

RECEIVED

Form 3160-3
(August 2007)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

FORM APPROVED
OMB No 1004-0137
Expires July 31, 2010

5. Lease Serial No. **SF-078860**
Bureau of Land Management

6. If Indian, Allottee or Tribe Name

RCUD JAN 27 '12

7. If Unit or CA Agreement, Name and No.

OIL CONS. DIV.

8. Lease Name and Well No.
Escrito I24-2409 01H

9. API Well No.

30-045-25322

10. Field and Pool, or Exploratory
Bisti-Lower Gallup (5890)

11. Sec., T R. M. or Blk. and Survey or Area
Section 24, T24N, R9W NMMP

DIST. 3

12. County or Parish
San Juan

13. State
NM

1a. Type of work: ☒ DRILL ☐ REENTER

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

2. Name of Operator **Encana Oil & Gas (USA) Inc.**

3a. Address **370 17th Street, Suite 1700
Denver, CO 80202**

3b. Phone No. (include area code)
720-876-3989

4. Location of Well (Report location clearly and in accordance with any State requirements *)

At surface **1935' FSL and 205' FEL Section 24 T24N, R9W I**

At proposed prod. zone **1935' FSL and 330' FWL Section 24, T24N, R9W L**

14. Distance in miles and direction from nearest town or post office*
+/- **36.5 miles southeast of Farmington, NM**

15. Distance from proposed* location to nearest property or lease line, ft (Also to nearest drig. unit line, if any)
BHL is 330' from west lease line

16. No. of acres in lease
SF-078860 2,560 acres

17. Spacing Unit dedicated to this well
320 acres S/2

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft
Largo Federal B 91 is 84' south of wellbore

19. Proposed Depth
6600' TVD/ 9962' MD

20. BLM/BIA Bond No. on file
COB000235NW300

21. Elevations (Show whether DF, KDB, RT, GL, etc.)
6880' GL, 6894' KB

22. Approximate date work will start*
02/01/2012

23. Estimated duration
45 days

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No.1, must be attached to this form:

1. Well plat certified by a registered surveyor.
2. A Drilling Plan.
3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office)

4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
5. Operator certification
6. Such other site specific information and/or plans as may be required by the BLM.

25. Signature **Brenda R Linster**
Title **Regulatory Advisor**

Name (Printed/Typed)
Brenda R. Linster

Date
11-01-11

Approved by **[Signature]**
Title **AFM**

Name (Printed/Typed)
FEO

Date
1/24/12

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)

Hold C104

for Directional Survey
and "As Drilled" plat

*Review & follow (Instructions on page 2)
NMOC 19.15 16.10.02 for Cementing

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".

NMOC
AV

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

ca FEB 17 2012

NOTIFY AZTEC OCD 24 HRS.
PRIOR TO CASING & CEMENT

Hold C104
for Directional Survey
and "As Drilled" plat

RCVD FEB 1 '12

OIL CONS. DIV.

DIST. 3

Form C-102
Revised August 1, 2011District I
1625 N. French Drive, Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720District II
811 S. Farst Street, Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170District IV
1220 S. St. Francis Drive, Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462State of New Mexico
Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION

1220 South St. Francis Drive
Santa Fe, NM 87505Submit one copy to
Appropriate District Office☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

*API Number 30-045-35322	*Pool Code 5890	*Pool Name BISTI LOWER - GALLUP
*Property Code 39049	*Property Name ESCRITO I24-2409	*Well Number 01H
*OGRID No. 282327	*Operator Name ENCANA OIL & GAS (USA) INC.	*Elevation 6880'

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
I	24	24N	9W		1935	SOUTH	205	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
L	24	24N	9W		1935	SOUTH	330	WEST	SAN JUAN

12 Dedicated Acres 320.0 Acres - (S/2)	13 Joint or Infill	14 Consolidation Code	15 Order No.
--------------------------------------------------	--------------------	-----------------------	--------------

