

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: 3-14-13

Well information;

Operator Encana, Well Name and Number Escrito D30-2408 #1H

API# 30-045-35467, Section 30, Township 24 N/S, Range 8 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
- ☒ A complete C-144 must be submitted to and approved by the NMOCD for: a pit, closed loop system, below grade tank, or proposed alternative method, pursuant to NMOCD PART 19.15.17 prior to the use or construction of the above applications
- ☐ 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


NMOCD Approved by Signature

6-10-13
Date

JUN 11 2013 *ca*

RECEIVED

MAR 25 2013

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

BLM 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 UNITED STATES

DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

Farmington Field Office

Bureau of Land Management

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No. NM 54980 and NM 54981
6. If Indian, Allottee or Tribe Name N/A
7. If Unit or CA Agreement, Name and No. N/A
8. Lease Name and Well No. Escrito D30-2408 01H
9. API Well No. 3004535467
10. Field and Pool, or Exploratory Basin Mancos Gas
11. Sec., T. R. M. or Blk. and Survey or Area Section 30, T24N, R8W NMPM
12. County or Parish San Juan
13. State NM
17. Spacing Unit dedicated to this well 640.0 acres - All of Section 30 RCVD JUN 4 '13
20. BLM/BIA Bond No. on file COB-000235 OIL CONS. DIV. DIST. 8
23. Estimated duration 25 days

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 444' FNL and 400' FWL Section 30, T24N, R8W At proposed prod. zone 660' FSL and 660' FEL Section 30, T24N, R8W	
14. Distance in miles and direction from nearest town or post office* +/- 36.3 miles southeast of the intersection of US Hwy 550 & US Hwy 64 in Bloomfield, NM	
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) BHL is 660' from west lease line	16. No. of acres in lease NM 54980 - 320.0 acres NM 54981 - 321.6 acres
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. Sapp 1 is +/- 660' NW of SHL	19. Proposed Depth 5393' TVD/11,136' MD
21. Elevations (Show whether DF, KDB, RI, GL, etc.) 6849' GL, 6862' KB	22. Approximate date work will start* 08/12/2013

24. Attachments

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

- | | |
|--|---|
| 1. Well plat certified by a registered surveyor. | 4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above). |
| 2. A Drilling Plan. | 5. Operator certification |
| 3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office). | 6. Such other site specific information and/or plans as may be required by the BLM. |

25. Signature <i>Brenda R. Linster</i>	Name (Printed/Typed) Brenda R. Linster	Date 03.14.13
Title Regulatory Lead		
Approved by (Signature) <i>[Signature]</i>	Name (Printed/Typed) AFM	Date 6/3/13
Title AFM	Office FFO	

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 3165.2
and appeal pursuant to 43 CFR 3165.4

NMOC
AV

DISTRICT I

1626 N. French Dr., Hobbs, N.M. 88240
Phone: (505) 393-6161 Fax: (505) 393-0720

DISTRICT II

511 S. First St., Artesia, N.M. 88210
Phone: (505) 748-1883 Fax: (505) 748-9780

DISTRICT III

1000 Rio Brazos Rd., Artesia, N.M. 87410
Phone: (505) 334-6178 Fax: (505) 334-6170

DISTRICT IV

1820 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3480 Fax: (505) 476-3482

State of New Mexico
Energy, Minerals & Natural Resources Department

RECEIVED

Form C-102
Revised August 1, 2011

MAR 25 2011 one copy to appropriate
District Office

OIL CONSERVATION DIVISION

1220 South St. Francis Dr. Farmington Field Office

Santa Fe, NM 87505

Bureau of Land Management

AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

*API Number 30-045-35467	*Pool Code 97232	*Pool Name BASIN MANCOS GAS
*Property Code 39945	*Property Name ESCRITO D30-240B	*Well Number 01H
*GRID No. 282327	*Operator Name ENCANA OIL & GAS (USA) INC.	*Elevation 6849.3'

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
D	30	24N	8W	1	444'	NORTH	400'	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
P	30	24N	8W		660'	SOUTH	660'	EAST	SAN JUAN

*Dedicated Acres 64.11 1640.00 Acres - All Sec. 30	*Joint or Infill	*Consolidation Code	*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

