

State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

David Martin
Cabinet Secretary-Designate

Brett F. Woods, Ph.D.
Deputy Cabinet Secretary

Jami Bailey, 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: 6/19/13

Well information;

Operator Encana, Well Name and Number Escrito L27-2409 2H

API# 30-045-35481, Section 27, Township 24 NS, Range 9 EW

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
- ☐ 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

Chad L. Herrin
NMOCD Approved by Signature

9-23-2013 ca
Date

CONFIDENTIAL
RECEIVED

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

JUN 25 2013

APPLICATION FOR PERMIT TO DRILL OR REENTER

Farmington Field Office
Bureau of Land Management

1a. Type of work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		5. Lease Serial No. NMNM 12374
1b. Type of Well: <input type="checkbox"/> Oil Well <input checked="" 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 N/A
2. Name of Operator Encana Oil & Gas (USA) Inc.		7. If Unit or CA Agreement, Name and No. N/A
3a. Address 370 17th Street, Suite 1700 Denver, CO 80202	3b. Phone No. (include area code) 720-876-3989	8. Lease Name and Well No. Escrito L27-2409 02H
4. Location of Well (Report location clearly and in accordance with any State requirements.)* At surface 2369' FSL and 332' FWL Section 27, T24N, R9W At proposed prod. zone 2550' FSL and 330' FWL Section 28, T24N, R9W		9. API Well No. 30-045-35481
14. Distance in miles and direction from nearest town or post office* +/- 34.2 miles southeast of the intersection of US Hwy 550 & US Hwy 64 in Bloomfield, NM		10. Field and Pool, or Exploratory Bisti Lower-Gallup Basin Mancos Gas
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 NMNM 12374 - 2240 acres	11. Sec., T. R. M. or Blk. and Survey or Area Section 27, T24N, R9W NMPM
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. November 24 2 is +/-565' south of the wellbore	19. Proposed Depth 4914' TVD/10008' MD	12. County or Parish San Juan
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 6924' GL, 6937' KB	22. Approximate date work will start* 02/10/2014	13. State NM
17. Spacing Unit dedicated to this well 160.0 acres - N/2 S/2 Section 28		23. Estimated duration 25 days
24. Attachments		DIST. 3

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 	Name (Printed/Typed) Brenda R. Linster	Date 06/19/2013
Title Regulatory Lead		
Approved by (Signature) 	Name (Printed/Typed) AFM	Date 8/21/13
Title AFM		

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.
Conditions of approval, if any, are attached.

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Continued on page 2)

*(Instructions on page 2)

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

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

NMOC
X

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

District I
1625 N. French Drive, Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720

District II
811 S. First Street, Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720

District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170

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

State of New Mexico
Energy, Minerals & Natural Resources Department

Form C-102
Revised August 1, 2011

Submit one copy to
Appropriate District Office

OIL CONSERVATION DIVISION

1220 South St. Francis Drive
Santa Fe, NM 87505

☐ AMENDED REPORT
RECEIVED

JUN 25 2013

WELL LOCATION AND ACREAGE DEDICATION PLAT

*API Number 30-045-35481	*Pool Code 5890 / 97232	*Pool Name Farmington Field Office Bisti Lower - Gallup Basin Mancos Gas
*Property Code 40144	*Property Name ESCRITO L27-2409	*Well Number 02H
*GRID No. 282327	*Operator Name ENCANA OIL & GAS (USA) INC.	*Elevation 6924'

¹⁰ Surface Location

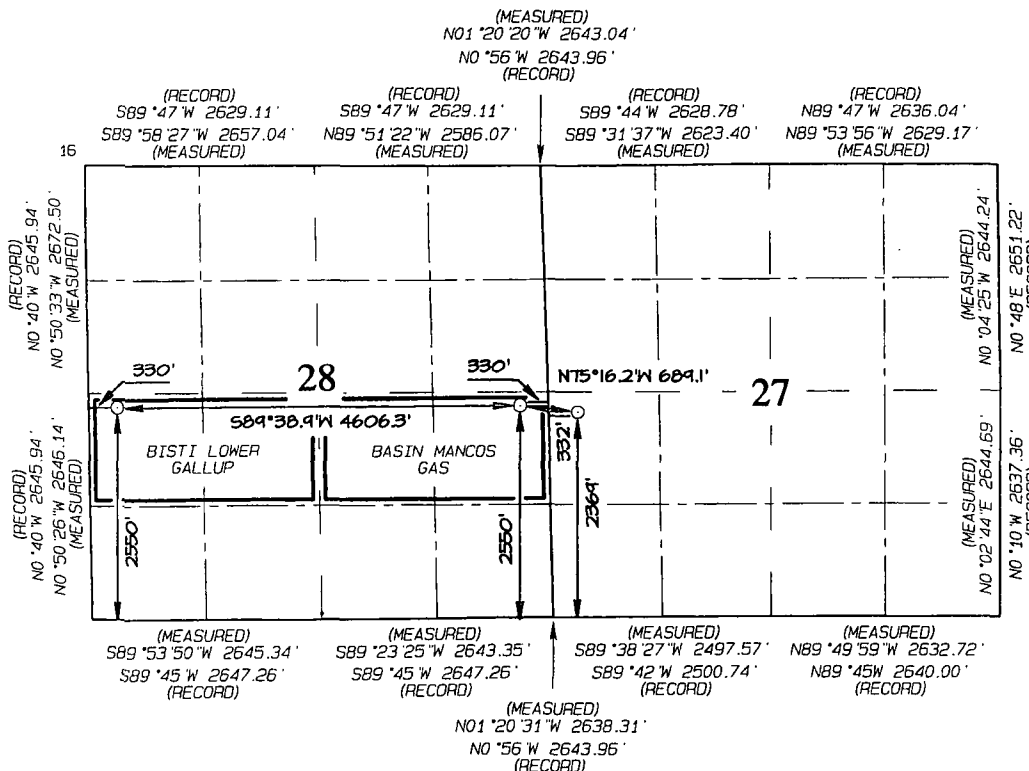
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
L	27	24N	9W		2369	SOUTH	332	WEST	SAN JUAN

