

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

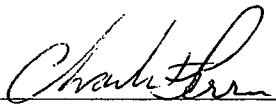
Well information;

Operator Encana, Well Name and Number Escrito M27-2409 1H

API# 30-045-35480, 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


NMOCD Approved by Signature

9-23-2013 ca
Date

CONFIDENTIAL

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

RECEIVED

APPLICATION FOR PERMIT TO DRILL OR REENTER

JUN 25 2013

1a. Type of work: ☒ DRILL ☐ REENTER		Farmington Field Office Bureau of Land Management		5. Lease Serial No. NMNM 12374	
1b. Type of Well: ☐ Oil Well ☒ Gas Well ☐ Other ☒ Single Zone ☐ 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 M27-2409 01H	
4. Location of Well (Report location clearly and in accordance with any State requirements.) At surface 1282' FSL and 383' FWL Section 27, T24N, R9W At proposed prod. zone 1880' FSL and 330' FWL Section 28, T24N, R9W				9. API Well No. 30-045-35480	
14. Distance in miles and direction from nearest town or post office* +/- 34.9 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	
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 SH Section 27, T24N, R9W NMPM BH S 28, T24N, R9W	
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. November 24 is +/- 152 south of the wellbore		19. Proposed Depth 5,319' TVD/10,672' MD		12. County or Parish San Juan	
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 6978' GL, 6991' KB		22. Approximate date work will start* 02/23/2014		13. State NM	
		17. Spacing Unit dedicated to this well 160.0 acres (N2, S2 Section 28, T24N R9W)		20. BLM/BIA Bond No. on file COB-000235	
		23. Estimated duration 25 days		RCVD AUG 27 '13 OIL CONS. DIV.	

24. Attachments

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

- Well plat certified by a registered surveyor.
- A Drilling Plan.
- A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office).
- Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
- Operator certification
- Such other site specific information and/or plans as may be required by the BLM.

25. Signature <i>Brenda R. Linster</i>		Name (Printed/Typed) Brenda R. Linster		Date 06.19.13	
Title Regulatory Lead					
Approved by (Signature) <i>[Signature]</i>		Name (Printed/Typed) AFM		Date 8/21/13	
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.

(Continued on page 2)

*(Instructions on page 2)

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

NMOC
12

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 30-045-35480	*Pool Code 5890 / 97232	*Pool Name BISTI LOWER - GALLUP / BASIN MANCOS
*Property Code 40098	*Property Name ESCRITO M27-2409	*Well Number 01H
*GRID No. 282327	*Operator Name ENCANA OIL & GAS (USA) INC.	*Elevation 6978'

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
M	27	24N	9W		1282	SOUTH	383	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		1880	SOUTH	330	WEST	SAN JUAN