1 LAT. 36.278070' N (NAD83) LONG. 107.732078' W (NAD83) LAT. 36.278058' N (NAD27) LONG. 107.731465' W (NAD27) 2 LAT. 36.285324' N (NAD83) LONG. 107.732027' W (NAD83) LAT. 36.285312' N (NAD27) LONG. 107.731414' W (NAD27) 3 LAT. 36.292579' N (NAD83) LONG. 107.722879' W (NAD83) LAT. 36.292567' N (NAD27) LONG. 107.722266' W (NAD27) 4 LAT. 36.278082' N (NAD83) LONG. 107.723069' W (NAD83) LAT. 36.278070' N (NAD27) LONG. 107.722456' W (NAD27) 5 LAT. 36.292579' N (NAD83) LONG. 107.713923' W (NAD83) LONG. 107.713311' W (NAD27) 6 LAT. 36.278095' N (NAD83) LONG. 107.714102' W (NAD83) LAT. 36.278083' N (NAD27) LONG. 107.713490' W (NAD27)	18 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> 03-14-11 Signature Date Brenda R. Linster Printed Name brenda.linster@encana.com E-mail Address SURVEYOR CERTIFICATION I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief. JANUARY 31, 2013 Date of Survey Signature and Seal of Professional Surveyor: <i>David B. Russell</i> DAVID B. RUSSELL NEW MEXICO REGISTERED PROFESSIONAL LAND SURVEYOR 1020 DAVID-RUSSELL Certificate Number 10201
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ENCANA OIL & GAS (USA) INC.

ESCRITO D30-2408 #01H

444' FNL & 400' FWL

LOCATED IN THE NW/4 NW/4 OF SECTION 30,

T24N, R8W, N.M.P.M.,

SAN JUAN COUNTY, NEW MEXICO

DIRECTIONS

- 1) FROM THE INTERSECTION OF US HWY 550 AND US HWY 64, TRAVEL SOUTH ON 550 FOR 35.0 MILES TO MP 116.6 INDIAN SERVICE ROUTE 459.
- 2) TURN LEFT ONTO ISR 459 AND GO 0.7 MILES TO "Y" INTERSECTION.
- 3) CONTINUE LEFT ON ISR 459 AND GO 0.6 MILES WHERE ACCESS IS STAKED ON RIGHT SIDE OF ROAD.

WELL FLAG LOCATED AT LAT. 36.291358° N, LONG. 107.730626° W (NAD 83).



Escrito D30-2408 01H

SHL: NWNW Section 30, T24N, R8W
444 FNL and 400 FWL

BHL: SESE Section 30, T24N, R8W
660 FSL and 660 FEL

San Juan County, New Mexico

Lease Number: NM 54980 & NM 54981

**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.	983'
Kirtland	1206'
Fruitland Coal	1464'
Pictured Cliffs	1744'
Lewis	1860'
Cliffhouse	2572'
Menefee	3248'
Point Lookout	4144'
Mancos Shale	4355'
Mancos Silt	4899'
Gallup	5146'

The referenced surface elevation is 6849', KB 6862'

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	1751'
Gas	Pictured Cliffs	1751'
Gas	Cliffhouse	2572'
Gas	Point Lookout	4144'
Oil/Gas	Mancos	4355'

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 D30-2408 01H

**SHL: NWNW Section 30, T24N, R8W
444 FNL and 400 FWL**

**BHL: SESE Section 30, T24N, R8W
660 FSL and 660 FEL**

San Juan County, New Mexico

Lease Number: NM 54980 & NM 54981

- 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'-5597'MD	8 3/4"	7"	26#	J55, LTC New
Production Liner	5397'-11136'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 D30-2408 01H

SHL: NWNW Section 30, T24N, R8W
444 FNL and 400 FWL

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660 FSL and 660 FEL

San Juan County, New Mexico

Lease Number: NM 54980 & NM 54981

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	5597'MD	30% open hole excess Stage 1 Lead: 244sks Stage 1 Tail: 168sks Stage 2 Lead: 158sks	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*	5397'-11136'	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 4871'. Directional plans are attached.

Description	Proposed Depth (TVD/MD)	Formation
Horizontal Lateral TD	5393'/11136'	Gallup

Escrito D30-2408 01H**SHL: NWNW Section 30, T24N, R8W****444 FNL and 400 FWL****BHL: SESE Section 30, T24N, R8W****660 FSL and 660 FEL****San Juan County, New Mexico****Lease Number: NM 54980 & NM 54981****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- 5421'TVD/5597'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"	5597'-11136'	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 +/- 2537 psi based on a 9.0 ppg at 5421' 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.