¹¹ Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
L	28	24N	9W		2550	SOUTH	330	WEST	SAN JUAN

¹² Dedicated Acres 160.0 Acres N/2 S/2 Section 28	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.
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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



¹⁷ OPERATOR CERTIFICATION

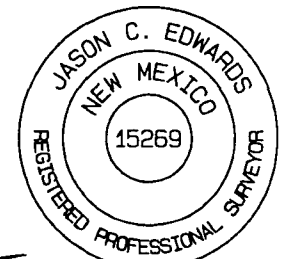
I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom-hole location or has a right to drill this well at this 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: *Brenda R. Linster*
Printed Name: Brenda R. Linster
E-mail Address: brenda.linster@encana.com

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 Revised: JUNE 7, 2013
Date of Survey: JULY 30, 2012
Signature and Seal of Professional Surveyor



JASON C. EDWARDS
Certificate Number 15269

END-OF-LATERAL
2550' FSL 330' FWL
SECTION 28, T24N, R9W
LAT: 36.28474°N
LONG: 107.80169°W
DATUM: NAD1927

POINT-OF-ENTRY
2550' FSL 330' FEL
SECTION 27, T24N, R9W
LAT: 36.28481°N
LONG: 107.78606°W
DATUM: NAD1927

SURFACE LOCATION
2369' FSL 332' FWL
SECTION 27, T24N, R9W
LAT: 36.28433°N
LONG: 107.78380°W
DATUM: NAD1927

LAT: 36.28475°N
LONG: 107.80230°W
DATUM: NAD1983

LAT: 36.28483°N
LONG: 107.78667°W
DATUM: NAD1983

LAT: 36.28434°N
LONG: 107.78441°W
DATUM: NAD1983

Directions from the Intersection of US Hwy 550 & US Hwy 64

in Bloomfield, NM to Encana Oil & Gas (USA) Inc. Escrito L27-2409 02H

2369' FSL & 332' FWL, Section 27, T24N, R9W, N.M.P.M., San Juan County, NM

Latitude: 36.28434°N Longitude: 107.78441°W Datum: NAD1983

From the intersection of US Hwy 550 & US Hwy 64 in Bloomfield, NM, travel Southerly on US Hwy 550 for 27.9 miles to State Hwy #57 @ Mile Marker 123.4;

Go right (South-westerly) on State Hwy #57 for 1.4 miles to fork in road;

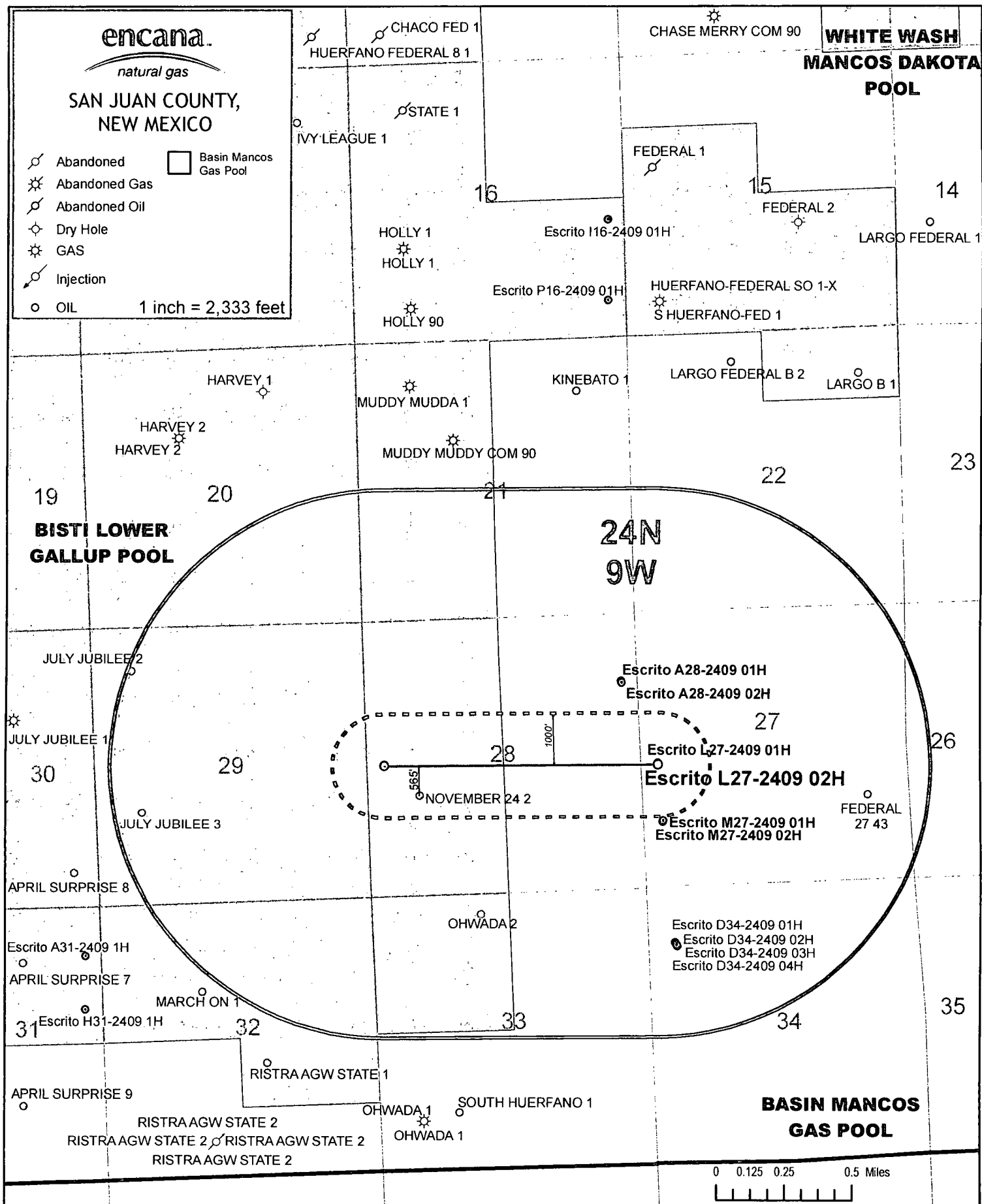
Go left (Southerly) exiting State Hwy #57 for 1.4 miles to fork in road;