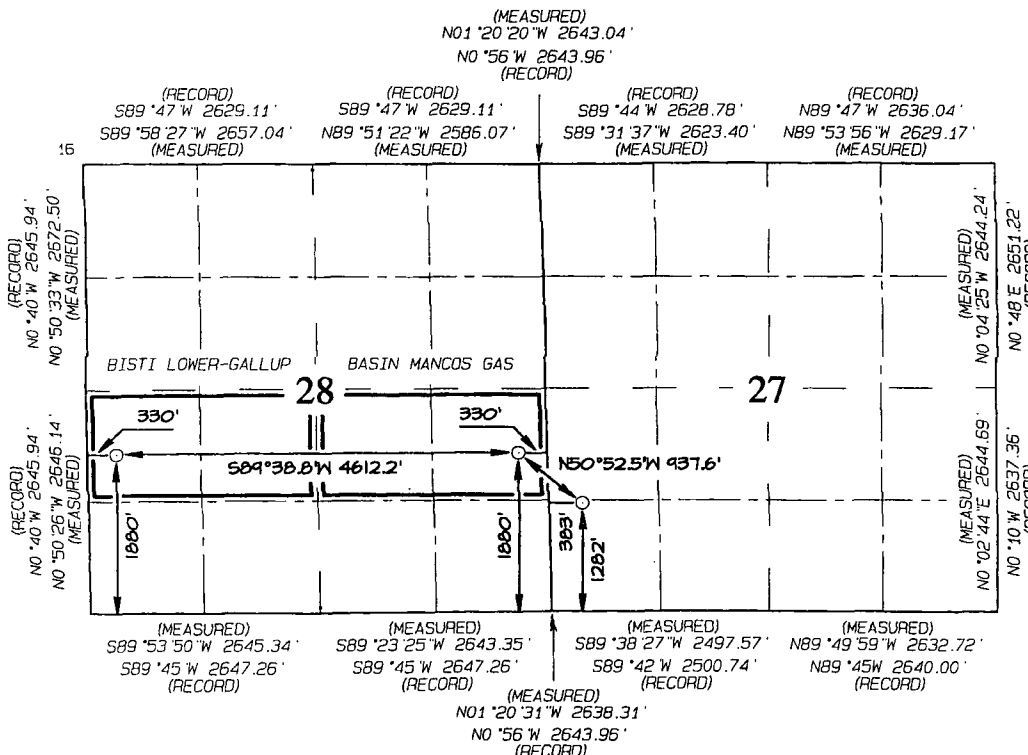
12 Dedicated Acres
160.0 Acres
N/2 S/2 Section 28

13 Joint or Infill

14 Consolidation Code

15 Order No.

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



END-OF-LATERAL
1880' FSL 330' FWL
SECTION 28, T24N, R9W
LAT: 36.28290°N
LONG: 107.80165°W
DATUM: NAD1927

LAT: 36.28291°N
LONG: 107.80227°W
DATUM: NAD1983

POINT-OF-ENTRY
1880' FSL 330' FEL
SECTION 28, T24N, R9W
LAT: 36.28297°N
LONG: 107.78601°W
DATUM: NAD1927

LAT: 36.28299°N
LONG: 107.78662°W
DATUM: NAD1983

SURFACE LOCATION
1282' FSL 383' FWL
SECTION 27, T24N, R9W
LAT: 36.28135°N
LONG: 107.78354°W
DATUM: NAD1927

LAT: 36.28136°N
LONG: 107.78415°W
DATUM: NAD1983

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* Date: 06-17-13

Printed Name: Brenda R. Linster

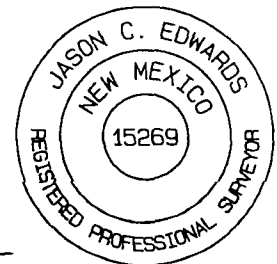
E-mail Address: brenda.linster@encana.com

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 1, 2013
Date of Survey: JULY 30, 2012

Signature and Seal of Professional Surveyor



JASON C. EDWARDS
Certificate Number 15269

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

in Bloomfield, NM to Encana Oil & Gas (USA) Inc. Escrito M27-2409 01H

1282' FSL & 383' FWL, Section 27, T24N, R9W, N.M.P.M., San Juan County, NM

Latitude: 36.28136°N Longitude: 107.78415°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 287' to new access on right-hand side which continues for 600' to staked Encana Escrito M27-2409 01H location.

encana.

natural gas

SAN JUAN COUNTY,
NEW MEXICO

- ⊗ Abandoned
 - ⊗ Abandoned Gas
 - ⊗ Abandoned Oil
 - ⊗ Dry Hole
 - ⊗ GAS
 - ⊗ Injection
 - OIL
 - Basin Mancos Gas Pool
- 1 inch = 2,333 feet