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

15 S88°15'15"W 2703.15' (MEASURED) S88°15'W 2679.60' (RECORD)	S89°50'27"W 2621.05' (MEASURED) N89°58'W 2645.94' (RECORD)	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. <i>Brenda R. Linster</i> Signature Brenda R. Linster Printed Name brenda.linster@encana.com E-mail Address
BOTTOM-HOLE LAT: 36.29764°N LONG: 107.74825°W DATUM: NAD1927 LAT: 36.29765°N LONG: 107.74886°W DATUM: NAD1983 SURFACE LOCATION LAT: 36.29787°N LONG: 107.73197°W DATUM: NAD1927 LAT: 36.29788°N LONG: 107.73258°W DATUM: NAD1983		18 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: JULY 22, 2011 Signature and Seal of Professional Surveyor
24 330' 588°51.2'W 4791.1' Gallup Penetration Point 1935' FSL 316' FEL Start of Completed Interval 1935' FSL 691' FEL 205' 1935' S89°07'W 2651.88' (RECORD) S88°53'33"W 2647.24' (MEASURED) S89°07'W 2651.88' (RECORD) S88°57'49"W 2675.41' (MEASURED)		

JASON C. EDWARDS
Certificate Number 15269

4-80 Acre STAN J UP units

SHEET A

Directions from the Intersection of US Hwy 550 & US Hwy 64
in Bloomfield, NM to Encana Oil & Gas (USA) Inc. Escrito I24-2409 01H
1935' FSL & 205' FEL, Section 24, T24N, R9W, N.M.P.M., San Juan County, NM

Latitude: 36.29788°N Longitude: 107.73258°W Datum: NAD1983

From the intersection of US Hwy 550 & US Hwy 64 in Bloomfield, NM, travel Southerly on US Hwy 550 for 34.6 miles to Mile Marker 116.6;

Go left (North-easterly) for 0.7 miles to fork in road;

Go left (Northerly) for 0.9 miles to fork in road;

Go left (Westerly) for 0.2 miles to fork in road;

Go right which is straight (Northerly) for 0.1 miles to new access on right-hand side of existing roadway which continues for 80' to staked location.

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SHL: NESE Section 24, T24N, R9W
1935 FSL and 205 FEL

BHL: NWSW Section 24, T24N, R9W
1935 FSL and 330 FWL

San Juan County, New Mexico

Lease Number: SF-078860

Encana Oil & Gas (USA) Inc. Drilling Plan

1. ESTIMATED TOPS OF GEOLOGICAL MARKERS (TVD)

The estimated tops of important geologic markers are as follows:

<u>Formation</u>	<u>Depth (TVD)</u>
Ojo Alamo	1016'
Kirtland	1160'
Fruitland Coal	1378'
Pictured Cliffs	1765'
Lewis	1943'
Cliffhouse	2621'
Menefee	3341'
Point Lookout	4216'
Mancos	4420'
Gallup	5212'
Upper Carlile	5734'
Juana Lopez	5824'
Lower Carlile	5921'
Greenhorn	6176'
Graneros	6232'
Dakota	6272'
Morrison	6500'

The referenced surface elevation is 6880', KB 6894'

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

<u>Substance</u>	<u>Formation</u>	<u>Depth (TVD)</u>
Water	Ojo Alamo	1016'
Gas	Fruitland Coal	1378'
Gas	Pictured Cliffs	1765'
Gas	Cliffhouse	2621'
Gas	Point Lookout	4216'
Oil/Gas	Mancos	4420'
Oil/Gas	Dakota	6272'

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

3. PRESSURE CONTROL

- Pressure control equipment and configuration will be designed to meet 2M standards.
- Working pressure on rams and BOPE will be 3,000 psi
- Function test and visual inspection of the BOP will be conducted daily and noted in the IADC Daily Drilling Report.
- The Annular BOP will be pressure tested to a minimum of 50 percent of its rated working pressure.

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San Juan County, New Mexico

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- e) Blind and Pipe Rams/BOP will be tested against a test plug to either 70 percent of the casings internal yield pressure or 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	Hole Size	Csg Size	Weight	Grade
Conductor	0-60'	26"	20"	94#	H40, STC New
Surface	0'-500'	17 1/2"	13 3/8"	48#	H40, STC New
Intermediate	0'-4650'	12 1/4"	9 5/8"	40#	J55, STC New
Production Liner	4450'-9962'	8 1/2"	5 1/2"	17#	B80*, LTC New

Casing String				Casing Strength Properties			Minimum Design Factors		
Size	Weight (lb/ft)	Grade	Connection	Collapse (psi)	Burst (psi)	Tensile (1000lb)	Collapse	Burst	Tension
13 3/8"	48	H40	STC	740	1730	322	1.125	1.1	1.5
9 5/8"	40	J55	STC	2570	3950	452	1.125	1.1	1.5
5 1/2"	17	B80	LTC	6290	7740	320	1.125	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.