Go right which is straight (South-easterly) for 2.7 miles to 4-way intersection;

Go left (Easterly) for 0.4 miles to new access on left-hand side of existing roadway;

Go left (South-easterly) along proposed Escrito D34-2409 01H access for 5055' to fork in proposed roadway;

Go left (Northerly) along proposed Escrito L27-2409 01H access for 2105' to staked Encana Escrito L27-2409 02H location.



Escrito L27-2409 02H

SHL: NWSW Section 27, T24N, R9W
2369 FSL and 332 FWL

BHL: NWSW Section 28, T24N, R9W
2550 FSL and 330 FWL

San Juan County, New Mexico

Lease Number: NMNM 12374

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 Ss.	879'
Kirtland	1067'
Fruitland Coal	1277'
Pictured Cliffs	1637'
Lewis	1767'
Cliffhouse	2427'
Menefee	3187'
Point Lookout	4087'
Mancos Shale	4247'
Mancos Silt	4817'
Gallup	5062'

The referenced surface elevation is 6924', KB 6937'

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

<u>Substance</u>	<u>Formation</u>	<u>Depth (TVD)</u>
Gas	Fruitland Coal	1277'
Gas	Pictured Cliffs	1637'
Gas	Cliffhouse	2427'
Gas	Point Lookout	4087'
Oil/Gas	Mancos	4247'

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.

Escrito L27-2409 02H

SHL: NWSW Section 27, T24N, R9W
2369 FSL and 332 FWL

BHL: NWSW Section 28, T24N, R9W
2550 FSL and 330 FWL

San Juan County, New Mexico

Lease Number: NMNM 12374

- 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'	30"	20"	94#	H40, STC New
Surface	0'-500'	12 1/4"	9 5/8"	36#	J55, STC New
Intermediate	0'-5310'MD	8 3/4"	7"	26#	J55, LTC New
Production Liner	5110'-10008'MD	6 1/8"	4 1/2"	11.6#	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
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 1/2"	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.

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:

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.

Escrito L27-2409 02H

SHL: NWSW Section 27, T24N, R9W
2369 FSL and 332 FWL

BHL: NWSW Section 28, T24N, R9W
2550 FSL and 330 FWL

San Juan County, New Mexico

Lease Number: NMNM 12374

Casing	Depth	Cement Volume (sacks)	Cement Type&Yield	Designed TOC	Centralizers
Conductor	60'	100sk	Type I Neat 14.8 ppg	Surface	None
Surface	500'	178sk	Type III Cement + 1% CaCl + 0.25lb/sk Cello Flake + 0.2% FL, 14.6ppg, 1.38cuf/sk	Surface	1 per joint on bottom 3 joints
Intermediate	5310'MD	30% open hole excess Stage 1 Lead: 233sks Stage 1 Tail: 160sks Stage 2 Lead: 148sks	Lead (Stages 1 and 2): PremLite + 3% CaCl + 0.25lb/sk CelloFlake + 5lb/sk LCM, 12.1ppg 2.13cuf/sk Tail (Stage 1): Type III Cmt + 1% CaCl + 0.25lb/sk Cello Flake 14.5ppg 1.38cuf/sk	Surface	1 per joint for bottom 3 joints, 1 every 3 joints for remaining joints
Production Liner*	5110'-10008'	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 a minimum of 8 hours or adequate to achieve a 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 4381'. Directional plans are attached.