CHACO FED 1
HUERFANO FEDERAL 8 1

CHASE MERRY COM 90

WHITE WASH

MANCOS DAKOTA
POOL

STATE 1
IVY LEAGUE 1

FEDERAL 1

FEDERAL 2

LARGO FEDERAL 1

HOLLY 1
HOLLY 1

Escrito 116-2409 01H

Escrito P16-2409 01H

HUERFANO-FEDERAL SO 1-X

S HUERFANO-FED 1

HOLLY 90

MUDDY MUDDA 1

KINEBATO 1

LARGO FEDERAL B 2

LARGO B 1

MUDDY MUDDY COM 90

HARVEY 2
HARVEY 2

HARVEY 1

BISTI LOWER
GALLUP POOL

24N
9W

Escrito A28-2409 01H

Escrito A28-2409 02H

Escrito L27-2409 01H

Escrito L27-2409 02H

Escrito M27-2409 01H

Escrito M27-2409 02H

NOVEMBER 24 2

9152'

OHWADA 2

Escrito D34-2409 01H

Escrito D34-2409 02H

Escrito D34-2409 03H

Escrito D34-2409 04H

Escrito A31-2409 1H

APRIL SURPRISE 7

MARCH ON 1

Escrito H31-2409 1H

APRIL SURPRISE 9

RISTRAAGW STATE 2

RISTRAAGW STATE 2

RISTRAAGW STATE 2

OHWADA 1

OHWADA 1

SOUTH HUERFANO 1

BASIN MANCOS
GAS POOL

0 0.125 0.25 0.5 Miles

Escrito M27-2409 01H
SHL: SWSW Section 27, T24N, R9W
1282 FSL and 383 FWL
BHL: NWSW Section 28, T24N, R9W
1880 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.	916'
Kirtland	1106'
Fruitland Coal	1326'
Pictured Cliffs	1673'
Lewis	1801'
Cliffhouse	2456'
Menefee	3221'
Point Lookout	4121'
Mancos Shale	4281'
Mancos Silt	4851'
Gallup	5106'

The referenced surface elevation is 6978', KB 6991'

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	1326'
Gas	Pictured Cliffs	1673'
Gas	Cliffhouse	2456'
Gas	Point Lookout	4121'
Oil/Gas	Mancos	4281'

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 M27-2409 01H

**SHL: SWSW Section 27, T24N, R9W
1282 FSL and 383 FWL**

**BHL: NWSW Section 28, T24N, R9W
1880 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'-5967'MD	8 3/4"	7"	26#	J55, LTC New
Production Liner	5767'-10672'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 M27-2409 01H

SHL: SWSW Section 27, T24N, R9W
1282 FSL and 383 FWL

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1880 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	5967'MD	30% open hole excess Stage 1 Lead: 273sks Stage 1 Tail: 186sks Stage 2 Lead: 151sks	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*	5767'-10672'	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 4738'. Directional plans are attached.

Description	Proposed Depth (TVD/MD)	Formation
Horizontal Lateral TD	5319'/10672'	Gallup

Escrito M27-2409 01H
 SHL: SWSW Section 27, T24N, R9W
 1282 FSL and 383 FWL
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 1880 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- 5366'TVD/5967'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"	5967'-10672'	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 +/- 2512 psi based on a 9.0 ppg at 5367' 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 M27-2409 01H

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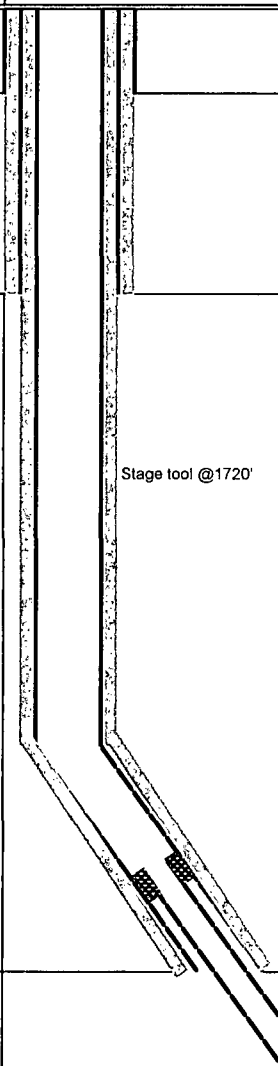
San Juan County, New Mexico