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b) The proposed cementing program is as follows:

Top plugs shall be used to reduce contamination of cement by displacement fluid. A bottom plug or other acceptable technique, such as a pre-flush fluid, inner string cement method, etc. shall be utilized to help isolate the cement from contamination by the mud fluid being displaced ahead of the cement slurry.

Casing	Depth	Cement Volume (sacks)	Cement Type&Yield	Designed TOC	Centralizers
Conductor	60'	80sk	Redi-mix Construction Grade Cement	Surface	None
Surface	500'	Lead: 130sk Tail: 100sk	Lead: Varicem Poz Cmt 1% Cal-Seal 12.7ppg, 1.78cuft/sk Tail: Type III Prem Plus 6% Salt 13.5ppg 1.77cuft/sk	Surface	1 per joint on bottom 3 joints
Intermediate	4650'	50% open hole excess Lead:1358sk Tail: 176sk	Lead: Fillseal Poz Cmt 1% foam 13ppg, 1.43cuft/sk Tail: HalCem Class H 1% foam 13ppg 1.43cuft/sk	Surface	1 per joint for bottom 3 joints, 1 every 3 joints for remaining joints, turbolizers will be used at the base of the Ojo Alamo
Production Liner*	4450'-9962'	None – External casing packers	N/A	N/A	N/A

*Production liner clarification: Utilizing external swell casing packer system for zonal isolation will not use cement in the production liner.

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 adequate to achieve a minimum of 500 psi compressive strength at the casing shoe prior to drilling out. *X AMOCB 19.15.16.10.G.2.*

5. WELL PLAN & DIRECTIONAL DRILLING PROGRAM

The proposed well will be drilled in two phases. A pilot hole will be drilled in the first phase, followed by kicking off a horizontal lateral in the existing wellbore in the second phase. The intent of drilling a pilot hole is to obtain open hole log and core data. The intent of the second phase of the well is to plug back the pilot hole with cement to the kick off point. After plugging back, the plan is to drill a horizontal lateral from the kick off point in the existing wellbore to the proposed bottom hole location.

Directional plans are attached.

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Well Phase	Description	Proposed Depth (TVD/MD)	Formation
1	Vertical Pilot Hole	6600'/6600'	Morrison
2	Horizontal Lateral	5410'/9962'	Gallup

Proposed Plug Back Procedure:

TOPS: TVD
KOP 4837'
Graneros Shale 6232'
Dakota 6272'

Set 2 cement plugs in 8 ½" hole
Plug A: Bottom plug over Dakota
Plug B: Kick plug at KOP

Plug A

1. TIH to TD of vertical pilot hole at 6600'
2. Spot 400' cement plug from 6200'- 6600'
 - a. 135sx of Class A cement (1.18ft³/sk yield)
 - b. Spot tuned spacer
3. Pull uphole and reverse out
4. TIH and tag plug, proceed when cement is solid
5. Fill hole and move uphole to spot kick plug

Plug B

1. Spot 300' kick plug from 4737' – 5037'
 - a. 91sx of Class A cement with salt (1.3ft³/sk yield)
 - b. Spot tuned spacer
2. Pull uphole and reverse out
3. Pump bottoms up 2 times, pull uphole
4. Tag plug, drill ahead to KOP when cement is solid

6. DRILLING FLUIDS PROGRAM

a) Phase 1, Vertical Pilot Hole:

Hole Size (in)	TVD (ft)	Mud Type	Density (lb/gal)	Viscosity (sec/qt)	Fluid Loss (cc)
26"	0-60'	Fresh Water	8.3-9.2	38-100	4-28
17 1/2"	0-500'	Fresh Water	8.4-8.6	60-70	NC
12 1/4"	500-4650'	Fresh Water LSND	8.5-8.8	40-50	8-10
8 1/2"	4650-6600'	Fresh Water LSND	8.5-8.8	40-50	8-10

b) Phase 2, Kick off to Horizontal Lateral:

Hole Size (in)	TVD (ft)	Mud Type	Density (lb/gal)	Viscosity (sec/qt)	Fluid Loss (cc)
8 1/2"	4837' (KOP)- 9962'	Synthetic Oil Based Mud	8.6-9.0	15-25	<15

Escrito I24-2409 01H

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San Juan County, New Mexico

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- 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, including fresh water and oil-based operations. 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 and LOGGING

- a) Drill Stem Testing – None anticipated
- b) Coring – Obtain core starting in the Mancos formation. Specific cored intervals will be determined real time by onsite geologists.
- c) Mud Logging – Mud loggers will be on location from Surface Casing to TD.
- d) Logging – See Below

Open Hole:

Triple combo with Spectral Gamma TD to surface casing
Specialty logs will be decided real time by onsite geologists

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 +/- 3089 psi based on a 9.0 ppg at 6600' TVD of the vertical pilot hole. No abnormal pressure or temperatures are anticipated.

No hydrogen sulfide gas is anticipated, however, if H₂S is encountered, the guidelines in Onshore Order No. 6 will be followed.

9. ANTICIPATED START DATE AND DURATION OF OPERATIONS

Drilling is estimated to commence on March 1, 2012. 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 45 days.

10. NOTIFICATION REQUIREMENTS & OTHER ITEMS

- a) The spud date will be reported orally to the Authorized Officer within 24 hours prior to spudding. Written notification via a Sundry Notice (Form 3160-5) will be submitted to the Authorized Officer within 5 days of spudding.
- b) The Authorized Officer will be notified at least 24 hours in advance of BOP pressure tests.

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- c) The Authorized Officer will be notified at least 24 hours in advance of running and cementing casing strings.
- d) A Sundry Notice (Form 3160-5) will be submitted to the Authorized Officer within 30 days of setting each string of casing. Information will include the size, grade, weight of casing set, hole size, setting depth, amounts and type of cement used, whether cement circulated to the top of the cement behind the casing, depth of cementing tools used, casing test method and results, and the date the work was done.
- e) Should the well be successfully completed for production, the Authorized Officer will be notified orally within 24 hours of placing the well on production. Written notification via a Sundry Notice (Form 3160-5) will be submitted to the Authorized Officer within 5 days of placing on production.
- f) Whether the well is completed as a dry hole or as a producer, a Well Completion and Recompletion Report and Log (Form 3160-4) will be submitted no later than 30 days after completion of the well or after completion of operations being performed, in accordance with 43 CFR 3160. One copy of all logs, core descriptions, core analysis, well-test data, geologic summaries, sample descriptions, and all other surveys or data obtained and compiled during the drilling, workover, and/or completion operations, will be filed with Form 3160-4. Samples (cuttings, fluids, and/or gases) will be submitted when requested by the Authorized Officer.
- g) Starting with the month in which operations commence and continuing each month until the well is physically plugged and abandoned, this well will be reported on Form 3160-6, Monthly Report of Operations. Reports will be filed by the 10th day of the second month following the operation month.
- h) All off-lease storage, off-lease measurement, commingling on-lease or off-lease will have prior written approval from the Authorized Officer.
- i) Oil and gas measurement facilities will be installed on the well location. Oil and gas meters will be calibrated in place prior to any deliveries. The Authorized Officer will be provided with a date and time for the initial meter calibration and all future meter proving schedules. A copy of the meter calibration reports will be submitted to the Authorized Officer. All meter measurement facilities will conform to the API standards for liquid hydrocarbons and to AGA standards for natural gas measurement.
- j) A site facility diagram as required by 43 CFR 3162.7-5(d) will be submitted within 60 days after measurement facilities are installed. Any venting or flaring of gas will be done in accordance with Notice to Lessees (NTL-4A) and may need prior approval from the Authorized Officer.
- k) Minor Events will be reported on the Monthly Report of Operations and Production (Form 3160-6). All undesirable events (fires, accidents, blowouts, spills, discharges) as specified in Notice to Lessee (NTL-3A) will be reported to the Authorized Officer. Major events will be reported verbally within 24 hours, followed by a written report within 15 days. Other than Major Events will be reported in writing within 15 days.

