassium Chloride + 0.25lbs/sack Cello Flake + 0.5% bwoc CD-32 + 1.15% bwoc FL- 52A + 60 lbs/sack Calcium Carbonate + 124.4% Fresh Water. Yield 2.63 cuft/sk	Liner Hanger	N/A

Actual volumes will be calculated and determined by conditions onsite. All cement slurries will meet or exceed minimum BLM and New Mexico Oil Conservation Division requirements. Slurries used will be the slurries listed above or equivalent slurries depending on service provider selected. Cement yields may change depending on slurries selected.

All waiting on cement times shall be a minimum of 8 hours or adequate to achieve minimum of 500 psi compressive strength at the casing shoe prior to drilling out.

5. WELL PLAN & DIRECTIONAL DRILLING PROGRAM

The proposed horizontal well will have a kick off point of 600'. Directional plans are attached.

Description	Proposed Depth (TVD/MD)	Formation
Horizontal Lateral TD	4844'/12077'	Gallup

Nageezi Unit 514H**SHL: SE/4 SE/4 Sec 09 T23N R9W, 1246' FSL, 808' FEL****BHL: NE/4 SE/4 Sec 05 T23N R9W, 1915' FSL, 170' FEL****San Juan, New Mexico****Lease Number: NM 8005, BIA-NO-G-1402-1884, BIA-NO-G-1401-1831 & BIA-NO-G-1403-1920****6. DRILLING FLUIDS PROGRAM****a) Surface through Intermediate Casing Point:**

Hole Size (in)	Depth (TVD/MD)	Mud Type	Density (ppg)	Viscosity (sec/qt)	Fluid Loss (cc)
30"	0-60'/60'	Fresh Water	8.3-9.2	38-100	4-28
12 1/4"	0'-500'/500'	Fresh Water	8.3-10	60-70	NC
8 3/4"	500'/500'-4844'/5224'	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"	4844'/5224'- 4844'/12077'	Fresh Water LSND	8.3-10	15-25	<15'

c) There will be sufficient mud on location to control a blowout should one occur. Mud flow and volume will be monitored both visually and with electronic pit volume totalizers. Mud tests shall be performed every 24 hours after mudding up to determine, as applicable: density, viscosity, gel strength, filtration, and pH.

✓ d) A closed-loop system will be used to recover drilling fluid and dry cuttings in both phases of the well and on all hole intervals. Above-ground tanks will be utilized to hold cuttings and fluids for rig operations. A frac tank will be on location to store fresh water. Waste will be disposed of properly at an EPA-approved hazardous waste facility. Fresh water cuttings will be disposed of at Basin Disposal, Inc. and/or Industrial Ecosystems, Inc. The location will be lined in accordance with the Surface Use Plan of Operations.

7. TESTING, CORING, & LOGGING

- a) Drill Stem Testing - None anticipated.
- b) Coring - None anticipated.
- c) Mudd Logging - Mud loggers will be on location from kick off point to TD.
- d) Logging - See below.

Cased Hole:

CBL/CCL/GR/VDL will be run as needed for perforating control.

8. ABNORMAL PRESSURES & HYDROGEN SULFIDE

The anticipated bottom hole pressure is +/- 2267 psi based on a 9.0 ppg at 4844' 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 November 5, 2015. It is anticipated that completion operations will begin within 30 days after the well has been drilled depending on fracture treatment schedules with various pumping service companies.

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

LOC: SE/4 SE/4 Sec 09 T23N R9W, 1246' FSL, 808' FEL			Encana Oil & Gas (USA) Inc.				ENG: 0		2/26/16	
County: San Juan			WELL SUMMARY				RIG: Unassigned			
WELL: Nageezi Unit 514H							GLE: 6802			
							RKBE: 6818			
MWD	OPEN HOLE	FORM	DEPTH			HOLE	CASING	MW	DEVIATION	
LWD	LOGGING		TVD	MD						SIZE
			60	60'		26	16" 42.09# 100sx Type I Neat 16.0ppg cmt	Fresh wtr 8.3-9.2		
Multi-Well pad take survey every stand and run anti-collision report prior to spud	None	San Jose Fn.	0			12 1/4	9 5/8" 36ppf J55 LTC	Fresh wtr	Vertical <1°	
		Nacimiento Fn. 9 5/8" Csg	surface 500	500.00	TOC Surface with 100% OH Excess: 228 sks Type III Cement + 1% bwoc Calcium Chloride + 0.25 lbs/sack Cello Flake + 0.2% bwoc FL-52A + 58.9% Fresh Water.		8.3-10			
Survey Every 60'-120', updating anticollision report after surveys. Stop operations and contact drilling engineer if separation factor approaches 1.5	No OH logs	Ojo Alamo Ss. Kirtland Shale	473 643			8 3/4	7" 26ppf J55 LTC	Fresh Wtr	Vertical <1°	
		Frutland Coal	1,023		TOC @ surface (100% OH excess - 70% Lead 30% Tail) Stage 1 Total: 858sks		8.3-10			
Surveys every 30' through the curve	Mud logger onsite	Pictured Cliffs Ss. Lewis Shale	1,194 1,332				Stage 1 Lead: 485 sks Premium Lite FM + 3% CaCl2 + 0.25/sk Cello Flake + 5#/sk LCM-1 + 8% Bentonite + 0.4% FL-52A + 0.4% Sodium Metasilicate. Mixed at 12.1 ppg. Yield 2.13 cuft/sk.			
		Cliffhouse Ss. Menefee Fn.	1,873 2,603				Stage 1 Tail: 372 sks Type III Cement + 1% CaCl2 + 0.25#/sk Cello Flake + 0.2% FL-52A. Mixed at 14.6 ppg. Yield 1.38 cuft/sk.			
		Point Lookout Ss. Mancos Shale	3,573 3,726							
		KOP	600	600						
		Mancos Silt	4,281							
		Gallup Fn.	4,554							
		7" Csg	4,844	5,224'						
Surveys every stand to TD unless directed otherwise by Geologist	No OH Logs	Horizontal Target TD	4,844 4,844	12,077		6 1/8	100' overlap at liner top		Horz Inc/TVD 90deg/4844ft	
		Base Gallup	4,880				6853' Drilled Lateral		TD = 12076.5 MD	
MWD Gamma Directional							4 1/2" 11.6ppf SB80 LTC	WBM 8.3-10		
							TOC @ hanger (50% OH excess) Stage 1 Total: 388sks			
							Stage 1 Blend: 388 sks Premium Lite High Strength FM + 0.7% bwoc R-3 + 3% bwoc Potassium Chloride + 0.25lbs/sack Cello Flake + 0.5% bwoc CD-32 + 1.15% bwoc FL-52A + 60 lbs/sack Calcium Carbonate + 124.4% Fresh Water. Yield 2.63 cuft/sk.			