Description	Proposed Depth (TVD/MD)	Formation
Horizontal Lateral TD	4914'/10008'	Gallup

Escrito L27-2409 02H
 SHL: NWSW Section 27, T24N, R9W
 2369 FSL and 332 FWL
 BHL: NWSW Section 28, T24N, R9W
 2550 FSL and 330 FWL
 San Juan County, New Mexico
 Lease Number: NMNM 12374

6. DRILLING FLUIDS PROGRAM

a) Surface through Intermediate Casing Point:

Hole Size (in)	Depth (ft)	Mud Type	Density (lb/gal)	Viscosity (sec/qt)	Fluid Loss (cc)
30"	0-60' TVD	Fresh Water	8.3-9.2	38-100	4-28
12 1/4"	0-500' TVD	Fresh Water	8.4-8.6	60-70	NC
8 3/4"	500'TVD-4960'TVD/5310'MD	Fresh Water LSND	8.5-8.8	40-50	8-10

b) Intermediate Casing Point to TD:

Hole Size (in)	MD (ft)	Mud Type	Density (lb/gal)	Viscosity (sec/qt)	Fluid Loss (cc)
6 1/8"	5310'-10008'	Synthetic Oil Based Mud	8.6-9.0	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, 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 – None anticipated.
 c) Mud 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 +/- 2322 psi based on a 9.0 ppg at 4962' TVD of the landing point of the horizontal lateral. 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.

Escrito L27-2409 02H

**SHL: NWSW Section 27, T24N, R9W
2369 FSL and 332 FWL**

**BHL: NWSW Section 28, T24N, R9W
2550 FSL and 330 FWL**

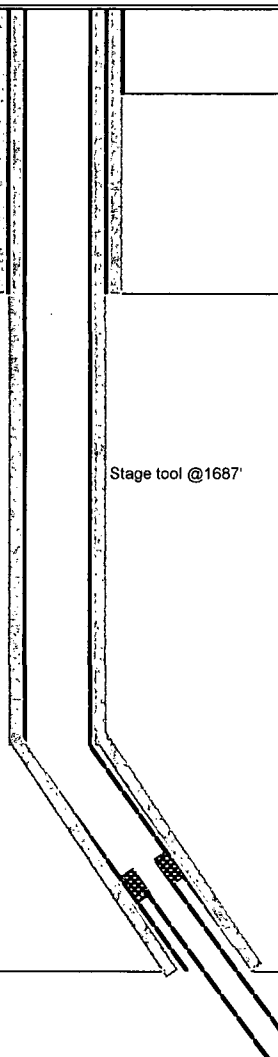
San Juan County, New Mexico

Lease Number: NMNM 12374

9. ANTICIPATED START DATE AND DURATION OF OPERATIONS

Drilling is estimated to commence on February 10, 2014. 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 25 days.

LOC: Sec 27-T24N-R9W County: San Juan WELL: Escrito L27-2409 02H			Encana Natural Gas WELL SUMMARY			<div>encana.</div> <div>natural gas</div>		ENG: 5/23/13 RIG: GLE: 6924 RKBE: 6937	
MWD LWD	OPEN HOLE LOGGING	FORM	DEPTH			HOLE SIZE	CASING SPECS	MW MUD TYPE	DEVIATION INFORMATION
			TVD	MD					
			60	60'		30	20" 94# 100sx Type I Neat 48.8ppg cmt	Fresh wtr 8.3-9.2	
Surveys After csg is run	None		500	500		12 1/4	9 5/8" 36ppf J55 STC TOC @ surface 178 sks Type III Cmt	Fresh wtr 8.4-8.6	Vertical <1°
Surveys every 500'	No OH logs Mud logger onsite	Ojo Alamo Kirtland Fruitland Coal Pictured Cliffs Ss Lewis Shale Cliffhouse Ss Menefee Fn Point Lookout Ss Mancos Sh KICK OFF PT Mancos Silt 7" Csg Depth	879 1067 1277 1637 1767 2427 3187 4087 4247 4381 4817 4960	5310		8 3/4	7" 26ppf J55 LTC TOC @ surface 30% OH excess: 541 sksTotal. Stage 1 Lead: 233sks Stage 1 Tail: 160sks. Stage 2 Lead: 148sks	Fresh Wtr 8.5-8.8	Vertical <1° KOP 4381 10 deg/100'
Surveys every 500' Gyro at CP MWD Gamma Directional	No OH Logs	horz target Mancos Silt Base Gallup Top Base Gallup	4962 5002 5062 5377	5401		6 1/8	200' overlap at liner top 4607' Lateral	4 1/2" 11.6ppf SB80 LTC Running external swellable csg packers for isolation of prod string Plan on setting top packer within 100' of intermediate casing shoe	Switch to OBM 8.6-9.0

NOTES:

- 1) Drill with 30" bit to 60', set 20" 94# conductor pipe
- 2) Drill surface to 500', R&C 9 5/8" casing
- 3) N/U BOP and surface equipment
- 4) Drill to KOP of 4381' , 8 3/4" hole size,
- 5) PU directional tools and start curve at 10deg/100' build rate
- 6) Drill to casing point of 5310' MD
- 7) R&C 7" casing, circ cmt to surface, switch to OBM
- 8) Land at 90deg, drill 4607' lateral to 10008', run 4 1/2" liner with external swellable csg packers



Boomerang Tube LLC

CASING (OR) TUBING DESCRIPTION AND PERFORMANCE PROPERTIES

Pipe Outside Diameter (ins)	_____	4.500
Pipe Wall Thickness (ins)	_____	0.250
Nominal Weight Per Foot (lbs)	_____	11.60
Thread Name	_____	Long Thread CSG
Grade Name	_____	SB-80
Pipe Minimum Yield (psi)	_____	80,000
Pipe Minimum Ultimate (psi)	_____	90,000
Coupling Minimum Yield (psi)	_____	80,000
Coupling Minimum Ultimate (psi)	_____	100,000
Coupling or Joint Outside Diameter (ins)	_____	5.000
Drift Diameter (ins)	_____	3.875
Plain End Weight per Foot (lbs)	_____	11.36
Joint Strength (lbs)	_____	201,000
Internal Yield (psi)	_____	7,780
Collapse Rating (psi)	_____	6,350