Database:	EDMDBBW	Local Co-ordinate Reference:	Well Escrito I24-2409 01H
Company:	Encana Oil & Gas	TVD Reference:	WELL @ 6894.00usft
Project:	San Juan Co., NM (NAD83)	MD Reference:	WELL @ 6894.00usft
Site:	Sec.24-T24N-R9W	North Reference:	True
Well:	Escrito I24-2409 01H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Project	San Juan Co., NM (NAD83)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Western Zone		

Site		Sec.24-T24N-R9W			
Site Position:		Northing:	1,927,743.451 usft	Latitude:	36.297880
From:	Lat/Long	Easting:	2,752,780.758 usft	Longitude:	-107.732580
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16"	Grid Convergence:	0.06 °

Well		Escnto I24-2409 01H				
Well Position	+N/-S	0.00 usft	Northing:	1,927,743.451 usft	Latitude:	36.297880
	+E/-W	0.00 usft	Easting:	2,752,780.758 usft	Longitude:	-107.732580
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	6,880.00 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	10/20/11	9.78	63.08	50,446

Design	Design #1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	5,373.13	0.00	0.00	269.00

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	
4,837.02	0.00	0.00	4,837.02	0.00	0.00	0.00	0.00	0.00	0.00	
5,742.02	90.50	269.00	5,409.96	-10.04	-577.87	10.00	10.00	0.00	269.00	Escrito I24-2409 01H
9,962.21	90.50	269.00	5,373.13	-83.32	-4,797.26	0.00	0.00	0.00	0.00	Escrito I24-2409 01H

Database:	EDMDBBW	Local Co-ordinate Reference:	Well Escrito I24-2409 01H
Company:	Encana Oil & Gas	TVD Reference:	WELL @ 6894.00usft
Project:	San Juan Co., NM (NAD83)	MD Reference:	WELL @ 6894.00usft
Site:	Sec.24-T24N-R9W	North Reference:	True
Well:	Escrito I24-2409 01H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #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 (°/100usft)	Turn Rate (°/100usft)
0.00	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	0.00
200.00	0.00	0.00	200.00	0.00	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	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
13 3/8" Csg.									
500.00	0.00	0.00	500.00	0.00	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	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	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	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
Ojo Alamo Ss.									
1,016.00	0.00	0.00	1,016.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
Kirtland Shale									
1,160.00	0.00	0.00	1,160.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
Fruitland Coal									
1,378.00	0.00	0.00	1,378.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
Pictured Cliffs Ss.									
1,765.00	0.00	0.00	1,765.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
Lewis Shale									
1,943.00	0.00	0.00	1,943.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00	0.00	0.00
Cliffhouse Ss.									
2,621.00	0.00	0.00	2,621.00	0.00	0.00	0.00	0.00	0.00	0.00
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00	0.00	0.00
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00	0.00	0.00
2,900.00	0.00	0.00	2,900.00	0.00	0.00	0.00	0.00	0.00	0.00
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00
3,100.00	0.00	0.00	3,100.00	0.00	0.00	0.00	0.00	0.00	0.00
3,200.00	0.00	0.00	3,200.00	0.00	0.00	0.00	0.00	0.00	0.00
3,300.00	0.00	0.00	3,300.00	0.00	0.00	0.00	0.00	0.00	0.00
Menefee Fr.									
3,341.00	0.00	0.00	3,341.00	0.00	0.00	0.00	0.00	0.00	0.00
3,400.00	0.00	0.00	3,400.00	0.00	0.00	0.00	0.00	0.00	0.00
3,500.00	0.00	0.00	3,500.00	0.00	0.00	0.00	0.00	0.00	0.00
3,600.00	0.00	0.00	3,600.00	0.00	0.00	0.00	0.00	0.00	0.00
3,700.00	0.00	0.00	3,700.00	0.00	0.00	0.00	0.00	0.00	0.00