Lease Number: NMNM 12374

9. ANTICIPATED START DATE AND DURATION OF OPERATIONS

Drilling is estimated to commence on February 23, 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 M27-2409 01H			Encana Natural Gas WELL SUMMARY				encana natural gas		ENG: 5/23/13 RIG: GLE: 6978 RKBE: 6991	
MWD LWD	OPEN HOLE LOGGING	FORM	DEPTH TVDMD			HOLE SIZE	CASING SPECS	MW MUD TYPE	DEVIATION INFORMATION	
			60	60'		30	20" 94# 100sx Type I Neat 48.8ppg cmt	Fresh wtr 8.3-9.2		
Surveys After csg is run	None					12 1/4	9 5/8" 36ppf J55 STC TOC @ surface 178 sks Type III Cmt	Fresh wtr 8.4-8.6	Vertical <1°	
			500	500						
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 Gallup Top	916 1106 1326 1673 1801 2456 3221 4121 4281 4738 4851 5106			Stage tool @1720'	8 3/4	7" 26ppf J55 LTC TOC @ surface 30% OH excess: 610 sksTotal. Stage 1 Lead: 273sks Stage 1 Tail: 187sks. Stage 2 Lead: 151sks	Fresh Wtr 8.5-8.8	Vertical <1° KOP 4738 10 deg/100'
			5366	5967						
Surveys every 500' Gyro at CP MWD Gamma Directional	No OH Logs	horz target Base Gallup	5367 5429	6060		6 1/8	200' overlap at liner top 4612' Lateral	8.6-9.0 OBM Switch to OBM 8.6-9.0	.25deg updip 5319'TVD TD = 10672' MD	
							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			

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 4738' , 8 3/4" hole size,
- 5) PU directional tools and start curve at 10deg/100' build rate
- 6) Drill to casing point of 5967' MD
- 7) R&C 7" casing, circ cmt to surface, switch to OBM
- 8) Land at 90deg, drill 4612' lateral to 10672', 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