NOTES:

- 1) Drill with 26" bit to 60', set 16" 42.09ppf conductor pipe
- 2) Drill surface to 500', R&C 9 5/8" casing
- 3) NU BOP and surface equipment
- 4) Drill to KOP of 600', 8 3/4 inch holesize
- 5) Start curve at 10deg/100' build rate
- 6) Drill to csg point of 5224' MD
- 7) R&C 7" csg, circ cmt to surface
- 8) Land at ~55 deg, drill lateral to 12077' run 4 1/2 inch cemented liner



SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	600.0	0.00	0.00	600.0	0.0	0.0	0.00	0.00	0.0	
3	1067.2	9.34	36.28	1065.1	30.6	22.5	2.00	36.28	7.1	
4	4341.0	9.34	36.28	4295.5	459.2	337.0	0.00	0.00	105.9	
5	5223.7	90.00	316.99	4844.0	938.4	11.2	10.00	-79.42	678.6	NAGEEZI UNIT 514H POE
6	12076.5	90.00	316.99	4844.0	5949.6	-4663.1	0.00	0.00	7531.4	NAGEEZI UNIT 514H PBHL

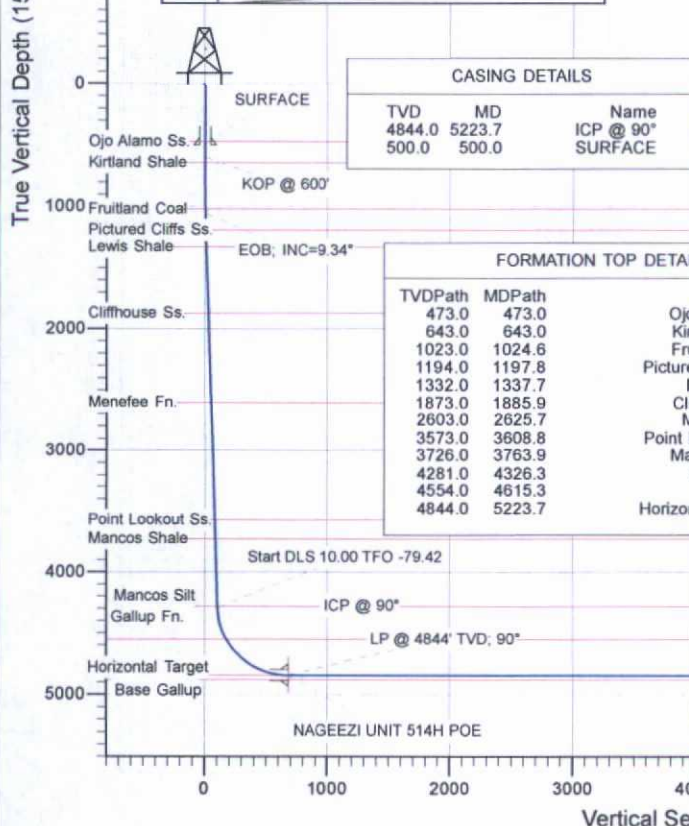
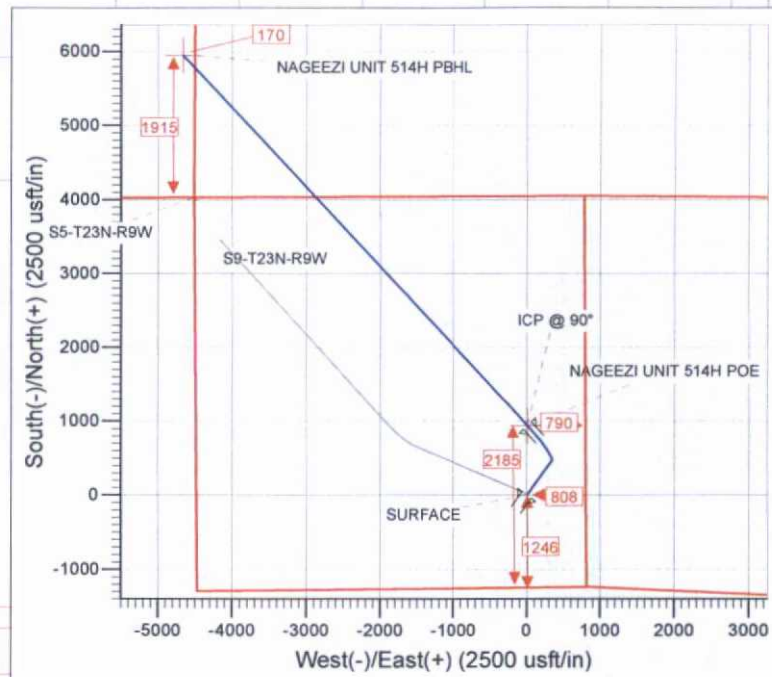
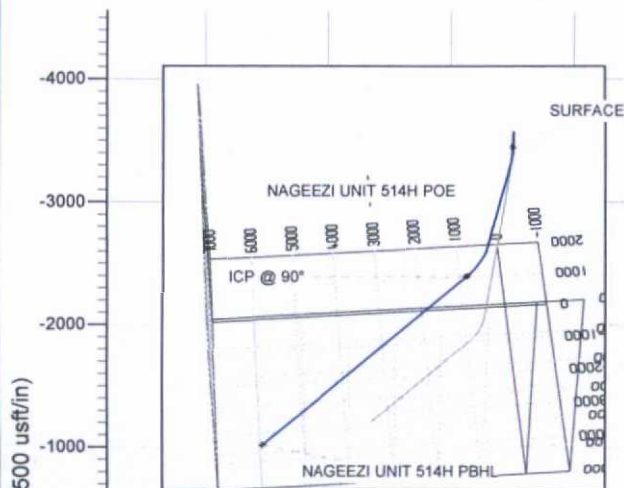
Project: San Juan County, NM
Site: S9-T23N-R9W
Well: NAGEEZI UNIT 514H
Wellbore: OH
Design: PLAN #1



Azimuths to True North
Magnetic North: 9.20°

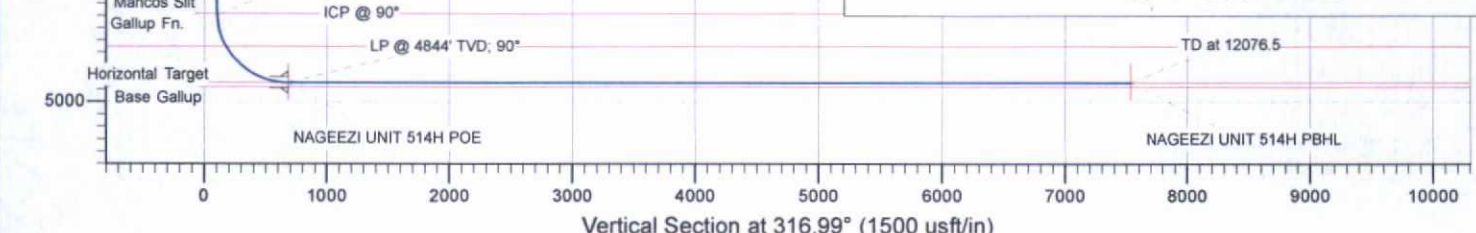
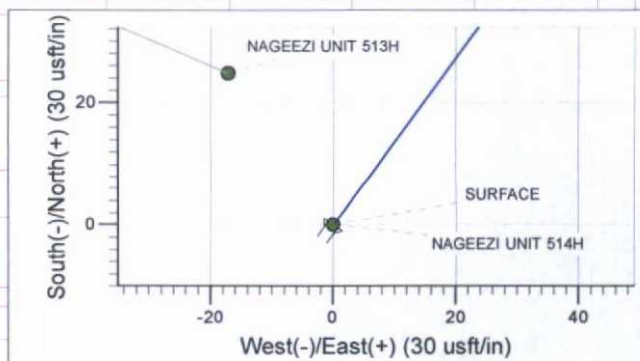
Magnetic Field
Strength: 49832.8nT
Dip Angle: 62.87°
Date: 12/16/2015
Model: HDGM

Type	Target	No Target (if westhand)	Azimuth	Origin Type	N/S	E/W	From TVD
Name	NAGEEZI UNIT 514H PBHL		TVD	+N/-S	+E/-W	Latitude	Longitude
	NAGEEZI UNIT 514H POE		4844.0	5949.6	-4663.1	36.237650	-107.788025
			4844.0	938.4	11.2	36.240228	-107.787987