Database:	EDMDBBW	Local Co-ordinate Reference:	Well Escrito I24-2409 01H
Company:	Encana Oil & Gas	TVD Reference:	WELL @ 6894.00usft
Project:	San Juan Co , NM (NAD83)	MD Reference:	WELL @ 6894.00usft
Site:	Sec.24-T24N-R9W	North Reference:	True
Well:	Escrito I24-2409 01H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #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 (°/100usft)	Turn Rate (°/100usft)
3,800.00	0.00	0.00	3,800.00	0.00	0.00	0.00	0.00	0.00	0.00
3,900.00	0.00	0.00	3,900.00	0.00	0.00	0.00	0.00	0.00	0.00
4,000.00	0.00	0.00	4,000.00	0.00	0.00	0.00	0.00	0.00	0.00
4,100.00	0.00	0.00	4,100.00	0.00	0.00	0.00	0.00	0.00	0.00
4,200.00	0.00	0.00	4,200.00	0.00	0.00	0.00	0.00	0.00	0.00
Point Lookout Ss.									
4,216.00	0.00	0.00	4,216.00	0.00	0.00	0.00	0.00	0.00	0.00
4,300.00	0.00	0.00	4,300.00	0.00	0.00	0.00	0.00	0.00	0.00
4,400.00	0.00	0.00	4,400.00	0.00	0.00	0.00	0.00	0.00	0.00
Mancon Shale									
4,420.00	0.00	0.00	4,420.00	0.00	0.00	0.00	0.00	0.00	0.00
4,500.00	0.00	0.00	4,500.00	0.00	0.00	0.00	0.00	0.00	0.00
4,600.00	0.00	0.00	4,600.00	0.00	0.00	0.00	0.00	0.00	0.00
9 5/8" Csg.									
4,650.00	0.00	0.00	4,650.00	0.00	0.00	0.00	0.00	0.00	0.00
4,700.00	0.00	0.00	4,700.00	0.00	0.00	0.00	0.00	0.00	0.00
4,800.00	0.00	0.00	4,800.00	0.00	0.00	0.00	0.00	0.00	0.00
KOP / Start Build 10.00°									
4,837.02	0.00	0.00	4,837.02	0.00	0.00	0.00	0.00	0.00	0.00
4,850.00	1.30	269.00	4,850.00	0.00	-0.15	0.15	10.00	10.00	0.00
4,900.00	6.30	269.00	4,899.87	-0.06	-3.46	3.46	10.00	10.00	0.00
4,950.00	11.30	269.00	4,949.27	-0.19	-11.10	11.10	10.00	10.00	0.00
5,000.00	16.30	269.00	4,997.81	-0.40	-23.02	23.02	10.00	10.00	0.00
5,050.00	21.30	269.00	5,045.13	-0.68	-39.12	39.13	10.00	10.00	0.00
5,100.00	26.30	269.00	5,090.86	-1.03	-59.29	59.30	10.00	10.00	0.00
5,150.00	31.30	269.00	5,134.67	-1.45	-83.37	83.38	10.00	10.00	0.00
5,200.00	36.30	269.00	5,176.20	-1.93	-111.17	111.18	10.00	10.00	0.00
Gallup Fn.									
5,244.21	40.72	269.00	5,210.79	-2.41	-138.68	138.70	10.00	10.00	0.00
5,250.00	41.30	269.00	5,215.16	-2.47	-142.48	142.50	10.00	10.00	0.00
5,300.00	46.30	269.00	5,251.24	-3.08	-177.07	177.10	10.00	10.00	0.00
5,350.00	51.30	269.00	5,284.16	-3.73	-214.67	214.70	10.00	10.00	0.00
5,400.00	56.30	269.00	5,313.68	-4.43	-255.00	255.04	10.00	10.00	0.00
5,450.00	61.30	269.00	5,339.58	-5.17	-297.75	297.79	10.00	10.00	0.00
5,500.00	66.30	269.00	5,361.65	-5.95	-342.59	342.64	10.00	10.00	0.00
5,550.00	71.30	269.00	5,379.73	-6.76	-389.18	389.24	10.00	10.00	0.00
5,600.00	76.30	269.00	5,393.67	-7.59	-437.17	437.24	10.00	10.00	0.00
5,650.00	81.30	269.00	5,403.38	-8.44	-486.20	486.27	10.00	10.00	0.00
5,700.00	86.30	269.00	5,408.78	-9.31	-535.88	535.96	10.00	10.00	0.00
EOB / Start 4220.19' hold at 5742.02 MD									
5,742.02	90.50	269.00	5,409.96	-10.04	-577.87	577.96	10.00	10.00	0.00
5,800.00	90.50	269.00	5,409.45	-11.04	-635.84	635.94	0.00	0.00	0.00
5,900.00	90.50	269.00	5,408.58	-12.78	-735.82	735.93	0.00	0.00	0.00
6,000.00	90.50	269.00	5,407.70	-14.52	-835.80	835.93	0.00	0.00	0.00
6,100.00	90.50	269.00	5,406.83	-16.25	-935.78	935.92	0.00	0.00	0.00
6,200.00	90.50	269.00	5,405.96	-17.99	-1,035.76	1,035.92	0.00	0.00	0.00
6,300.00	90.50	269.00	5,405.09	-19.73	-1,135.75	1,135.92	0.00	0.00	0.00
6,400.00	90.50	269.00	5,404.21	-21.46	-1,235.73	1,235.91	0.00	0.00	0.00
6,500.00	90.50	269.00	5,403.34	-23.20	-1,335.71	1,335.91	0.00	0.00	0.00
6,600.00	90.50	269.00	5,402.47	-24.94	-1,435.69	1,435.91	0.00	0.00	0.00
6,700.00	90.50	269.00	5,401.60	-26.67	-1,535.67	1,535.90	0.00	0.00	0.00
6,800.00	90.50	269.00	5,400.72	-28.41	-1,635.65	1,635.90	0.00	0.00	0.00
6,900.00	90.50	269.00	5,399.85	-30.15	-1,735.63	1,735.89	0.00	0.00	0.00