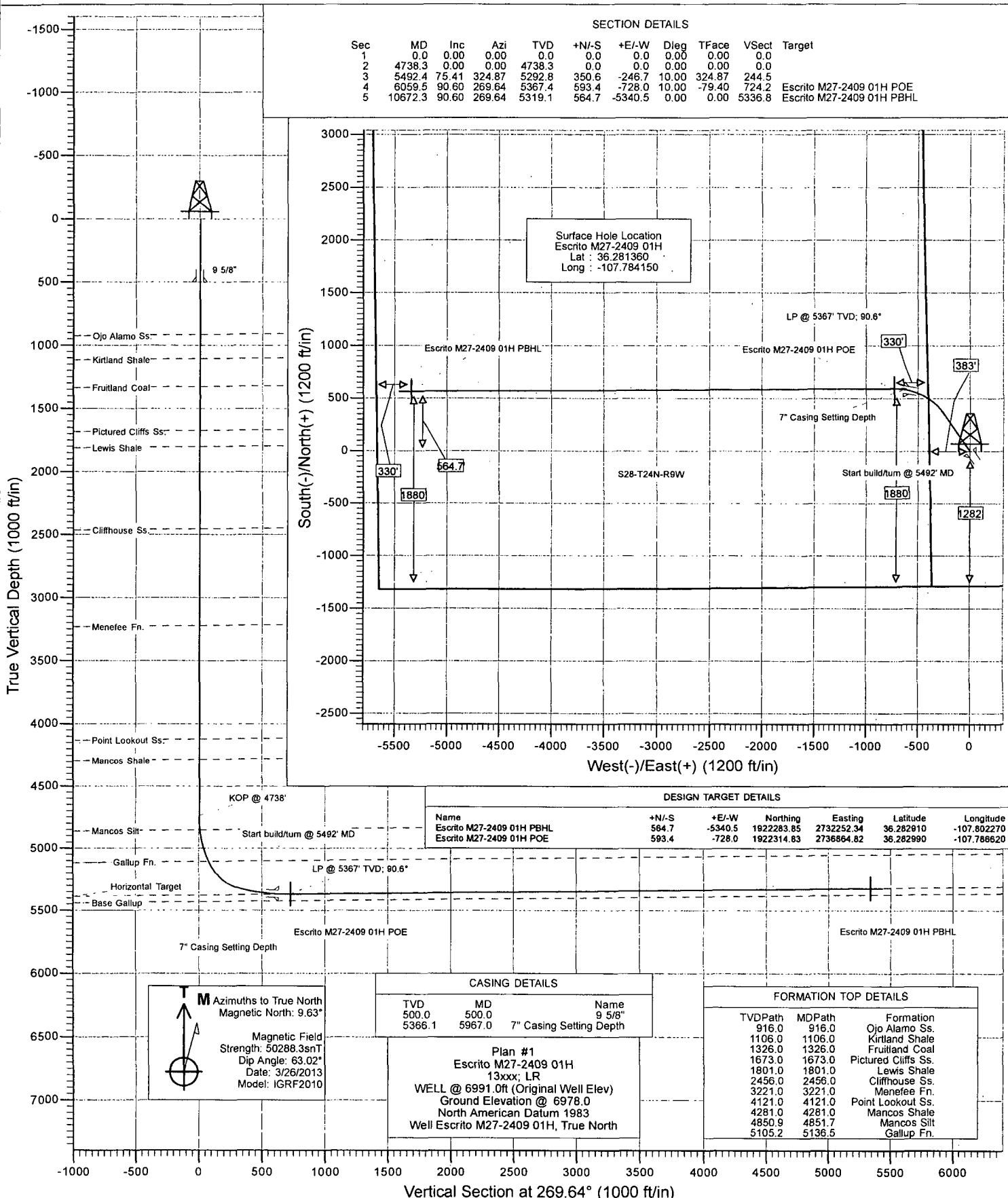
Drilling Mud Weight (ppg)	_____	9.625
Tension Safety Factor	_____	1.80
Maximum Tension Length (ft)	_____	9,630
Internal Yield Safety Factor	_____	1.10
Maximum Depth for Internal Yield (ft)	_____	14,150
Collapse Safety Factor	_____	1.125
Maximum Collapse Depth (ft)	_____	11,290

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 M27-2409 01H
 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 M27-2409 01H
 Wellbore: Hz
 Design: Plan #1

Local Co-ordinate Reference: Well Escrito M27-2409 01H
 TVD Reference: WELL @ 6991.0ft (Original Well Elev)
 MD Reference: WELL @ 6991.0ft (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 M27-2409 01H		
Well Position	+N/-S	0.0 ft	Northing:
	+E/-W	0.0 ft	Easting:
Position Uncertainty	0.0 ft	Wellhead Elevation:	ft
		Latitude:	36.281360
		Longitude:	-107.784150
		Ground Level:	6,978.0 ft

Wellbore	Hz		
Magnetics	Model Name	Sample Date	Declination
	IGRF2010	3/26/2013	9.63
			Dip Angle
			63.02
			Field Strength
			50,288

Design	Plan #1		
Audit Notes:			
Version:	Phase:	PLAN	Tie On Depth:
			0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(ft)	(ft)	(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	
4,738.3	0.00	0.00	4,738.3	0.0	0.0	0.00	0.00	0.00	0.00	
5,492.4	75.41	324.87	5,292.8	350.6	-246.7	10.00	10.00	0.00	324.87	
6,059.5	90.60	269.64	5,367.4	593.4	-728.0	10.00	2.68	-9.74	-79.40	Escrito M27-2409 01H
10,672.3	90.60	269.64	5,319.1	564.7	-5,340.5	0.00	0.00	0.00	0.00	Escrito M27-2409 01H