TVD	MD	Name
4844.0	5223.7	ICP @ 90°
500.0	500.0	SURFACE

TVDPath	MDPath	Formation
473.0	473.0	Ojo Alamo Ss.
643.0	643.0	Kirtland Shale
1023.0	1024.6	Fruitland Coal
1194.0	1197.8	Pictured Cliffs Ss.
1332.0	1337.7	Lewis Shale
1873.0	1885.9	Cliffhouse Ss.
2603.0	2625.7	Menefee Fn.
3573.0	3608.8	Point Lookout Ss.
3726.0	3763.9	Mancos Shale
4281.0	4326.3	Mancos Silt
4554.0	4615.3	Gallup Fn.
4844.0	5223.7	Horizontal Target



WELL DETAILS: NAGEEZI UNIT 514H

+N/-S	+E/-W	North	East	Ground Level:	6802.0	Latitude	Longitude
0.0	0.0	1905805.96	2736452.98			36.237650	-107.788025



Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well NAGEEZI UNIT 514H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	16' KB @ 6818.0usft
Project:	San Juan County, NM	MD Reference:	16' KB @ 6818.0usft
Site:	S9-T23N-R9W	North Reference:	True
Well:	NAGEEZI UNIT 514H	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	S9-T23N-R9W				
Site Position:		Northing:	1,905,830.70 usft	Latitude:	36.237718
From:	Lat/Long	Easting:	2,736,435.86 usft	Longitude:	-107.788083
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16"	Grid Convergence:	0.03 °

Well	NAGEEZI UNIT 514H					
Well Position	+N/-S	0.0 usft	Northing:	1,905,805.96 usft	Latitude:	36.237650
	+E/-W	0.0 usft	Easting:	2,736,452.98 usft	Longitude:	-107.788025
Position Uncertainty		0.0 usft	Wellhead Elevation:	0.0 usft	Ground Level:	6,802.0 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	12/16/2015	9.20	62.87	49,833

Design	PLAN #1				
Audit Notes:					
Version:	Phase:	PLAN		Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.0	0.0	0.0	316.99	

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
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
600.0	0.00	0.00	600.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,067.2	9.34	36.28	1,065.1	30.6	22.5	2.00	2.00	0.00	36.28	
4,341.0	9.34	36.28	4,295.5	459.2	337.0	0.00	0.00	0.00	0.00	
5,223.7	90.00	316.99	4,844.0	938.4	11.2	10.00	9.14	-8.98	-79.42	NAGEEZI UNIT 514H
12,076.5	90.00	316.99	4,844.0	5,949.6	-4,663.1	0.00	0.00	0.00	0.00	NAGEEZI UNIT 514H

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well NAGEEZI UNIT 514H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	16' KB @ 6818.0usft
Project:	San Juan County, NM	MD Reference:	16' KB @ 6818.0usft
Site:	S9-T23N-R9W	North Reference:	True
Well:	NAGEEZI UNIT 514H	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
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	
473.0	0.00	0.00	473.0	0.0	0.0	0.0	0.00	0.00	Ojo Alamo Ss.
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	SURFACE
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	KOP @ 600'
643.0	0.86	36.28	643.0	0.3	0.2	0.1	2.00	2.00	Kirtland Shale
700.0	2.00	36.28	700.0	1.4	1.0	0.3	2.00	2.00	
800.0	4.00	36.28	799.8	5.6	4.1	1.3	2.00	2.00	
900.0	6.00	36.28	899.5	12.7	9.3	2.9	2.00	2.00	
1,000.0	8.00	36.28	998.7	22.5	16.5	5.2	2.00	2.00	
1,024.6	8.49	36.28	1,023.0	25.3	18.6	5.8	2.00	2.00	Fruitland Coal
1,067.2	9.34	36.28	1,065.1	30.6	22.5	7.1	2.00	2.00	EOB; INC=9.34°
1,100.0	9.34	36.28	1,097.5	34.9	25.6	8.1	0.00	0.00	
1,197.8	9.34	36.28	1,194.0	47.7	35.0	11.0	0.00	0.00	Pictured Cliffs Ss.
1,200.0	9.34	36.28	1,196.2	48.0	35.2	11.1	0.00	0.00	
1,300.0	9.34	36.28	1,294.8	61.1	44.9	14.1	0.00	0.00	
1,337.7	9.34	36.28	1,332.0	66.0	48.5	15.2	0.00	0.00	Lewis Shale
1,400.0	9.34	36.28	1,393.5	74.2	54.5	17.1	0.00	0.00	
1,500.0	9.34	36.28	1,492.2	87.3	64.1	20.1	0.00	0.00	
1,600.0	9.34	36.28	1,590.9	100.4	73.7	23.1	0.00	0.00	
1,700.0	9.34	36.28	1,689.5	113.5	83.3	26.2	0.00	0.00	
1,800.0	9.34	36.28	1,788.2	126.6	92.9	29.2	0.00	0.00	
1,885.9	9.34	36.28	1,873.0	137.8	101.1	31.8	0.00	0.00	Cliffhouse Ss.
1,900.0	9.34	36.28	1,886.9	139.7	102.5	32.2	0.00	0.00	
2,000.0	9.34	36.28	1,985.6	152.7	112.1	35.2	0.00	0.00	
2,100.0	9.34	36.28	2,084.2	165.8	121.7	38.2	0.00	0.00	
2,200.0	9.34	36.28	2,182.9	178.9	131.3	41.3	0.00	0.00	
2,300.0	9.34	36.28	2,281.6	192.0	140.9	44.3	0.00	0.00	
2,400.0	9.34	36.28	2,380.2	205.1	150.5	47.3	0.00	0.00	
2,500.0	9.34	36.28	2,478.9	218.2	160.1	50.3	0.00	0.00	
2,600.0	9.34	36.28	2,577.6	231.3	169.7	53.3	0.00	0.00	
2,625.7	9.34	36.28	2,603.0	234.7	172.2	54.1	0.00	0.00	Menefee Fn.
2,700.0	9.34	36.28	2,676.3	244.4	179.3	56.4	0.00	0.00	
2,800.0	9.34	36.28	2,774.9	257.5	189.0	59.4	0.00	0.00	
2,900.0	9.34	36.28	2,873.6	270.5	198.6	62.4	0.00	0.00	
3,000.0	9.34	36.28	2,972.3	283.6	208.2	65.4	0.00	0.00	
3,100.0	9.34	36.28	3,071.0	296.7	217.8	68.4	0.00	0.00	
3,200.0	9.34	36.28	3,169.6	309.8	227.4	71.4	0.00	0.00	
3,300.0	9.34	36.28	3,268.3	322.9	237.0	74.5	0.00	0.00	
3,400.0	9.34	36.28	3,367.0	336.0	246.6	77.5	0.00	0.00	
3,500.0	9.34	36.28	3,465.6	349.1	256.2	80.5	0.00	0.00	
3,600.0	9.34	36.28	3,564.3	362.2	265.8	83.5	0.00	0.00	
3,608.8	9.34	36.28	3,573.0	363.3	266.7	83.8	0.00	0.00	Point Lookout Ss.
3,700.0	9.34	36.28	3,663.0	375.3	275.4	86.5	0.00	0.00	
3,763.9	9.34	36.28	3,726.0	383.6	281.5	88.5	0.00	0.00	Mancos Shale
3,800.0	9.34	36.28	3,761.7	388.4	285.0	89.6	0.00	0.00	
3,900.0	9.34	36.28	3,860.3	401.4	294.6	92.6	0.00	0.00	
4,000.0	9.34	36.28	3,959.0	414.5	304.2	95.6	0.00	0.00	
4,100.0	9.34	36.28	4,057.7	427.6	313.8	98.6	0.00	0.00	