MAXIMUM DEPTH/LENGTH BASED ON MUD WTS & SAFETY FACTORS

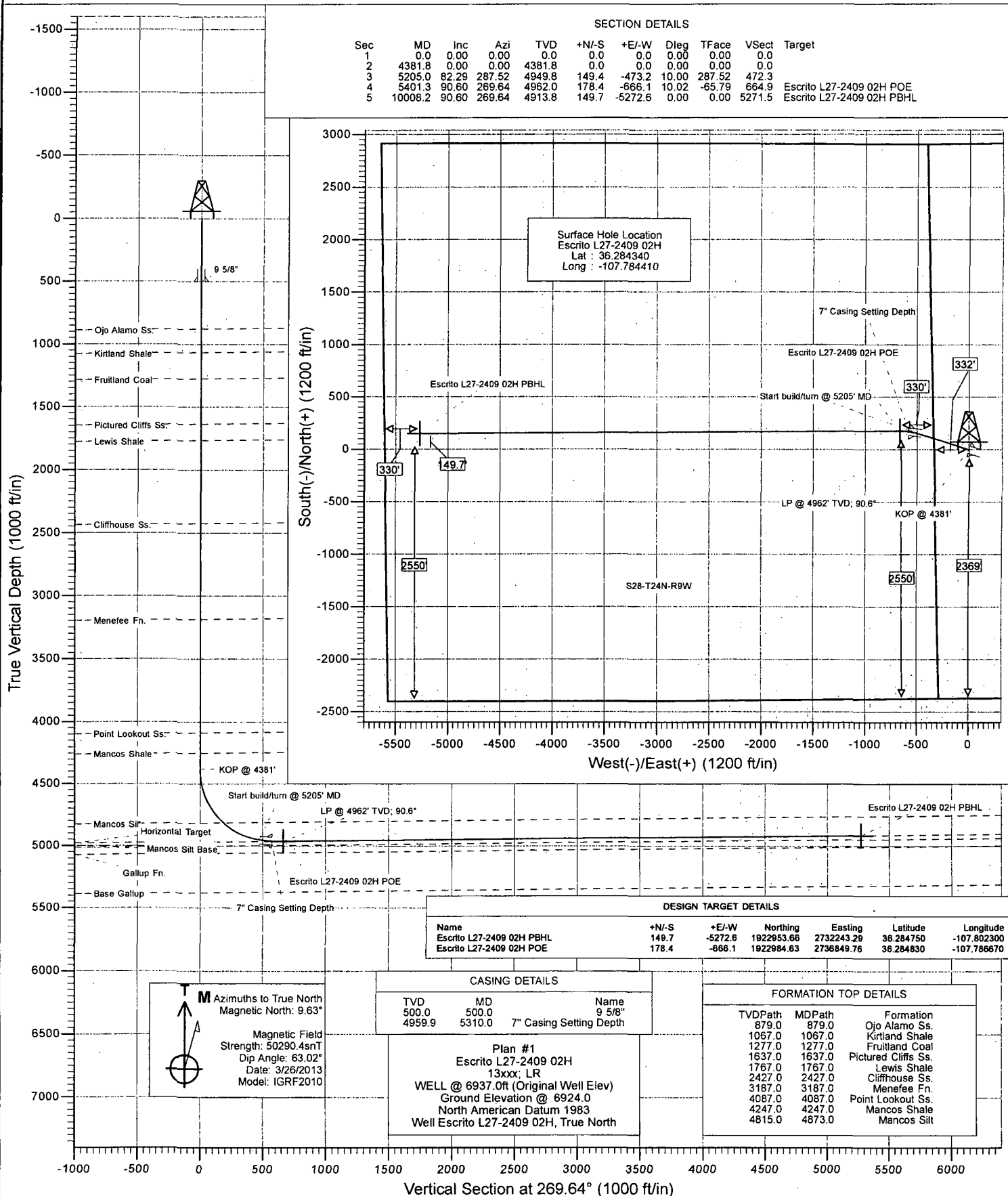
Drilling Mud Weight (ppg)	_____	9.625
Tension Safety Factor	_____	1.80
Maximum Tension Length (ft)	_____	9,630
Internal Yield Safety Factor	_____	1.10
Maximum Depth for Internal Yield (ft)	_____	14,150
Collapse Safety Factor	_____	1.125
Maximum Collapse Depth (ft)	_____	11,290

API RELATED VALUES and INTERMEDIATE CALCULATION RESULTS

Coupling Thread Fracture Strength	_____	464,000
Pipe Thread Fracture Strength (lbs)	_____	201,000
Pipe Body Plain End Yield (lbs)	_____	267,000
Round Thread Pull-Out (lbs)	_____	219,000
Minimum Make-up Torque (ft-lbs)	_____	1,640
Nominal Make-up Torque (ft-lbs)	_____	2,190
Maximum Make-up Torque (ft-lbs)	_____	2,740
Coupling Internal Yield (psi)	_____	10,660
Pipe Body Internal Yield (psi)	_____	7,780
Leak @ E1 or E7 plane (psi)	_____	17,920
Pipe Hydrostatic Test Pressure @ 80 % SMYS	_____	7,100



Project: San Juan County, NM
Site: S27-T24N-R9W
Well: Escrito L27-2409 02H
Wellbore: Hz
Design: Plan #1



Planning Report

Database: USA EDM 5000 Multi Users DB
Company: EnCana Oil & Gas (USA) Inc
Project: San Juan County, NM
Site: S27-T24N-R9W
Well: Escrito L27-2409 02H
Wellbore: Hz
Design: Plan #1