Planning Report

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Project: San Juan County, NM
Site: S27-T24N-R9W
Well: Escrito M27-2409 01H
Wellbore: Hz
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Local Co-ordinate Reference: Well Escrito M27-2409 01H
TVD Reference: WELL @ 6991.0ft (Original Well Elev)
MD Reference: WELL @ 6991.0ft (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	
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	
916.0	0.00	0.00	916.0	0.0	0.0	0.0	0.00	0.00	Ojo Alamo Ss.
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	
1,106.0	0.00	0.00	1,106.0	0.0	0.0	0.0	0.00	0.00	Kirtland Shale
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	
1,326.0	0.00	0.00	1,326.0	0.0	0.0	0.0	0.00	0.00	Fruitland Coal
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	
1,673.0	0.00	0.00	1,673.0	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	
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	
1,801.0	0.00	0.00	1,801.0	0.0	0.0	0.0	0.00	0.00	Lewis Shale
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	
2,456.0	0.00	0.00	2,456.0	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	
3,200.0	0.00	0.00	3,200.0	0.0	0.0	0.0	0.00	0.00	
3,221.0	0.00	0.00	3,221.0	0.0	0.0	0.0	0.00	0.00	Menefee Fn.
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	
4,100.0	0.00	0.00	4,100.0	0.0	0.0	0.0	0.00	0.00	
4,121.0	0.00	0.00	4,121.0	0.0	0.0	0.0	0.00	0.00	Point Lookout Ss.
4,200.0	0.00	0.00	4,200.0	0.0	0.0	0.0	0.00	0.00	
4,281.0	0.00	0.00	4,281.0	0.0	0.0	0.0	0.00	0.00	Mancos Shale