Planning Report

Database: USA EDM 5000 Multi Users DB
Company: EnCana Oil & Gas (USA) Inc
Project: San Juan County, NM
Site: S9-T23N-R9W
Well: NAGEEZI UNIT 514H
Wellbore: OH
Design: PLAN #1

Local Co-ordinate Reference: Well NAGEEZI UNIT 514H
TVD Reference: 16' KB @ 6818.0usft
MD Reference: 16' KB @ 6818.0usft
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
4,200.0	9.34	36.28	4,156.4	440.7	323.4	101.6	0.00	0.00	
4,300.0	9.34	36.28	4,255.0	453.8	333.1	104.7	0.00	0.00	
4,326.3	9.34	36.28	4,281.0	457.2	335.6	105.4	0.00	0.00	Mancos Silt
4,341.0	9.34	36.28	4,295.5	459.2	337.0	105.9	0.00	0.00	Start DLS 10.00 TFO -79.42
4,400.0	11.92	6.98	4,353.5	469.1	340.6	110.7	10.00	4.36	
4,500.0	19.81	343.66	4,449.7	495.7	337.0	132.5	10.00	7.89	
4,600.0	29.00	333.95	4,540.7	533.8	321.6	171.0	10.00	9.19	
4,615.3	30.45	332.95	4,554.0	540.6	318.2	178.3	10.00	9.47	Gallup Fn.
4,700.0	38.57	328.69	4,623.7	582.3	294.7	224.8	10.00	9.59	
4,800.0	48.30	325.27	4,696.3	639.8	257.1	292.5	10.00	9.72	
4,900.0	58.10	322.77	4,756.1	704.5	210.0	371.8	10.00	9.80	
5,000.0	67.93	320.75	4,801.4	774.3	154.9	460.5	10.00	9.84	
5,100.0	77.79	319.00	4,830.9	847.3	93.4	555.9	10.00	9.86	
5,110.5	78.83	318.82	4,833.0	855.0	86.6	566.1	10.00	9.87	Payzone Top
5,200.0	87.66	317.37	4,843.5	921.1	27.3	654.9	10.00	9.87	
5,223.7	90.00	316.99	4,844.0	938.5	11.2	678.6	9.99	9.86	LP @ 4844' TVD; 90° - Horizontal Target - ICP
5,300.0	90.00	316.99	4,844.0	994.3	-40.9	754.9	0.00	0.00	
5,400.0	90.00	316.99	4,844.0	1,067.4	-109.1	854.9	0.00	0.00	
5,500.0	90.00	316.99	4,844.0	1,140.5	-177.3	954.9	0.00	0.00	
5,600.0	90.00	316.99	4,844.0	1,213.6	-245.5	1,054.9	0.00	0.00	
5,700.0	90.00	316.99	4,844.0	1,286.8	-313.7	1,154.9	0.00	0.00	
5,800.0	90.00	316.99	4,844.0	1,359.9	-381.9	1,254.9	0.00	0.00	
5,900.0	90.00	316.99	4,844.0	1,433.0	-450.1	1,354.9	0.00	0.00	
6,000.0	90.00	316.99	4,844.0	1,506.1	-518.3	1,454.9	0.00	0.00	
6,100.0	90.00	316.99	4,844.0	1,579.3	-586.5	1,554.9	0.00	0.00	
6,200.0	90.00	316.99	4,844.0	1,652.4	-654.7	1,654.9	0.00	0.00	
6,300.0	90.00	316.99	4,844.0	1,725.5	-723.0	1,754.9	0.00	0.00	
6,400.0	90.00	316.99	4,844.0	1,798.6	-791.2	1,854.9	0.00	0.00	
6,500.0	90.00	316.99	4,844.0	1,871.8	-859.4	1,954.9	0.00	0.00	
6,600.0	90.00	316.99	4,844.0	1,944.9	-927.6	2,054.9	0.00	0.00	
6,700.0	90.00	316.99	4,844.0	2,018.0	-995.8	2,154.9	0.00	0.00	
6,800.0	90.00	316.99	4,844.0	2,091.1	-1,064.0	2,254.9	0.00	0.00	
6,900.0	90.00	316.99	4,844.0	2,164.3	-1,132.2	2,354.9	0.00	0.00	
7,000.0	90.00	316.99	4,844.0	2,237.4	-1,200.4	2,454.9	0.00	0.00	
7,100.0	90.00	316.99	4,844.0	2,310.5	-1,268.6	2,554.9	0.00	0.00	
7,200.0	90.00	316.99	4,844.0	2,383.6	-1,336.8	2,654.9	0.00	0.00	
7,300.0	90.00	316.99	4,844.0	2,456.8	-1,405.1	2,754.9	0.00	0.00	
7,400.0	90.00	316.99	4,844.0	2,529.9	-1,473.3	2,854.9	0.00	0.00	
7,500.0	90.00	316.99	4,844.0	2,603.0	-1,541.5	2,954.9	0.00	0.00	
7,600.0	90.00	316.99	4,844.0	2,676.1	-1,609.7	3,054.9	0.00	0.00	
7,700.0	90.00	316.99	4,844.0	2,749.3	-1,677.9	3,154.9	0.00	0.00	
7,800.0	90.00	316.99	4,844.0	2,822.4	-1,746.1	3,254.9	0.00	0.00	
7,900.0	90.00	316.99	4,844.0	2,895.5	-1,814.3	3,354.9	0.00	0.00	
8,000.0	90.00	316.99	4,844.0	2,968.6	-1,882.5	3,454.9	0.00	0.00	
8,100.0	90.00	316.99	4,844.0	3,041.8	-1,950.7	3,554.9	0.00	0.00	
8,200.0	90.00	316.99	4,844.0	3,114.9	-2,018.9	3,654.9	0.00	0.00	
8,300.0	90.00	316.99	4,844.0	3,188.0	-2,087.2	3,754.9	0.00	0.00	
8,400.0	90.00	316.99	4,844.0	3,261.1	-2,155.4	3,854.9	0.00	0.00	
8,500.0	90.00	316.99	4,844.0	3,334.3	-2,223.6	3,954.9	0.00	0.00	
8,600.0	90.00	316.99	4,844.0	3,407.4	-2,291.8	4,054.9	0.00	0.00	
8,700.0	90.00	316.99	4,844.0	3,480.5	-2,360.0	4,154.9	0.00	0.00	
8,800.0	90.00	316.99	4,844.0	3,553.6	-2,428.2	4,254.9	0.00	0.00	