Database:	EDMDBBW	Local Co-ordinate Reference:	Well Escrito I24-2409 01H
Company:	Encana Oil & Gas	TVD Reference:	WELL @ 6894.00usft
Project:	San Juan Co., NM (NAD83)	MD Reference:	WELL @ 6894.00usft
Site:	Sec.24-T24N-R9W	North Reference:	True
Well:	Escrito I24-2409 01H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #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 (°/100usft)	Turn Rate (°/100usft)
7,000.00	90.50	269.00	5,398.98	-31.88	-1,835.61	1,835.89	0.00	0.00	0.00
7,100.00	90.50	269.00	5,398.11	-33.62	-1,935.59	1,935.89	0.00	0.00	0.00
7,200.00	90.50	269.00	5,397.23	-35.36	-2,035.58	2,035.88	0.00	0.00	0.00
7,300.00	90.50	269.00	5,396.36	-37.09	-2,135.56	2,135.88	0.00	0.00	0.00
7,400.00	90.50	269.00	5,395.49	-38.83	-2,235.54	2,235.87	0.00	0.00	0.00
7,500.00	90.50	269.00	5,394.61	-40.56	-2,335.52	2,335.87	0.00	0.00	0.00
7,600.00	90.50	269.00	5,393.74	-42.30	-2,435.50	2,435.87	0.00	0.00	0.00
7,700.00	90.50	269.00	5,392.87	-44.04	-2,535.48	2,535.86	0.00	0.00	0.00
7,800.00	90.50	269.00	5,392.00	-45.77	-2,635.46	2,635.86	0.00	0.00	0.00
7,900.00	90.50	269.00	5,391.12	-47.51	-2,735.44	2,735.86	0.00	0.00	0.00
8,000.00	90.50	269.00	5,390.25	-49.25	-2,835.42	2,835.85	0.00	0.00	0.00
8,100.00	90.50	269.00	5,389.38	-50.98	-2,935.41	2,935.85	0.00	0.00	0.00
8,200.00	90.50	269.00	5,388.51	-52.72	-3,035.39	3,035.84	0.00	0.00	0.00
8,300.00	90.50	269.00	5,387.63	-54.46	-3,135.37	3,135.84	0.00	0.00	0.00
8,400.00	90.50	269.00	5,386.76	-56.19	-3,235.35	3,235.84	0.00	0.00	0.00
8,500.00	90.50	269.00	5,385.89	-57.93	-3,335.33	3,335.83	0.00	0.00	0.00
8,600.00	90.50	269.00	5,385.02	-59.67	-3,435.31	3,435.83	0.00	0.00	0.00
8,700.00	90.50	269.00	5,384.14	-61.40	-3,535.29	3,535.83	0.00	0.00	0.00
8,800.00	90.50	269.00	5,383.27	-63.14	-3,635.27	3,635.82	0.00	0.00	0.00
8,900.00	90.50	269.00	5,382.40	-64.88	-3,735.25	3,735.82	0.00	0.00	0.00
9,000.00	90.50	269.00	5,381.53	-66.61	-3,835.24	3,835.81	0.00	0.00	0.00
9,100.00	90.50	269.00	5,380.65	-68.35	-3,935.22	3,935.81	0.00	0.00	0.00
9,200.00	90.50	269.00	5,379.78	-70.09	-4,035.20	4,035.81	0.00	0.00	0.00
9,300.00	90.50	269.00	5,378.91	-71.82	-4,135.18	4,135.80	0.00	0.00	0.00
9,400.00	90.50	269.00	5,378.03	-73.56	-4,235.16	4,235.80	0.00	0.00	0.00
9,500.00	90.50	269.00	5,377.16	-75.30	-4,335.14	4,335.79	0.00	0.00	0.00
9,600.00	90.50	269.00	5,376.29	-77.03	-4,435.12	4,435.79	0.00	0.00	0.00
9,700.00	90.50	269.00	5,375.42	-78.77	-4,535.10	4,535.79	0.00	0.00	0.00
9,800.00	90.50	269.00	5,374.54	-80.51	-4,635.08	4,635.78	0.00	0.00	0.00
9,900.00	90.50	269.00	5,373.67	-82.24	-4,735.07	4,735.78	0.00	0.00	0.00
TD at 9962.21 - Escrito I24-2409 01H PBHL									
9,962.21	90.50	269.00	5,373.13	-83.32	-4,797.26	4,797.99	0.00	0.00	0.00

Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Escrito I24-2409 01H PE	0.00	0.00	5,373.13	-83.32	-4,797.26	1,927,655.135	2,747,983.585	36.297650	-107.748860
- hit/miss target									
- Shape									
- plan hits target center									
- Point									

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
4,650.00	4,650.00	9 5/8" Csg.	9-5/8	12-1/4
500.00	500.00	13 3/8" Csg.	13-3/8	17-1/2

Database:	EDMDBBW	Local Co-ordinate Reference:	Well Escrito I24-2409 01H
Company:	Encana Oil & Gas	TVD Reference:	WELL @ 6894.00usft
Project:	San Juan Co., NM (NAD83)	MD Reference:	WELL @ 6894.00usft
Site:	Sec 24-T24N-R9W	North Reference:	True
Well:	Escrito I24-2409 01H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,016.00	1,016.00	Ojo Alamo Ss.		-0.50	269.00
1,160.00	1,160.00	Kirtland Shale		-0.50	269.00
1,378.00	1,378.00	Fruitland Coal		-0.50	269.00
1,765.00	1,765.00	Pictured Cliffs Ss.		-0.50	269.00
1,943.00	1,943.00	Lewis Shale		-0.50	269.00
2,621.00	2,621.00	Cliffhouse Ss.		-0.50	269.00
3,341.00	3,341.00	Menefee Fn.		-0.50	269.00
4,216.00	4,216.00	Point Lookout Ss.		-0.50	269.00
4,420.00	4,420.00	Mancon Shale		-0.50	269.00
5,244.21	5,212.00	Gallup Fn.		-0.50	269.00

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N-S (usft)	+E-W (usft)	
4,837.02	4,837.02	0.00	0.00	KOP / Start Build 10.00°
5,742.02	5,409.96	-10.04	-577.87	EOB / Start 4220.19' hold at 5742.02 MD
9,962.21	5,373.13	-83.32	-4,797.26	TD at 9962.21

WELLHEAD BLOWOUT CONTROL SYSTEM



Well name and number:

Escrito I24-2409 01H