Local Co-ordinate Reference: Well Escrito L27-2409 02H
TVD Reference: WELL @ 6937.0ft (Original Well Elev)
MD Reference: WELL @ 6937.0ft (Original Well Elev)
North Reference: True
Survey Calculation Method: Minimum Curvature

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	S27-T24N-R9W		
Site Position:		Northing:	1,922,839.35 ft
From:	Lat/Long	Easting:	2,737,515.90 ft
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in
		Latitude:	36.284430
		Longitude:	-107.784410
		Grid Convergence:	0.03 °

Well	Escrito L27-2409 02H		
Well Position	+N/-S	0.0 ft	Northing: 1,922,806.58 ft
	+E/-W	0.0 ft	Easting: 2,737,515.92 ft
Position Uncertainty	0.0 ft	Wellhead Elevation:	ft
		Latitude:	36.284340
		Longitude:	-107.784410
		Ground Level:	6,924.0 ft

Wellbore	Hz		
Magnetics	Model Name	Sample Date	Declination (°)
	IGRF2010	3/26/2013	9.63
			Dip Angle (°)
			63.02
			Field Strength (nT)
			50,290

Design	Plan #1		
Audit Notes:			
Version:	Phase:	PLAN	Tie On Depth: 0.0
Vertical Section:	Depth From (TVD)	+N/-S (ft)	+E/-W (ft)
	0.0	0.0	0.0
			Direction (°)
			269.64

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
4,381.8	0.00	0.00	4,381.8	0.0	0.0	0.00	0.00	0.00	0.00	
5,205.0	82.29	287.52	4,949.8	149.4	-473.2	10.00	10.00	0.00	287.52	
5,401.3	90.60	269.64	4,962.0	178.4	-666.1	10.02	4.23	-9.11	-65.79	Escrito L27-2409 02H
10,008.2	90.60	269.64	4,913.8	149.7	-5,272.6	0.00	0.00	0.00	0.00	Escrito L27-2409 02H

Planning Report

Database: USA EDM 5000 Multi Users DB
 Company: EnCana Oil & Gas (USA) Inc
 Project: San Juan County, NM
 Site: S27-T24N-R9W
 Well: Escrito L27-2409 02H
 Wellbore: Hz
 Design: Plan #1

Local Co-ordinate Reference: Well Escrito L27-2409 02H
 TVD Reference: WELL @ 6937.0ft (Original Well Elev)
 MD Reference: WELL @ 6937.0ft (Original Well Elev)
 North Reference: True
 Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	9 5/8"
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	
879.0	0.00	0.00	879.0	0.0	0.0	0.0	0.00	0.00	Ojo Alamo Ss.
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	
1,067.0	0.00	0.00	1,067.0	0.0	0.0	0.0	0.00	0.00	Kirtland Shale
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	
1,277.0	0.00	0.00	1,277.0	0.0	0.0	0.0	0.00	0.00	Fruitland Coal
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	
1,637.0	0.00	0.00	1,637.0	0.0	0.0	0.0	0.00	0.00	Pictured Cliffs Ss.
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	
1,767.0	0.00	0.00	1,767.0	0.0	0.0	0.0	0.00	0.00	Lewis Shale
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	
2,100.0	0.00	0.00	2,100.0	0.0	0.0	0.0	0.00	0.00	
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	0.00	
2,300.0	0.00	0.00	2,300.0	0.0	0.0	0.0	0.00	0.00	
2,400.0	0.00	0.00	2,400.0	0.0	0.0	0.0	0.00	0.00	
2,427.0	0.00	0.00	2,427.0	0.0	0.0	0.0	0.00	0.00	Cliffhouse Ss.
2,500.0	0.00	0.00	2,500.0	0.0	0.0	0.0	0.00	0.00	
2,600.0	0.00	0.00	2,600.0	0.0	0.0	0.0	0.00	0.00	
2,700.0	0.00	0.00	2,700.0	0.0	0.0	0.0	0.00	0.00	
2,800.0	0.00	0.00	2,800.0	0.0	0.0	0.0	0.00	0.00	
2,900.0	0.00	0.00	2,900.0	0.0	0.0	0.0	0.00	0.00	
3,000.0	0.00	0.00	3,000.0	0.0	0.0	0.0	0.00	0.00	
3,100.0	0.00	0.00	3,100.0	0.0	0.0	0.0	0.00	0.00	
3,187.0	0.00	0.00	3,187.0	0.0	0.0	0.0	0.00	0.00	Menefee Fn.
3,200.0	0.00	0.00	3,200.0	0.0	0.0	0.0	0.00	0.00	
3,300.0	0.00	0.00	3,300.0	0.0	0.0	0.0	0.00	0.00	
3,400.0	0.00	0.00	3,400.0	0.0	0.0	0.0	0.00	0.00	
3,500.0	0.00	0.00	3,500.0	0.0	0.0	0.0	0.00	0.00	
3,600.0	0.00	0.00	3,600.0	0.0	0.0	0.0	0.00	0.00	
3,700.0	0.00	0.00	3,700.0	0.0	0.0	0.0	0.00	0.00	
3,800.0	0.00	0.00	3,800.0	0.0	0.0	0.0	0.00	0.00	
3,900.0	0.00	0.00	3,900.0	0.0	0.0	0.0	0.00	0.00	
4,000.0	0.00	0.00	4,000.0	0.0	0.0	0.0	0.00	0.00	
4,087.0	0.00	0.00	4,087.0	0.0	0.0	0.0	0.00	0.00	Point Lookout Ss.
4,100.0	0.00	0.00	4,100.0	0.0	0.0	0.0	0.00	0.00	
4,200.0	0.00	0.00	4,200.0	0.0	0.0	0.0	0.00	0.00	
4,247.0	0.00	0.00	4,247.0	0.0	0.0	0.0	0.00	0.00	Mancos Shale