LOC: Sec 30-T24N-R8W County: San Juan WELL: Escrito D30-2408 01H			Encana Natural Gas WELL SUMMARY					ENG: J. Fox/ A. RIG: GLE: 6849 RKBE: 6862		3/14/13	
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 KICK OFF PT Point Lookout Ss Mancos Sh Mancos Silt Gallup Top	983 1206 1464 1744 1860 2572 3248 4871 4144 4355 4899 5146 5421	 5597	Stage tool @ 1800'	8 3/4	7" 26ppf J55 LTC TOC @ surface 30% OH excess: 570 sksTotal. Stage 1 Lead: 244sks Stage 1 Tail: 168sks. Stage 2 Lead: 158sks	Fresh Wtr 8.5-8.8	Vertical <1° KOP 4871 10 deg/100'		
Surveys every 500' Gyro at CP MWD Gamma Directional	No OH Logs	horz target Base Gallup	5449 5492	5783		6 1/8	200' overlap at liner top 5353' Lateral	8.6-9.0 OBM	.25deg updip 5393'TVD TD = 11136' 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	Switch to OBM 8.6-9.0			



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

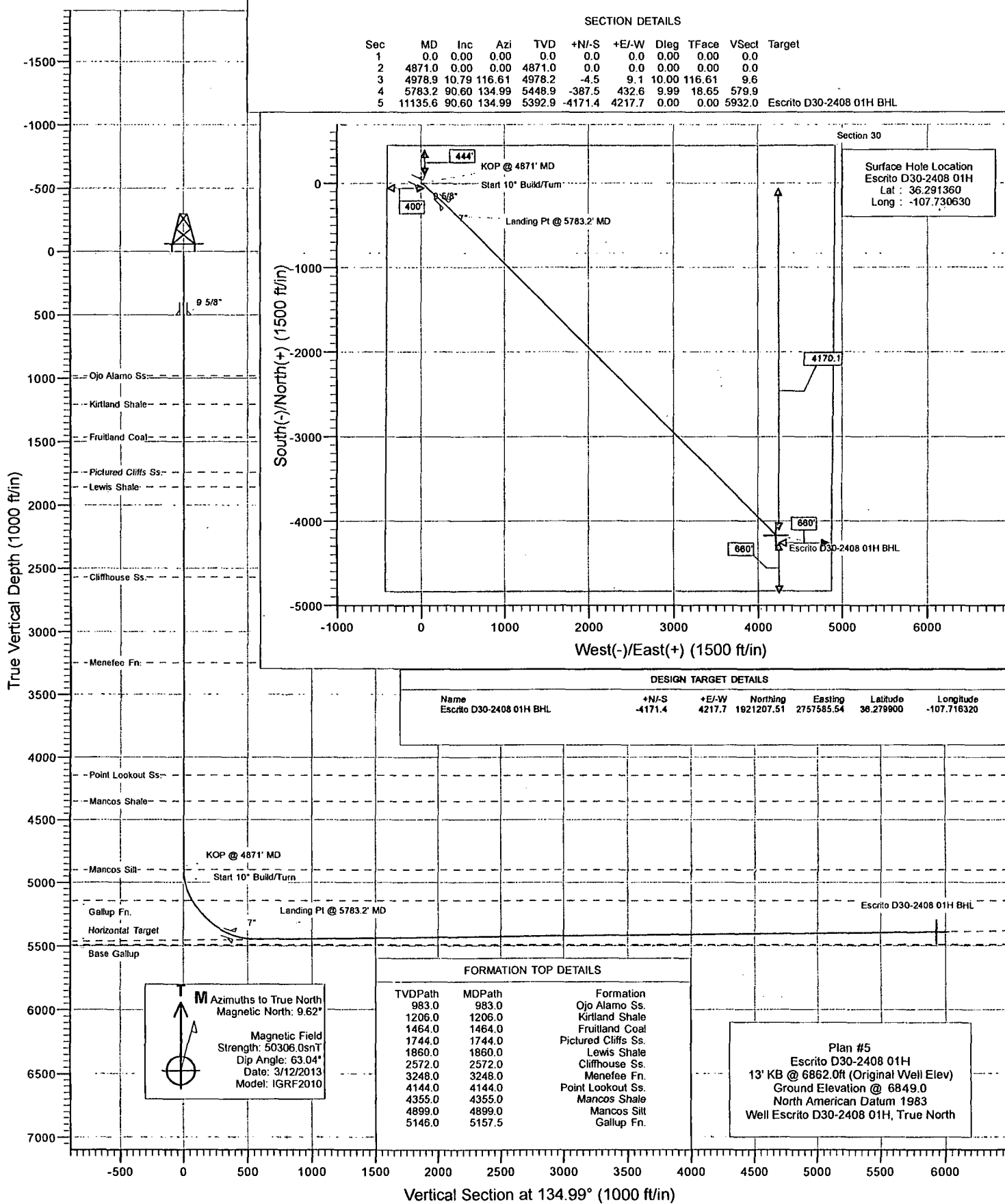


Project: San Juan County, NM
 Site: S30-T24N-R8W
 Well: Escrito D30-2408 01H
 Wellbore: HZ
 Design: Plan #5



SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	4871.0	0.00	0.00	4871.0	0.0	0.0	0.00	0.00	0.0	
3	4978.9	10.79	116.61	4978.2	-4.5	9.1	10.00	116.61	9.6	
4	5783.2	90.60	134.99	5448.9	-387.5	432.6	9.99	18.65	579.9	
5	11135.6	90.60	134.99	5392.9	-4171.4	4217.7	0.00	0.00	5932.0	Escrito D30-2408 01H BHL



Surface Hole Location
 Escrito D30-2408 01H
 Lat : 36.291360
 Long : -107.730630

DESIGN TARGET DETAILS

Name	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
Escrito D30-2408 01H BHL	-4171.4	4217.7	1621207.51	2757585.54	36.279900	-107.716320

FORMATION TOP DETAILS

TVDPPath	MDPath	Formation
983.0	983.0	Ojo Alamo Ss.
1206.0	1206.0	Kirtland Shale
1464.0	1464.0	Fruitland Coal
1744.0	1744.0	Pictured Cliffs Ss.
1860.0	1860.0	Lewis Shale
2572.0	2572.0	Cliffhouse Ss.