Planning Report

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 Wellbore: Hz
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 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	
4,400.0	0.00	0.00	4,400.0	0.0	0.0	0.0	0.00	0.00	
4,500.0	0.00	0.00	4,500.0	0.0	0.0	0.0	0.00	0.00	
4,600.0	0.00	0.00	4,600.0	0.0	0.0	0.0	0.00	0.00	
4,700.0	0.00	0.00	4,700.0	0.0	0.0	0.0	0.00	0.00	
4,738.3	0.00	0.00	4,738.3	0.0	0.0	0.0	0.00	0.00	KOP @ 4738'
4,800.0	6.17	324.87	4,799.9	2.7	-1.9	1.9	10.00	10.00	
4,851.7	11.34	324.87	4,850.9	9.1	-6.4	6.4	10.00	10.00	Mancos Silt
4,900.0	16.17	324.87	4,897.9	18.5	-13.0	12.9	10.00	10.00	
5,000.0	26.17	324.87	4,991.0	48.0	-33.8	33.5	10.00	10.00	
5,100.0	36.17	324.87	5,076.4	90.3	-63.5	63.0	10.00	10.00	
5,136.5	39.82	324.87	5,105.2	108.7	-76.5	75.8	10.00	10.00	Gallup Fn.
5,200.0	46.17	324.87	5,151.6	144.1	-101.4	100.5	10.00	10.00	
5,300.0	56.17	324.87	5,214.3	207.7	-146.1	144.8	10.00	10.00	
5,400.0	66.17	324.87	5,262.4	279.3	-196.5	194.7	10.00	10.00	
5,492.4	75.41	324.87	5,292.8	350.6	-246.7	244.5	10.00	10.00	Start build/turn @ 5492' MD
5,500.0	75.55	324.10	5,294.7	356.5	-250.9	248.7	10.00	1.86	
5,600.0	77.63	314.05	5,317.9	429.9	-314.6	311.9	10.00	2.08	
5,700.0	80.07	304.17	5,337.3	491.7	-390.6	387.5	10.00	2.44	
5,800.0	82.80	294.44	5,352.2	540.0	-476.7	473.3	10.00	2.72	
5,900.0	85.72	284.84	5,362.3	573.4	-570.3	566.7	10.00	2.93	
5,967.0	87.75	278.44	5,366.1	586.9	-635.8	632.1	10.00	3.03	7" Casing Setting Depth
6,000.0	88.77	275.30	5,367.1	590.8	-668.6	664.8	10.00	3.07	
6,059.5	90.60	269.64	5,367.4	593.4	-728.0	724.2	10.00	3.08	LP @ 5367' TVD; 90.6° - Escrito M27-2409 01H
6,100.0	90.60	269.64	5,367.0	593.1	-768.5	764.7	0.00	0.00	
6,200.0	90.60	269.64	5,365.9	592.5	-868.5	864.7	0.00	0.00	
6,300.0	90.60	269.64	5,364.9	591.9	-968.5	964.7	0.00	0.00	
6,400.0	90.60	269.64	5,363.8	591.3	-1,068.5	1,064.7	0.00	0.00	
6,500.0	90.60	269.64	5,362.8	590.6	-1,168.4	1,164.7	0.00	0.00	
6,600.0	90.60	269.64	5,361.8	590.0	-1,268.4	1,264.7	0.00	0.00	
6,700.0	90.60	269.64	5,360.7	589.4	-1,368.4	1,364.7	0.00	0.00	
6,800.0	90.60	269.64	5,359.7	588.8	-1,468.4	1,464.7	0.00	0.00	
6,900.0	90.60	269.64	5,358.6	588.2	-1,568.4	1,564.7	0.00	0.00	
7,000.0	90.60	269.64	5,357.6	587.5	-1,668.4	1,664.7	0.00	0.00	
7,100.0	90.60	269.64	5,356.5	586.9	-1,768.4	1,764.7	0.00	0.00	
7,200.0	90.60	269.64	5,355.5	586.3	-1,868.4	1,864.7	0.00	0.00	
7,300.0	90.60	269.64	5,354.4	585.7	-1,968.4	1,964.7	0.00	0.00	
7,400.0	90.60	269.64	5,353.4	585.1	-2,068.4	2,064.7	0.00	0.00	
7,500.0	90.60	269.64	5,352.3	584.4	-2,168.4	2,164.7	0.00	0.00	
7,600.0	90.60	269.64	5,351.3	583.8	-2,268.4	2,264.7	0.00	0.00	
7,700.0	90.60	269.64	5,350.2	583.2	-2,368.4	2,364.6	0.00	0.00	
7,800.0	90.60	269.64	5,349.2	582.6	-2,468.4	2,464.6	0.00	0.00	
7,900.0	90.60	269.64	5,348.1	581.9	-2,568.3	2,564.6	0.00	0.00	
8,000.0	90.60	269.64	5,347.1	581.3	-2,668.3	2,664.6	0.00	0.00	
8,100.0	90.60	269.64	5,346.0	580.7	-2,768.3	2,764.6	0.00	0.00	
8,200.0	90.60	269.64	5,345.0	580.1	-2,868.3	2,864.6	0.00	0.00	
8,300.0	90.60	269.64	5,344.0	579.5	-2,968.3	2,964.6	0.00	0.00	
8,400.0	90.60	269.64	5,342.9	578.8	-3,068.3	3,064.6	0.00	0.00	
8,500.0	90.60	269.64	5,341.9	578.2	-3,168.3	3,164.6	0.00	0.00	
8,600.0	90.60	269.64	5,340.8	577.6	-3,268.3	3,264.6	0.00	0.00	
8,700.0	90.60	269.64	5,339.8	577.0	-3,368.3	3,364.6	0.00	0.00	
8,800.0	90.60	269.64	5,338.7	576.4	-3,468.3	3,464.6	0.00	0.00	