Planning Report

Database: USA EDM 5000 Multi Users DB
 Company: EnCana Oil & Gas (USA) Inc
 Project: San Juan County, NM
 Site: S27-T24N-R9W
 Well: Escrito L27-2409 02H
 Wellbore: Hz
 Design: Plan #1

Local Co-ordinate Reference: Well Escrito L27-2409 02H
 TVD Reference: WELL @ 6937.0ft (Original Well Elev)
 MD Reference: WELL @ 6937.0ft (Original Well Elev)
 North Reference: True
 Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
4,300.0	0.00	0.00	4,300.0	0.0	0.0	0.0	0.00	0.00	
4,381.8	0.00	0.00	4,381.8	0.0	0.0	0.0	0.00	0.00	KOP @ 4381'
4,400.0	1.82	287.52	4,400.0	0.1	-0.3	0.3	10.00	10.00	
4,500.0	11.82	287.52	4,499.2	3.7	-11.6	11.6	10.00	10.00	
4,600.0	21.81	287.52	4,594.8	12.4	-39.1	39.1	10.00	10.00	
4,700.0	31.81	287.52	4,683.9	25.9	-82.1	81.9	10.00	10.00	
4,800.0	41.81	287.52	4,763.9	43.9	-139.1	138.9	10.00	10.00	
4,873.0	49.10	287.52	4,815.0	59.6	-188.7	188.3	10.00	10.00	Mancos Silt
4,900.0	51.80	287.52	4,832.2	65.9	-208.6	208.2	10.00	10.00	
5,000.0	61.80	287.52	4,886.9	91.0	-288.3	287.7	10.00	10.00	
5,100.0	71.80	287.52	4,926.3	118.7	-375.8	375.1	10.00	10.00	
5,200.0	81.79	287.52	4,949.1	147.9	-468.5	467.6	10.00	10.00	
5,205.0	82.29	287.52	4,949.8	149.4	-473.2	472.3	10.00	10.00	Start build/turn @ 5205' MD
5,300.0	86.27	278.83	4,959.3	170.9	-565.2	564.1	10.02	4.19	
5,310.0	86.69	277.92	4,959.9	172.4	-575.1	574.0	10.02	4.25	7" Casing Setting Depth
5,400.0	90.54	269.76	4,962.0	178.4	-664.7	663.6	10.02	4.28	
5,401.3	90.60	269.64	4,962.0	178.4	-666.1	664.9	10.02	4.29	LP @ 4962' TVD; 90.6° - Escrito L27-2409 02H
5,500.0	90.60	269.64	4,961.0	177.8	-764.7	763.6	0.00	0.00	
5,600.0	90.60	269.64	4,959.9	177.1	-864.7	863.6	0.00	0.00	
5,700.0	90.60	269.64	4,958.9	176.5	-964.7	963.6	0.00	0.00	
5,800.0	90.60	269.64	4,957.9	175.9	-1,064.7	1,063.6	0.00	0.00	
5,900.0	90.60	269.64	4,956.8	175.3	-1,164.7	1,163.6	0.00	0.00	
6,000.0	90.60	269.64	4,955.8	174.7	-1,264.7	1,263.6	0.00	0.00	
6,100.0	90.60	269.64	4,954.7	174.0	-1,364.7	1,363.6	0.00	0.00	
6,200.0	90.60	269.64	4,953.7	173.4	-1,464.7	1,463.6	0.00	0.00	
6,300.0	90.60	269.64	4,952.6	172.8	-1,564.7	1,563.6	0.00	0.00	
6,400.0	90.60	269.64	4,951.6	172.2	-1,664.7	1,663.6	0.00	0.00	
6,500.0	90.60	269.64	4,950.5	171.5	-1,764.7	1,763.5	0.00	0.00	
6,600.0	90.60	269.64	4,949.5	170.9	-1,864.7	1,863.5	0.00	0.00	
6,700.0	90.60	269.64	4,948.4	170.3	-1,964.6	1,963.5	0.00	0.00	
6,800.0	90.60	269.64	4,947.4	169.7	-2,064.6	2,063.5	0.00	0.00	
6,900.0	90.60	269.64	4,946.3	169.1	-2,164.6	2,163.5	0.00	0.00	
7,000.0	90.60	269.64	4,945.3	168.4	-2,264.6	2,263.5	0.00	0.00	
7,100.0	90.60	269.64	4,944.2	167.8	-2,364.6	2,363.5	0.00	0.00	
7,200.0	90.60	269.64	4,943.2	167.2	-2,464.6	2,463.5	0.00	0.00	
7,300.0	90.60	269.64	4,942.1	166.6	-2,564.6	2,563.5	0.00	0.00	
7,400.0	90.60	269.64	4,941.1	166.0	-2,664.6	2,663.5	0.00	0.00	
7,500.0	90.60	269.64	4,940.1	165.3	-2,764.6	2,763.5	0.00	0.00	
7,600.0	90.60	269.64	4,939.0	164.7	-2,864.6	2,863.5	0.00	0.00	
7,700.0	90.60	269.64	4,938.0	164.1	-2,964.6	2,963.5	0.00	0.00	
7,800.0	90.60	269.64	4,936.9	163.5	-3,064.6	3,063.5	0.00	0.00	
7,900.0	90.60	269.64	4,935.9	162.8	-3,164.6	3,163.5	0.00	0.00	
8,000.0	90.60	269.64	4,934.8	162.2	-3,264.6	3,263.5	0.00	0.00	
8,100.0	90.60	269.64	4,933.8	161.6	-3,364.5	3,363.5	0.00	0.00	
8,200.0	90.60	269.64	4,932.7	161.0	-3,464.5	3,463.5	0.00	0.00	
8,300.0	90.60	269.64	4,931.7	160.4	-3,564.5	3,563.5	0.00	0.00	
8,400.0	90.60	269.64	4,930.6	159.7	-3,664.5	3,663.4	0.00	0.00	
8,500.0	90.60	269.64	4,929.6	159.1	-3,764.5	3,763.4	0.00	0.00	
8,600.0	90.60	269.64	4,928.5	158.5	-3,864.5	3,863.4	0.00	0.00	
8,700.0	90.60	269.64	4,927.5	157.9	-3,964.5	3,963.4	0.00	0.00	
8,800.0	90.60	269.64	4,926.4	157.2	-4,064.5	4,063.4	0.00	0.00	
8,900.0	90.60	269.64	4,925.4	156.6	-4,164.5	4,163.4	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: S27-T24N-R9W
Well: Escrito L27-2409 02H
Wellbore: Hz
Design: Plan #1