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well NAGEEZI UNIT 514H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	16' KB @ 6818.0usft
Project:	San Juan County, NM	MD Reference:	16' KB @ 6818.0usft
Site:	S9-T23N-R9W	North Reference:	True
Well:	NAGEEZI UNIT 514H	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
8,900.0	90.00	316.99	4,844.0	3,626.8	-2,496.4	4,354.9	0.00	0.00	
9,000.0	90.00	316.99	4,844.0	3,699.9	-2,564.6	4,454.9	0.00	0.00	
9,100.0	90.00	316.99	4,844.0	3,773.0	-2,632.8	4,554.9	0.00	0.00	
9,200.0	90.00	316.99	4,844.0	3,846.1	-2,701.1	4,654.9	0.00	0.00	
9,300.0	90.00	316.99	4,844.0	3,919.3	-2,769.3	4,754.9	0.00	0.00	
9,400.0	90.00	316.99	4,844.0	3,992.4	-2,837.5	4,854.9	0.00	0.00	
9,500.0	90.00	316.99	4,844.0	4,065.5	-2,905.7	4,954.9	0.00	0.00	
9,600.0	90.00	316.99	4,844.0	4,138.6	-2,973.9	5,054.9	0.00	0.00	
9,700.0	90.00	316.99	4,844.0	4,211.8	-3,042.1	5,154.9	0.00	0.00	
9,800.0	90.00	316.99	4,844.0	4,284.9	-3,110.3	5,254.9	0.00	0.00	
9,900.0	90.00	316.99	4,844.0	4,358.0	-3,178.5	5,354.9	0.00	0.00	
10,000.0	90.00	316.99	4,844.0	4,431.1	-3,246.7	5,454.9	0.00	0.00	
10,100.0	90.00	316.99	4,844.0	4,504.3	-3,314.9	5,554.9	0.00	0.00	
10,200.0	90.00	316.99	4,844.0	4,577.4	-3,383.2	5,654.9	0.00	0.00	
10,300.0	90.00	316.99	4,844.0	4,650.5	-3,451.4	5,754.9	0.00	0.00	
10,400.0	90.00	316.99	4,844.0	4,723.6	-3,519.6	5,854.9	0.00	0.00	
10,500.0	90.00	316.99	4,844.0	4,796.8	-3,587.8	5,954.9	0.00	0.00	
10,600.0	90.00	316.99	4,844.0	4,869.9	-3,656.0	6,054.9	0.00	0.00	
10,700.0	90.00	316.99	4,844.0	4,943.0	-3,724.2	6,154.9	0.00	0.00	
10,800.0	90.00	316.99	4,844.0	5,016.2	-3,792.4	6,254.9	0.00	0.00	
10,900.0	90.00	316.99	4,844.0	5,089.3	-3,860.6	6,354.9	0.00	0.00	
11,000.0	90.00	316.99	4,844.0	5,162.4	-3,928.8	6,454.9	0.00	0.00	
11,100.0	90.00	316.99	4,844.0	5,235.5	-3,997.0	6,554.9	0.00	0.00	
11,200.0	90.00	316.99	4,844.0	5,308.7	-4,065.3	6,654.9	0.00	0.00	
11,300.0	90.00	316.99	4,844.0	5,381.8	-4,133.5	6,754.9	0.00	0.00	
11,400.0	90.00	316.99	4,844.0	5,454.9	-4,201.7	6,854.9	0.00	0.00	
11,500.0	90.00	316.99	4,844.0	5,528.0	-4,269.9	6,954.9	0.00	0.00	
11,600.0	90.00	316.99	4,844.0	5,601.2	-4,338.1	7,054.9	0.00	0.00	
11,700.0	90.00	316.99	4,844.0	5,674.3	-4,406.3	7,154.9	0.00	0.00	
11,800.0	90.00	316.99	4,844.0	5,747.4	-4,474.5	7,254.9	0.00	0.00	
11,900.0	90.00	316.99	4,844.0	5,820.5	-4,542.7	7,354.9	0.00	0.00	
12,000.0	90.00	316.99	4,844.0	5,893.7	-4,610.9	7,454.9	0.00	0.00	
12,076.5	90.00	316.99	4,844.0	5,949.6	-4,663.1	7,531.4	0.00	0.00	TD at 12076.5

Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
NAGEEZI UNIT 514H PI	0.00	0.00	4,844.0	938.4	11.2	1,906,744.41	2,736,463.74	36.240228	-107.787987
- plan hits target center									
- Point									
NAGEEZI UNIT 514H PI	0.00	0.00	4,844.0	5,949.6	-4,663.1	1,911,753.38	2,731,787.07	36.253993	-107.803841
- plan hits target center									
- Point									

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well NAGEEZI UNIT 514H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	16' KB @ 6818.0usft
Project:	San Juan County, NM	MD Reference:	16' KB @ 6818.0usft
Site:	S9-T23N-R9W	North Reference:	True
Well:	NAGEEZI UNIT 514H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #1		

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
5,223.7	4,844.0	ICP @ 90°	7	8-3/4	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
473.0	473.0	Ojo Alamo Ss.				
643.0	643.0	Kirtland Shale				
1,024.6	1,023.0	Fruitland Coal				
1,197.8	1,194.0	Pictured Cliffs Ss.				
1,337.7	1,332.0	Lewis Shale				
1,885.9	1,873.0	Cliffhouse Ss.				
2,625.7	2,603.0	Menefee Fn.				
3,608.8	3,573.0	Point Lookout Ss.				
3,763.9	3,726.0	Mancos Shale				
4,326.3	4,281.0	Mancos Silt				
4,615.3	4,554.0	Gallup Fn.				
5,110.5	4,833.0	Payzone Top				
5,223.7	4,844.0	Horizontal Target				

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
600.0	600.0	0.0	0.0	KOP @ 600'	
1,067.2	1,065.1	30.6	22.5	EOB; INC=9.34°	
4,341.0	4,295.5	459.2	337.0	Start DLS 10.00 TFO -79.42	
5,223.7	4,844.0	938.4	11.2	LP @ 4844' TVD; 90°	
12,076.5	4,844.0	5,949.6	-4,663.1	TD at 12076.5	

EnCana Oil & Gas (USA) Inc

San Juan County, NM

S9-T23N-R9W

NAGEEZI UNIT 514H

OH

PLAN #1

Anticollision Report

16 December, 2015

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well NAGEEZI UNIT 514H
Project:	San Juan County, NM	TVD Reference:	16' KB @ 6818.0usft
Reference Site:	S9-T23N-R9W	MD Reference:	16' KB @ 6818.0usft
Site Error:	0.0usft	North Reference:	True
Reference Well:	NAGEEZI UNIT 514H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0usft	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:	MD Interval 100.0usft	Error Model:	Systematic Ellipse
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 1,407.6usft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma		

Survey Tool Program	Date 12/16/2015			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.0	12,076.5	PLAN #1 (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						
S9-T23N-R9W						
NAGEEZI UNIT 513H - OH - PLAN #1	600.0	600.0	30.1	26.2	7.743	CC, ES
NAGEEZI UNIT 513H - OH - PLAN #1	10,000.0	8,839.0	1,339.2	1,081.8	5.203	SF

Anticollision Report

Company: EnCana Oil & Gas (USA) Inc
Project: San Juan County, NM
Reference Site: S9-T23N-R9W
Site Error: 0.0usft
Reference Well: NAGEEZI UNIT 514H
Well Error: 0.0usft
Reference Wellbore: OH
Reference Design: PLAN #1

Local Co-ordinate Reference: Well NAGEEZI UNIT 514H
TVD Reference: 16' KB @ 6818.0usft
MD Reference: 16' KB @ 6818.0usft
North Reference: True
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: USA EDM 5000 Multi Users DB
Offset TVD Reference: Offset Datum