3248.0	3248.0	Menefee Fn.
4144.0	4144.0	Point Lookout Ss.
4355.0	4355.0	Mancos Shale
4899.0	4899.0	Mancos Silt
5146.0	5157.5	Gallup Fn.

Plan #5
 Escrito D30-2408 01H
 13' KB @ 6862.0ft (Original Well Elev)
 Ground Elevation @ 6849.0
 North American Datum 1983
 Well Escrito D30-2408 01H, True North

Vertical Section at 134.99° (1000 ft/in)

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Escrito D30-2408 01H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	13' KB @ 6862.0ft (Original Well Elev)
Project:	San Juan County, NM	MD Reference:	13' KB @ 6862.0ft (Original Well Elev)
Site:	S30-T24N-R8W	North Reference:	True
Well:	Escrito D30-2408 01H	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #5		

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	S30-T24N-R8W				
Site Position:		Northing:	1,925,374.46 ft	Latitude:	36.291360
From:	Lat/Long	Easting:	2,753,363.39 ft	Longitude:	-107.730630
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	0.06 °

Well	Escrito D30-2408 01H					
Well Position	+N/-S	0.0 ft	Northing:	1,925,374.46 ft	Latitude:	36.291360
	+E/-W	0.0 ft	Easting:	2,753,363.39 ft	Longitude:	-107.730630
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	6,849.0 ft

Wellbore	HZ				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	3/12/2013	9.61	63.04	50,306

Design	Plan #5				
Audit Notes:					
Version:	Phase:	PLAN	Tie On Depth:	0.0	
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.0	0.0	0.0	134.99	

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	
4,871.0	0.00	0.00	4,871.0	0.0	0.0	0.00	0.00	0.00	0.00	
4,978.9	10.79	116.61	4,978.2	-4.5	9.1	10.00	10.00	0.00	116.61	
5,783.2	90.60	134.99	5,448.9	-387.5	432.6	9.99	9.92	2.29	18.65	
11,135.6	90.60	134.99	5,392.9	-4,171.4	4,217.7	0.00	0.00	0.00	0.00	Escrito D30-2408 01H