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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
8,900.0	90.60	269.64	5,337.7	575.7	-3,568.3	3,564.6	0.00	0.00	
9,000.0	90.60	269.64	5,336.6	575.1	-3,668.3	3,664.6	0.00	0.00	
9,100.0	90.60	269.64	5,335.6	574.5	-3,768.3	3,764.6	0.00	0.00	
9,200.0	90.60	269.64	5,334.5	573.9	-3,868.2	3,864.6	0.00	0.00	
9,300.0	90.60	269.64	5,333.5	573.3	-3,968.2	3,964.6	0.00	0.00	
9,400.0	90.60	269.64	5,332.4	572.6	-4,068.2	4,064.6	0.00	0.00	
9,500.0	90.60	269.64	5,331.4	572.0	-4,168.2	4,164.5	0.00	0.00	
9,600.0	90.60	269.64	5,330.3	571.4	-4,268.2	4,264.5	0.00	0.00	
9,700.0	90.60	269.64	5,329.3	570.8	-4,368.2	4,364.5	0.00	0.00	
9,800.0	90.60	269.64	5,328.2	570.2	-4,468.2	4,464.5	0.00	0.00	
9,900.0	90.60	269.64	5,327.2	569.5	-4,568.2	4,564.5	0.00	0.00	
10,000.0	90.60	269.64	5,326.1	568.9	-4,668.2	4,664.5	0.00	0.00	
10,100.0	90.60	269.64	5,325.1	568.3	-4,768.2	4,764.5	0.00	0.00	
10,200.0	90.60	269.64	5,324.1	567.7	-4,868.2	4,864.5	0.00	0.00	
10,300.0	90.60	269.64	5,323.0	567.1	-4,968.2	4,964.5	0.00	0.00	
10,400.0	90.60	269.64	5,322.0	566.4	-5,068.2	5,064.5	0.00	0.00	
10,500.0	90.60	269.64	5,320.9	565.8	-5,168.2	5,164.5	0.00	0.00	
10,600.0	90.60	269.64	5,319.9	565.2	-5,268.1	5,264.5	0.00	0.00	
10,672.3	90.60	269.64	5,319.1	564.7	-5,340.5	5,336.8	0.00	0.00	TD at 10672.3 - Escrito M27-2409 01H PBHL

Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- hit/miss target									
- Shape									
Escrito M27-2409 01H P	0.00	0.00	5,367.4	593.4	-728.0	1,922,314.83	2,736,864.82	36.282990	-107.786620
- plan hits target center									
- Point									
Escrito M27-2409 01H P	0.00	0.00	5,319.1	564.7	-5,340.5	1,922,283.85	2,732,252.34	36.282910	-107.802270
- plan hits target center									
- Point									

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
5,967.0	5,366.1	7" Casing Setting Depth	0.000	0.000

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Survey Calculation Method: Minimum Curvature

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
916.0	916.0	Ojo Alamo Ss.		-0.60	269.64
1,106.0	1,106.0	Kirtland Shale		-0.60	269.64
1,326.0	1,326.0	Fruitland Coal		-0.60	269.64
1,673.0	1,673.0	Pictured Cliffs Ss.		-0.60	269.64
1,801.0	1,801.0	Lewis Shale		-0.60	269.64
2,456.0	2,456.0	Cliffhouse Ss.		-0.60	269.64
3,221.0	3,221.0	Menefee Fn.		-0.60	269.64
4,121.0	4,121.0	Point Lookout Ss.		-0.60	269.64
4,281.0	4,281.0	Mancos Shale		-0.60	269.64
4,851.7	4,851.0	Mancos Silt		-0.60	269.64
5,136.5	5,106.0	Gallup Fn.		-0.60	269.64

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
4,738.3	4,738.3	0.0	0.0	KOP @ 4738'
5,492.4	5,292.8	350.6	-246.7	Start build/turn @ 5492' MD
6,059.5	5,367.4	593.4	-728.0	LP @ 5367' TVD; 90.6°
10,672.3	5,319.1	564.7	-5,340.5	TD at 10672.3

WELLHEAD BLOWOUT CONTROL SYSTEM



Well name and number:

Escrito M27-2409 01H