Offset Design S9-T23N-R9W - NAGEEZI UNIT 513H - OH - PLAN #1														Offset Site Error: 0.0 usft
Survey Program: 0-MWD+HDGM														Offset Well Error: 0.0 usft
Reference		Offset		Semi Major Axis		Highside Toothface (")	Distance		Total Uncertainty Axis	Separation Factor	Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)				Between Centres (usft)	Between Ellipses (usft)	
0.0	0.0	0.0	0.0	0.0	0.0	-34.64	24.8	-17.1	30.1					
100.0	100.0	100.0	100.0	0.2	0.2	-34.64	24.8	-17.1	30.1	29.8	0.30	96.921		
200.0	200.0	200.0	200.0	0.5	0.5	-34.64	24.8	-17.1	30.1	29.1	1.02	25.554		
300.0	300.0	300.0	300.0	0.9	0.9	-34.64	24.8	-17.1	30.1	28.4	1.74	17.342		
400.0	400.0	400.0	400.0	1.2	1.2	-34.64	24.8	-17.1	30.1	27.6	2.45	12.271		
500.0	500.0	500.0	500.0	1.6	1.6	-34.64	24.8	-17.1	30.1	26.9	3.17	9.495		
600.0	600.0	600.0	600.0	1.9	1.9	-34.64	24.8	-17.1	30.1	26.2	3.89	7.743 CC, ES		
700.0	700.0	699.0	699.0	2.3	2.3	-75.60	25.4	-18.7	31.1	26.5	4.61	6.741		
800.0	799.8	797.7	797.5	2.7	2.6	-87.63	27.4	-23.4	35.2	29.8	5.37	6.553		
900.0	899.5	895.4	894.9	3.0	3.0	-101.52	30.7	-31.1	44.5	38.3	6.14	7.242		
1,000.0	998.7	991.9	990.6	3.4	3.3	-112.73	35.2	-41.7	60.1	53.2	6.91	8.708		
1,100.0	1,097.5	1,086.7	1,084.4	3.8	3.7	-120.41	40.9	-55.1	82.0	74.3	7.66	10.709		
1,200.0	1,196.2	1,180.1	1,176.1	4.1	4.1	-124.67	47.6	-71.0	108.1	99.7	8.39	12.888		
1,300.0	1,294.8	1,272.0	1,265.9	4.5	4.5	-126.71	55.4	-89.3	137.4	128.3	9.11	15.074		
1,400.0	1,393.5	1,362.3	1,353.4	4.9	4.9	-127.58	64.2	-109.9	169.5	159.7	9.83	17.238		
1,500.0	1,492.2	1,450.9	1,438.4	5.3	5.3	-127.81	73.8	-132.6	204.3	193.7	10.54	19.377		
1,600.0	1,590.9	1,537.6	1,520.9	5.7	5.7	-127.67	84.2	-157.1	241.6	230.4	11.24	21.496		
1,700.0	1,689.5	1,622.3	1,600.7	6.1	6.2	-127.32	95.3	-183.2	281.5	269.6	11.93	23.603		
1,800.0	1,788.2	1,705.0	1,677.8	6.5	6.7	-126.86	107.1	-210.8	323.7	311.2	12.60	25.704		
1,900.0	1,886.9	1,785.6	1,752.0	7.0	7.2	-126.34	119.3	-239.7	368.4	355.1	13.25	27.802		
2,000.0	1,985.6	1,864.1	1,823.4	7.4	7.7	-125.79	132.0	-269.6	415.3	401.4	13.89	29.902		
2,100.0	2,084.2	1,940.3	1,892.0	7.8	8.3	-125.23	145.1	-300.5	464.3	449.8	14.50	32.015		
2,200.0	2,182.9	2,022.6	1,965.1	8.2	8.9	-124.65	159.9	-335.1	515.1	499.9	15.17	33.953		
2,300.0	2,281.6	2,108.6	2,041.5	8.6	9.6	-124.15	175.3	-371.4	566.0	550.1	15.88	35.649		
2,400.0	2,380.2	2,194.6	2,117.9	9.0	10.3	-123.73	190.7	-407.7	617.0	600.4	16.59	37.180		
2,500.0	2,478.9	2,280.6	2,194.3	9.4	11.0	-123.37	206.1	-444.0	667.9	650.6	17.32	38.565		
2,600.0	2,577.6	2,366.5	2,270.7	9.8	11.7	-123.07	221.5	-480.3	718.9	700.8	18.05	39.823		
2,700.0	2,676.3	2,452.5	2,347.1	10.3	12.5	-122.80	237.0	-516.6	769.9	751.1	18.79	40.969		
2,800.0	2,774.9	2,538.5	2,423.5	10.7	13.2	-122.57	252.4	-552.9	820.9	801.3	19.54	42.016		
2,900.0	2,873.6	2,624.4	2,499.9	11.1	14.0	-122.36	267.8	-589.2	871.9	851.6	20.29	42.976		
3,000.0	2,972.3	2,710.4	2,576.3	11.5	14.7	-122.18	283.2	-625.5	922.9	901.9	21.04	43.857		
3,100.0	3,071.0	2,796.4	2,652.7	11.9	15.5	-122.02	298.6	-661.8	973.9	952.1	21.80	44.669		
3,200.0	3,169.6	2,882.4	2,729.1	12.3	16.2	-121.87	314.1	-698.1	1,025.0	1,002.4	22.57	45.418		
3,300.0	3,268.3	2,968.3	2,805.5	12.8	17.0	-121.74	329.5	-734.4	1,076.0	1,052.7	23.33	46.112		
3,400.0	3,367.0	3,054.3	2,881.9	13.2	17.8	-121.61	344.9	-770.7	1,127.0	1,102.9	24.10	46.755		
3,500.0	3,465.7	3,140.3	2,958.3	13.6	18.5	-121.50	360.3	-807.0	1,178.1	1,153.2	24.88	47.353		
3,600.0	3,564.3	3,226.3	3,034.7	14.0	19.3	-121.40	375.7	-843.2	1,229.1	1,203.5	25.65	47.911		
3,700.0	3,663.0	3,312.2	3,111.1	14.4	20.1	-121.31	391.2	-879.5	1,280.2	1,253.7	26.43	48.432		
3,800.0	3,761.7	3,398.2	3,187.5	14.8	20.8	-121.22	406.6	-915.8	1,331.2	1,304.0	27.21	48.919		
3,900.0	3,860.3	3,484.2	3,263.9	15.3	21.6	-121.14	422.0	-952.1	1,382.2	1,354.3	27.99	49.375		
5,800.0	4,844.0	4,815.8	4,447.1	32.8	33.7	-73.08	660.8	-1,514.3	1,388.7	1,328.8	59.85	23.204		
5,900.0	4,844.0	4,857.7	4,484.4	34.9	34.1	-74.68	668.3	-1,532.0	1,372.8	1,309.5	63.24	21.708		
6,000.0	4,844.0	4,897.3	4,519.5	37.0	34.4	-76.19	675.6	-1,548.8	1,362.7	1,296.1	66.59	20.464		
6,100.0	4,844.0	4,941.7	4,557.7	39.3	34.9	-77.83	685.7	-1,569.1	1,358.6	1,288.7	69.99	19.413		
6,123.1	4,844.0	4,954.0	4,568.0	39.8	35.0	-78.28	688.9	-1,575.0	1,358.5	1,287.7	70.80	19.188		
6,200.0	4,844.0	5,001.8	4,606.6	41.5	35.6	-79.94	703.1	-1,599.2	1,360.0	1,286.4	73.60	18.479		
6,300.0	4,844.0	5,085.1	4,668.3	43.8	36.7	-82.59	734.4	-1,645.6	1,365.5	1,287.8	77.62	17.591		
6,400.0	4,844.0	5,202.1	4,740.5	46.1	38.7	-85.66	790.8	-1,717.9	1,373.1	1,290.7	82.34	16.676		
6,500.0	4,844.0	5,360.7	4,806.9	48.4	41.7	-88.46	886.9	-1,824.5	1,379.5	1,291.5	87.98	15.679		
6,600.0	4,844.0	5,543.9	4,833.0	50.8	45.5	-89.54	1,016.7	-1,950.0	1,380.9	1,286.9	93.99	14.693		
6,700.0	4,844.0	5,643.9	4,833.0	53.2	47.6	-89.54	1,090.7	-2,017.2	1,379.6	1,281.0	98.56	13.998		
6,800.0	4,844.0	5,743.9	4,833.0	55.6	49.7	-89.54	1,164.7	-2,084.4	1,378.2	1,275.1	103.17	13.359		