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Escrito D30-2408 01H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	13' KB @ 6862.0ft (Original Well Elev)
Project:	San Juan County, NM	MD Reference:	13' KB @ 6862.0ft (Original Well Elev)
Site:	S30-T24N-R8W	North Reference:	True
Well:	Escrito D30-2408 01H	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #5		

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	
983.0	0.00	0.00	983.0	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	
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	
1,206.0	0.00	0.00	1,206.0	0.0	0.0	0.0	0.00	0.00	Kirtland Shale
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	
1,464.0	0.00	0.00	1,464.0	0.0	0.0	0.0	0.00	0.00	Fruitland Coal
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	
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	
1,744.0	0.00	0.00	1,744.0	0.0	0.0	0.0	0.00	0.00	Pictured Cliffs Ss.
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	
1,860.0	0.00	0.00	1,860.0	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	
2,500.0	0.00	0.00	2,500.0	0.0	0.0	0.0	0.00	0.00	
2,572.0	0.00	0.00	2,572.0	0.0	0.0	0.0	0.00	0.00	Cliffhouse Ss.
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	
3,248.0	0.00	0.00	3,248.0	0.0	0.0	0.0	0.00	0.00	Menefee Fr.
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	
4,144.0	0.00	0.00	4,144.0	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	
4,300.0	0.00	0.00	4,300.0	0.0	0.0	0.0	0.00	0.00	

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Escrito D30-2408 01H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	13' KB @ 6862.0ft (Original Well Elev)
Project:	San Juan County, NM	MD Reference:	13' KB @ 6862.0ft (Original Well Elev)
Site:	S30-T24N-R8W	North Reference:	True
Well:	Escrito D30-2408 01H	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #5		