Local Co-ordinate Reference: Well Escrito L27-2409 02H
TVD Reference: WELL @ 6937.0ft (Original Well Elev)
MD Reference: WELL @ 6937.0ft (Original Well Elev)
North Reference: True
Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
9,000.0	90.60	269.64	4,924.3	156.0	-4,264.5	4,263.4	0.00	0.00	
9,100.0	90.60	269.64	4,923.3	155.4	-4,364.5	4,363.4	0.00	0.00	
9,200.0	90.60	269.64	4,922.3	154.8	-4,464.5	4,463.4	0.00	0.00	
9,300.0	90.60	269.64	4,921.2	154.1	-4,564.5	4,563.4	0.00	0.00	
9,400.0	90.60	269.64	4,920.2	153.5	-4,664.4	4,663.4	0.00	0.00	
9,500.0	90.60	269.64	4,919.1	152.9	-4,764.4	4,763.4	0.00	0.00	
9,600.0	90.60	269.64	4,918.1	152.3	-4,864.4	4,863.4	0.00	0.00	
9,700.0	90.60	269.64	4,917.0	151.7	-4,964.4	4,963.4	0.00	0.00	
9,800.0	90.60	269.64	4,916.0	151.0	-5,064.4	5,063.4	0.00	0.00	
9,900.0	90.60	269.64	4,914.9	150.4	-5,164.4	5,163.4	0.00	0.00	
10,000.0	90.60	269.64	4,913.9	149.8	-5,264.4	5,263.4	0.00	0.00	
10,008.2	90.60	269.64	4,913.8	149.7	-5,272.6	5,271.5	0.00	0.00	TD at 10008.2 - Escrito L27-2409 02H PBHL

Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
Escrito L27-2409 02H PI - plan hits target center - Point	0.00	0.00	4,913.8	149.7	-5,272.6	1,922,953.66	2,732,243.29	36.284750	-107.802300
Escrito L27-2409 02H PI - plan hits target center - Point	0.00	0.00	4,962.0	178.4	-666.1	1,922,984.63	2,736,849.76	36.284830	-107.786670

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)
500.0	500.0	9 5/8"	0.000	0.000
5,310.0	4,959.9	7" Casing Setting Depth	0.000	0.000

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
879.0	879.0	Ojo Alamo Ss.		-0.60	269.64
1,067.0	1,067.0	Kirtland Shale		-0.60	269.64
1,277.0	1,277.0	Fruitland Coal		-0.60	269.64
1,637.0	1,637.0	Pictured Cliffs Ss.		-0.60	269.64
1,767.0	1,767.0	Lewis Shale		-0.60	269.64
2,427.0	2,427.0	Cliffhouse Ss.		-0.60	269.64
3,187.0	3,187.0	Menefee Fn.		-0.60	269.64
4,087.0	4,087.0	Point Lookout Ss.		-0.60	269.64
4,247.0	4,247.0	Mancos Shale		-0.60	269.64
4,873.0	4,817.0	Mancos Silt		-0.60	269.64

Planning Report

Database: USA EDM 5000 Multi Users DB
Company: EnCana Oil & Gas (USA) Inc
Project: San Juan County, NM
Site: S27-T24N-R9W
Well: Escrito L27-2409 02H
Wellbore: Hz
Design: Plan #1

Local Co-ordinate Reference: Well Escrito L27-2409 02H
TVD Reference: WELL @ 6937.0ft (Original Well Elev)
MD Reference: WELL @ 6937.0ft (Original Well Elev)
North Reference: True
Survey Calculation Method: Minimum Curvature

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
4,381.8	4,381.8	0.0	0.0	KOP @ 4381'
5,205.0	4,949.8	149.4	-473.2	Start build/turn @ 5205' MD
5,401.3	4,962.0	178.4	-666.1	LP @ 4962' TVD; 90.6°
10,008.2	4,913.8	149.7	-5,272.6	TD at 10008.2

encana.™
natural gas

Escrito L27-2409 02H