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

Anticollision Report

Company: EnCana Oil & Gas (USA) Inc
Project: San Juan County, NM
Reference Site: S9-T23N-R9W
Site Error: 0.0usft
Reference Well: NAGEEZI UNIT 514H
Well Error: 0.0usft
Reference Wellbore: OH
Reference Design: PLAN #1

Local Co-ordinate Reference: Well NAGEEZI UNIT 514H
TVD Reference: 16' KB @ 6818.0usft
MD Reference: 16' KB @ 6818.0usft
North Reference: True
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: USA EDM 5000 Multi Users DB
Offset TVD Reference: Offset Datum

Offset Design S9-T23N-R9W - NAGEEZI UNIT 513H - OH - PLAN #1													Offset Site Error: 0.0 usft	
Survey Program: 0-MWD+HDGM													Offset Well Error: 0.0 usft	
Reference		Offset		Semi Major Axis			Distance						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)	Offset Wellbore Centre +E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Total Uncertainty Axis	Separation Factor		
6,900.0	4,844.0	5,843.8	4,833.0	58.0	51.8	-89.54	1,238.8	-2,151.6	1,376.9	1,269.1	107.83	12.770		
7,000.0	4,844.0	5,943.8	4,833.0	60.4	54.0	-89.54	1,312.8	-2,218.8	1,375.5	1,263.0	112.52	12.225		
7,100.0	4,844.0	6,043.8	4,833.0	62.8	56.2	-89.54	1,386.8	-2,286.0	1,374.2	1,257.0	117.24	11.721		
7,200.0	4,844.0	6,143.8	4,833.0	65.2	58.5	-89.54	1,460.9	-2,353.3	1,372.8	1,250.9	121.99	11.253		
7,300.0	4,844.0	6,243.8	4,833.0	67.7	60.7	-89.54	1,534.9	-2,420.5	1,371.5	1,244.7	126.77	10.819		
7,400.0	4,844.0	6,343.8	4,833.0	70.1	63.0	-89.54	1,608.9	-2,487.7	1,370.2	1,238.6	131.57	10.414		
7,500.0	4,844.0	6,443.8	4,833.0	72.6	65.3	-89.54	1,683.0	-2,554.9	1,368.8	1,232.4	136.39	10.036		
7,600.0	4,844.0	6,543.8	4,833.0	75.0	67.6	-89.54	1,757.0	-2,622.1	1,367.5	1,226.2	141.22	9.683		
7,700.0	4,844.0	6,643.8	4,833.0	77.5	70.0	-89.54	1,831.0	-2,689.3	1,366.1	1,220.0	146.07	9.352		
7,800.0	4,844.0	6,743.8	4,833.0	80.0	72.3	-89.54	1,905.1	-2,756.5	1,364.8	1,213.8	150.94	9.042		
7,900.0	4,844.0	6,843.8	4,833.0	82.4	74.7	-89.54	1,979.1	-2,823.7	1,363.4	1,207.6	155.82	8.750		
8,000.0	4,844.0	6,943.7	4,833.0	84.9	77.0	-89.54	2,053.1	-2,891.0	1,362.1	1,201.4	160.71	8.476		
8,100.0	4,844.0	7,043.7	4,833.0	87.4	79.4	-89.54	2,127.2	-2,958.2	1,360.7	1,195.1	165.61	8.217		
8,200.0	4,844.0	7,143.7	4,833.0	89.9	81.8	-89.54	2,201.2	-3,025.4	1,359.4	1,188.9	170.52	7.972		
8,300.0	4,844.0	7,243.7	4,833.0	92.4	84.2	-89.54	2,275.2	-3,092.6	1,358.0	1,182.6	175.44	7.741		
8,400.0	4,844.0	7,343.7	4,833.0	94.9	86.6	-89.54	2,349.2	-3,159.8	1,356.7	1,176.3	180.36	7.522		
8,500.0	4,844.0	7,443.7	4,833.0	97.4	89.0	-89.53	2,423.3	-3,227.0	1,355.3	1,170.0	185.30	7.314		
8,600.0	4,844.0	7,543.7	4,833.0	99.8	91.4	-89.53	2,497.3	-3,294.2	1,354.0	1,163.7	190.24	7.117		
8,700.0	4,844.0	7,643.7	4,833.0	102.3	93.9	-89.53	2,571.3	-3,361.4	1,352.6	1,157.4	195.19	6.930		
8,800.0	4,844.0	7,743.7	4,833.0	104.8	96.3	-89.53	2,645.4	-3,428.7	1,351.3	1,151.1	200.14	6.752		
8,900.0	4,844.0	7,843.7	4,833.0	107.4	98.7	-89.53	2,719.4	-3,495.9	1,349.9	1,144.8	205.10	6.582		
9,000.0	4,844.0	7,943.7	4,833.0	109.9	101.1	-89.53	2,793.4	-3,563.1	1,348.6	1,138.5	210.07	6.420		
9,100.0	4,844.0	8,043.6	4,833.0	112.4	103.6	-89.53	2,867.5	-3,630.3	1,347.2	1,132.2	215.04	6.265		
9,200.0	4,844.0	8,143.6	4,833.0	114.9	106.0	-89.53	2,941.5	-3,697.5	1,345.9	1,125.9	220.01	6.117		
9,300.0	4,844.0	8,243.6	4,833.0	117.4	108.5	-89.53	3,015.5	-3,764.7	1,344.5	1,119.6	224.99	5.976		
9,400.0	4,844.0	8,343.6	4,833.0	119.9	110.9	-89.53	3,089.6	-3,831.9	1,343.2	1,113.2	229.97	5.841		
9,500.0	4,844.0	8,443.6	4,833.0	122.4	113.4	-89.53	3,163.6	-3,899.1	1,341.9	1,106.9	234.95	5.711		
9,600.0	4,844.0	8,543.6	4,833.0	124.9	115.8	-89.53	3,237.6	-3,966.4	1,340.5	1,100.6	239.94	5.587		
9,700.0	4,844.0	8,643.6	4,833.0	127.4	118.3	-89.53	3,311.7	-4,033.6	1,339.2	1,094.2	244.94	5.467		
9,800.0	4,844.0	8,743.6	4,833.0	129.9	120.8	-89.53	3,385.7	-4,100.8	1,337.8	1,087.9	249.93	5.353		
9,900.0	4,844.0	8,839.0	4,833.0	132.5	123.1	-89.53	3,456.3	-4,164.9	1,336.5	1,081.6	254.85	5.244		
9,913.4	4,844.0	8,839.0	4,833.0	132.8	123.1	-89.53	3,456.3	-4,164.9	1,336.4	1,081.1	255.27	5.235		
10,000.0	4,844.0	8,839.0	4,833.0	135.0	123.1	-89.53	3,456.3	-4,164.9	1,339.2	1,081.8	257.39	5.203 SF		
10,100.0	4,844.0	8,839.0	4,833.0	137.5	123.1	-89.53	3,456.3	-4,164.9	1,349.4	1,090.8	258.54	5.219		
10,200.0	4,844.0	8,839.0	4,833.0	140.0	123.1	-89.53	3,456.3	-4,164.9	1,366.8	1,108.5	258.32	5.291		
10,300.0	4,844.0	8,839.0	4,833.0	142.5	123.1	-89.53	3,456.3	-4,164.9	1,391.2	1,134.3	256.85	5.416		