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
4,355.0	0.00	0.00	4,355.0	0.0	0.0	0.0	0.00	0.00	Mancos Shale
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	
4,800.0	0.00	0.00	4,800.0	0.0	0.0	0.0	0.00	0.00	KOP @ 4871' MD
4,871.0	0.00	0.00	4,871.0	0.0	0.0	0.0	0.00	0.00	
4,899.0	2.80	116.61	4,899.0	-0.3	0.6	0.7	10.00	10.00	Mancos Silt
4,900.0	2.90	116.61	4,900.0	-0.3	0.7	0.7	10.00	10.00	Start 10° Build/Turn
4,978.9	10.79	116.61	4,978.2	-4.5	9.1	9.6	10.00	10.00	
5,000.0	12.80	119.65	4,998.9	-6.6	12.9	13.7	9.99	9.55	
5,100.0	22.58	126.66	5,094.1	-23.6	38.0	43.5	9.99	9.78	
5,157.5	28.27	128.55	5,146.0	-38.7	57.5	68.0	9.99	9.89	
5,200.0	32.49	129.55	5,182.6	-52.2	74.2	89.4	9.99	9.92	Gallup Fn.
5,300.0	42.43	131.19	5,261.9	-91.6	120.4	149.9	9.99	9.94	
5,400.0	52.39	132.31	5,329.5	-140.6	175.2	223.3	9.99	9.96	
5,500.0	62.36	133.15	5,383.4	-197.7	236.9	307.4	9.99	9.97	
5,596.7	72.00	133.84	5,420.8	-259.0	301.5	396.4	9.99	9.97	
5,600.0	72.33	133.86	5,421.8	-261.2	303.8	399.5	9.99	9.97	Landing Pt @ 5783.2' MD
5,700.0	82.30	134.49	5,443.8	-329.1	373.7	496.9	9.99	9.97	
5,783.2	90.60	134.99	5,448.9	-387.5	432.6	579.9	9.99	9.97	
5,800.0	90.60	134.99	5,448.8	-399.4	444.5	596.7	0.00	0.00	
5,900.0	90.60	134.99	5,447.7	-470.1	515.2	696.7	0.00	0.00	
6,000.0	90.60	134.99	5,446.7	-540.8	585.9	796.7	0.00	0.00	
6,100.0	90.60	134.99	5,445.6	-611.5	656.6	896.7	0.00	0.00	
6,200.0	90.60	134.99	5,444.6	-682.2	727.3	996.7	0.00	0.00	
6,300.0	90.60	134.99	5,443.5	-752.9	798.1	1,096.7	0.00	0.00	
6,400.0	90.60	134.99	5,442.5	-823.6	868.8	1,196.7	0.00	0.00	
6,500.0	90.60	134.99	5,441.4	-894.2	939.5	1,296.7	0.00	0.00	
6,600.0	90.60	134.99	5,440.4	-964.9	1,010.2	1,396.6	0.00	0.00	
6,700.0	90.60	134.99	5,439.3	-1,035.6	1,080.9	1,496.6	0.00	0.00	
6,800.0	90.60	134.99	5,438.3	-1,106.3	1,151.6	1,596.6	0.00	0.00	
6,900.0	90.60	134.99	5,437.2	-1,177.0	1,222.4	1,696.6	0.00	0.00	
7,000.0	90.60	134.99	5,436.2	-1,247.7	1,293.1	1,796.6	0.00	0.00	
7,100.0	90.60	134.99	5,435.1	-1,318.4	1,363.8	1,896.6	0.00	0.00	
7,200.0	90.60	134.99	5,434.1	-1,389.1	1,434.5	1,996.6	0.00	0.00	
7,300.0	90.60	134.99	5,433.0	-1,459.8	1,505.2	2,096.6	0.00	0.00	
7,400.0	90.60	134.99	5,432.0	-1,530.5	1,576.0	2,196.6	0.00	0.00	
7,500.0	90.60	134.99	5,431.0	-1,601.2	1,646.7	2,296.6	0.00	0.00	
7,600.0	90.60	134.99	5,429.9	-1,671.9	1,717.4	2,396.6	0.00	0.00	
7,700.0	90.60	134.99	5,428.9	-1,742.6	1,788.1	2,496.6	0.00	0.00	
7,800.0	90.60	134.99	5,427.8	-1,813.3	1,858.8	2,596.6	0.00	0.00	
7,900.0	90.60	134.99	5,426.8	-1,884.0	1,929.5	2,696.6	0.00	0.00	
8,000.0	90.60	134.99	5,425.7	-1,954.7	2,000.3	2,796.6	0.00	0.00	
8,100.0	90.60	134.99	5,424.7	-2,025.4	2,071.0	2,896.6	0.00	0.00	
8,200.0	90.60	134.99	5,423.6	-2,096.1	2,141.7	2,996.6	0.00	0.00	
8,300.0	90.60	134.99	5,422.6	-2,166.8	2,212.4	3,096.6	0.00	0.00	
8,400.0	90.60	134.99	5,421.5	-2,237.5	2,283.1	3,196.5	0.00	0.00	
8,500.0	90.60	134.99	5,420.5	-2,308.2	2,353.9	3,296.5	0.00	0.00	
8,600.0	90.60	134.99	5,419.4	-2,378.9	2,424.6	3,396.5	0.00	0.00	
8,700.0	90.60	134.99	5,418.4	-2,449.5	2,495.3	3,496.5	0.00	0.00	
8,800.0	90.60	134.99	5,417.3	-2,520.2	2,566.0	3,596.5	0.00	0.00	

Cathedral Energy Services

Planning Report

Database: USA EDM 5000 Multi Users DB
Company: EnCana Oil & Gas (USA) Inc
Project: San Juan County, NM
Site: S30-T24N-R8W
Well: Escrito D30-2408 01H
Wellbore: HZ
Design: Plan #5

Local Co-ordinate Reference:
TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:

Well Escrito D30-2408 01H
13' KB @ 6862.0ft (Original Well Elev)
13' KB @ 6862.0ft (Original Well Elev)
True
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
8,900.0	90.60	134.99	5,416.3	-2,590.9	2,636.7	3,696.5	0.00	0.00	
9,000.0	90.60	134.99	5,415.2	-2,661.6	2,707.4	3,796.5	0.00	0.00	
9,100.0	90.60	134.99	5,414.2	-2,732.3	2,778.2	3,896.5	0.00	0.00	
9,200.0	90.60	134.99	5,413.1	-2,803.0	2,848.9	3,996.5	0.00	0.00	
9,300.0	90.60	134.99	5,412.1	-2,873.7	2,919.6	4,096.5	0.00	0.00	
9,400.0	90.60	134.99	5,411.1	-2,944.4	2,990.3	4,196.5	0.00	0.00	
9,500.0	90.60	134.99	5,410.0	-3,015.1	3,061.0	4,296.5	0.00	0.00	
9,600.0	90.60	134.99	5,409.0	-3,085.8	3,131.8	4,396.5	0.00	0.00	
9,700.0	90.60	134.99	5,407.9	-3,156.5	3,202.5	4,496.5	0.00	0.00	
9,800.0	90.60	134.99	5,406.9	-3,227.2	3,273.2	4,596.5	0.00	0.00	
9,900.0	90.60	134.99	5,405.8	-3,297.9	3,343.9	4,696.5	0.00	0.00	
10,000.0	90.60	134.99	5,404.8	-3,368.6	3,414.6	4,796.5	0.00	0.00	
10,100.0	90.60	134.99	5,403.7	-3,439.3	3,485.3	4,896.5	0.00	0.00	
10,200.0	90.60	134.99	5,402.7	-3,510.0	3,556.1	4,996.5	0.00	0.00	
10,300.0	90.60	134.99	5,401.6	-3,580.7	3,626.8	5,096.4	0.00	0.00	
10,400.0	90.60	134.99	5,400.6	-3,651.4	3,697.5	5,196.4	0.00	0.00	
10,500.0	90.60	134.99	5,399.5	-3,722.1	3,768.2	5,296.4	0.00	0.00	
10,600.0	90.60	134.99	5,398.5	-3,792.8	3,838.9	5,396.4	0.00	0.00	
10,700.0	90.60	134.99	5,397.4	-3,863.5	3,909.7	5,496.4	0.00	0.00	
10,800.0	90.60	134.99	5,396.4	-3,934.2	3,980.4	5,596.4	0.00	0.00	
10,900.0	90.60	134.99	5,395.3	-4,004.8	4,051.1	5,696.4	0.00	0.00	
11,000.0	90.60	134.99	5,394.3	-4,075.5	4,121.8	5,796.4	0.00	0.00	
11,100.0	90.60	134.99	5,393.3	-4,146.2	4,192.5	5,896.4	0.00	0.00	
11,135.6	90.60	134.99	5,392.9	-4,171.4	4,217.7	5,932.0	0.00	0.00	PBHL @ 11135.6' MD

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 D30-2408 01H B	0.00	0.07	5,392.9	-4,171.4	4,217.7	1,921,207.51	2,757,585.54	36.279900	-107.716320
- plan hits target center									
- Point									
Escrito D30-2408 01H P	0.00	0.06	5,451.5	-214.8	259.3	1,925,159.96	2,753,622.95	36.290770	-107.729750
- plan misses target center by 50.0ft at 5552.3ft MD (5405.5 TVD, -230.2 N, 271.4 E)									
- Point									

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)
500.0	500.0	9 5/8"	9.625	12.250
5,596.7	5,420.8	7"	7.000	7.500

Cathedral Energy Services

Planning Report

Database: USA EDM 5000 Multi Users DB
Company: EnCana Oil & Gas (USA) Inc
Project: San Juan County, NM
Site: S30-T24N-R8W
Well: Escrito D30-2408 01H
Wellbore: HZ
Design: Plan #5

Local Co-ordinate Reference: Well Escrito D30-2408 01H
TVD Reference: 13' KB @ 6862.0ft (Original Well Elev)
MD Reference: 13' KB @ 6862.0ft (Original Well Elev)
North Reference: True
Survey Calculation Method: Minimum Curvature

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
983.0	983.0	Ojo Alamo Ss.			
1,206.0	1,206.0	Kirtland Shale			
1,464.0	1,464.0	Fruitland Coal			
1,744.0	1,744.0	Pictured Cliffs Ss.			
1,860.0	1,860.0	Lewis Shale			
2,572.0	2,572.0	Cliffhouse Ss.			
3,248.0	3,248.0	Menefee Fn.			
4,144.0	4,144.0	Point Lookout Ss.			
4,355.0	4,355.0	Mancos Shale			
4,899.0	4,899.0	Mancos Silt			
5,157.5	5,146.0	Gallup Fn.			

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
4,871.0	4,871.0	0.0	0.0	KOP @ 4871' MD
4,978.9	4,978.2	-4.5	9.1	Start 10° Build/Turn
5,783.2	5,448.9	-387.5	432.6	Landing Pt @ 5783.2' MD
11,135.6	5,392.9	-4,171.4	4,217.7	PBHL @ 11135.6' MD

WELLHEAD BLOWOUT CONTROL SYSTEM



Well name and number:

Escrito D30-2408 01H