Anticollision Report

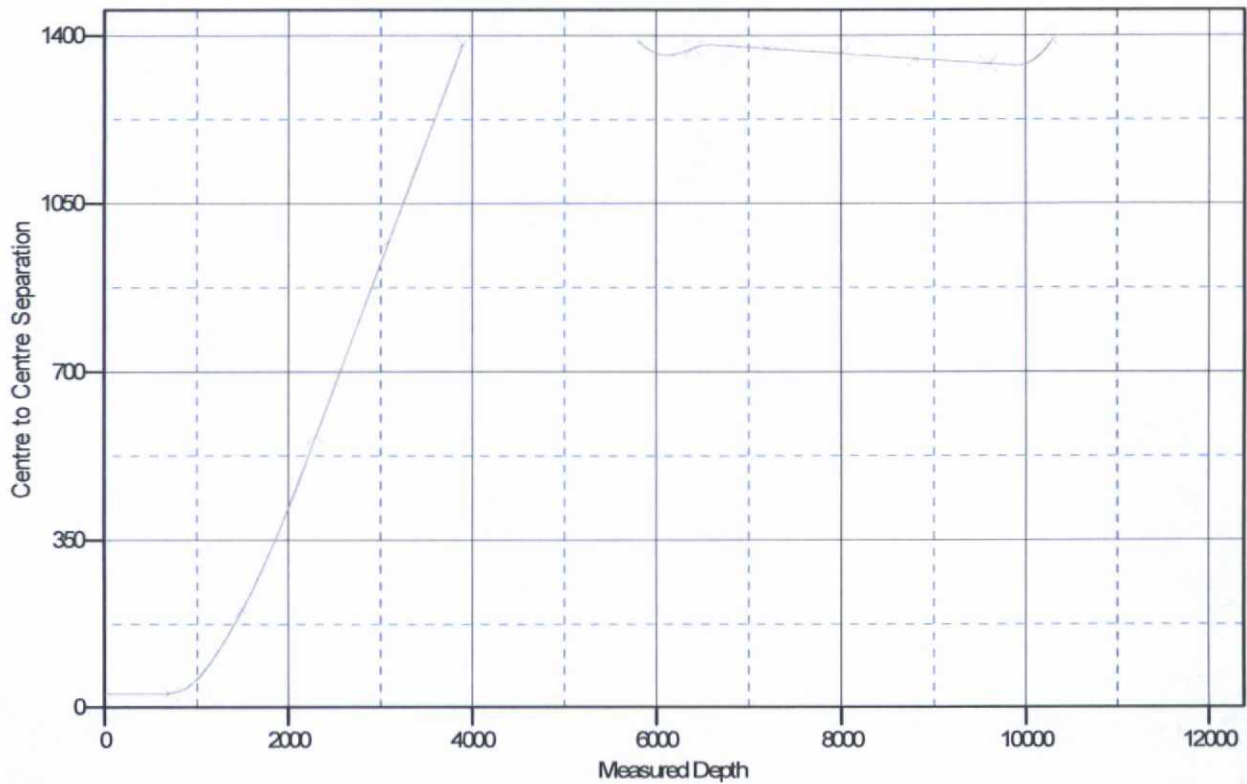
Company: EnCana Oil & Gas (USA) Inc
Project: San Juan County, NM
Reference Site: S9-T23N-R9W
Site Error: 0.0usft
Reference Well: NAGEEZI UNIT 514H
Well Error: 0.0usft
Reference Wellbore: OH
Reference Design: PLAN #1

Local Co-ordinate Reference: Well NAGEEZI UNIT 514H
TVD Reference: 16' KB @ 6818.0usft
MD Reference: 16' KB @ 6818.0usft
North Reference: True
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: USA EDM 5000 Multi Users DB
Offset TVD Reference: Offset Datum

Reference Depths are relative to 16' KB @ 6818.0usft
 Offset Depths are relative to Offset Datum
 Central Meridian is -107.833333 °

Coordinates are relative to: NAGEEZI UNIT 514H
 Coordinate System is US State Plane 1983, New Mexico Western Zone
 Grid Convergence at Surface is: 0.03°

Ladder Plot



LEGEND

✕ NAGEEZI UNIT 513H, OH, PLAN#1 V0

Nageezi Unit 514H

**SHL: SESE Section 9, T23N, R9W
1246' FSL and 808' FEL**

**BHL: NESE Section 5, T23N, R9W
1915' FSL and 170 FEL**

San Juan County, New Mexico

**Lease Number: NM 8005, BIA NO-G-1402-1884,
BIA NO-G-1401-1831 & BIA NO-G-1403-1920**

7. METHODS FOR HANDLING WASTE

A. Cuttings

- 
1. A closed-loop system will be used. Cuttings will be moved through a shaker system on the drill rig that separates drilling fluids from the cuttings. Cuttings will be stored onsite in above-ground storage tanks. Cuttings will be pulled from the storage tanks, mixed with saw dust or similar absorbent material, and disposed of at the Envirotech, Inc. and/or Industrial Ecosystem, Inc. waste disposal facilities.
 2. The closed-loop system storage tanks will be adequately sized to ensure confinement of all fluids and will provide sufficient freeboard to prevent uncontrolled releases.
 3. A 20-mil liner will be installed under tanks, pumps, ancillary facilities, and truck loading/unloading areas associated with the closed-loop system.

B. Drilling Fluids

1. A closed-loop system will be used. Drilling fluids will be stored onsite in above-ground storage tanks. Upon termination of drilling operations, the drilling fluids will be recycled and transferred to other permitted closed-loop systems or returned to the vendor for reuse, as practical. Residual fluids will be vacuumed from the storage tanks and disposed of at Basin Disposal, Inc. and/or Industrial Ecosystem, Inc. waste disposal facilities.
2. The closed-loop system storage tanks will be adequately sized to ensure confinement of all fluids and will provide sufficient freeboard to prevent uncontrolled releases.
3. The closed-loop system storage tanks will be placed in bermed secondary containment sized to accommodate a minimum of 110 percent of the volume of the largest storage tank.
4. A 20-mil liner will be installed under tanks, pumps, ancillary facilities, and truck loading/unloading areas associated with the closed-loop system.

C. Flowback Water

1. The water-based solution that flows back to the surface during and after completion operations will be placed in storage tanks on the location.
2. Flowback water will be confined to a storage tank for a period not to exceed 90 days after initial production and will be disposed of at Basin Disposal, Inc. and/or Industrial Ecosystem, Inc. waste disposal facilities.

D. Spills – any spills of non-freshwater fluids will be immediately cleaned up and removed to an approved disposal site. Encana will also notify the BLM within 24 hours of any spill.

E. 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.

F. Garbage and other waste material – garbage, trash and other waste materials will be collected in a portable, self-contained and fully-enclosed trash container during drilling and completion operations. The accumulated trash will be removed, as needed, and will be disposed of at an authorized sanitary landfill. No trash will be buried or burned on location.

ENCANA OIL & GAS (USA) INC.

NAGEEZI UNIT #514H

1246' FSL & 808' FEL

LOCATED IN THE SE/4 SE/4 OF SECTION 9

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 NAGEEZI.
- 2) TURN RIGHT ON CR 7800 AND GO 0.4 MILES.
- 3) CR 7800 CURVES RIGHT, HEAD STRAIGHT ONTO CR 7820 AND GO 1.7 MILES TO THE PIPELINE CORRIDOR.
- 4) TURN RIGHT AND GO 0.2 MILES TO UPGRADED ROAD ON LEFT SIDE OF ROAD. FOLLOW TO WHERE NEW ACCESS IS STAKED.

WELL FLAG LOCATED AT LAT. 36.237650° N, LONG. 107.788025° W (NAD 83).



JOB No.: ENC345
DATE: 04/14/2015

CCI

CHENault CONSULTING INC.

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

SHEET C

WELLHEAD BLOWOUT CONTROL SYSTEM

encana

Well Name and Number:
Nageezi Unit 514H

