

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: 3/31/14

Well information;

Operator Encana, Well Name and Number Escrito D32-24081H

API# 30-045-35519, Section 31, Township 24 NS, 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
- ☐ 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

Chah Leru
NMOCD Approved by Signature

4-3-2014
Date AV

RECEIVED

Form 3160-3
(August 2007)

FEB 26 2014

FORM APPROVED
OMB No. 1004-0137
Expires July 31, 2010UNITED STATES Farmington Field Office
DEPARTMENT OF THE INTERIOR Bureau of Land Management
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of work: ☒ DRILL ☐ REENTER		5. Lease Serial No. NMNM 118133
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) 720-876-3533	8. Lease Name and Well No. Escrito D32-2408 01H
4. Location of Well (Report location clearly and in accordance with any State requirements.) At surface D 1306' FNL and 280' FWL Section 32, T24N, R8W At proposed prod. zone D 400' FNL and 330' FWL Section 31, T24N, R8W		9. API Well No. 30-045-35519
14. Distance in miles and direction from nearest town or post office* +/- 36.9 miles southeast of the intersection of US Hwy 550 & US Hwy 64 in Bloomfield, NM		10. Field and Pool, or Exploratory 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 Section 31, T24N, R8W	16. No. of acres in lease NMNM 118133 - 1240.0 1664.80	17. Spacing Unit dedicated to this well 640 acres - All of Section 31, T24N, R8W 643.00
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. Escrito D32-2408 02H is +/- 30' south of wellhead	19. Proposed Depth 5,429' TVD/10,971' MD	20. BLM/BIA Bond No. on file COB-000235 RECD MAR 31 '14 OIL CONS. DIV.
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 6,945' GL, 6,961' KB	22. Approximate date work will start* 07/24/2014	23. Estimated duration 25 days DIST. 3

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 Katie Wegner	Name (Printed/Typed) Katie Wegner	Date 2/25/14
Title Regulatory Analyst		
Approved by (Signature) Troy Salyers	Name (Printed/Typed) Troy Salyers	Date 3/27/2014
Title Petroleum Engineer (Acting 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 the jurisdiction of the United States.

(Continued on page 2)

BLM'S APPROVAL OR REJECTION OF THIS ACTION DOES NOT RELIEVE THE LESSEE AND OPERATOR FROM OBTAINING ANY OTHER AUTHORIZATION REQUIRED FOR OPERATIONS ON FEDERAL AND INDIAN LANDS

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

NMOCDA

DISTRICT I
1625 N. French Dr., Hobbs, N.M. 88240
Phone: (575) 393-6161 Fax: (575) 393-0720

DISTRICT II
611 S. First St., Artesia, N.M. 88210
Phone: (575) 748-1283 Fax: (575) 748-9780

DISTRICT III
1000 Rio Bravo Rd., Aztec, N.M. 87410
Phone: (505) 334-6175 Fax: (505) 334-6170

DISTRICT IV
1820 S. St. Francis Dr., Santa Fe, NM 87506
Phone: (505) 475-3460 Fax: (505) 475-3468

State of New Mexico
Energy, Minerals & Natural Resources Department

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Form C-102
Revised August 1, 2011

Submit one copy to appropriate
FEB 26 2014 District Office

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87506

Farmington Field Office
Bureau of Land Management
AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

*API Number 30-045-35519	*Pool Code 97232	*Pool Name BASIN MANCOS GAS
*Property Code	*Property Name ESCRITO D32-2408	*Well Number 01H
*GRID No. 282327	*Operator Name ENCANA OIL & GAS (USA) INC.	*Elevation 6944.9'

10 Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	WEST/West line	County
D	32	24N	8W		1306'	NORTH	280'	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	WEST/West line	County
D	31	24N	8W	1	400'	NORTH	330'	WEST	SAN JUAN

*Dedicated Acres 643 640.00 ACRES ALL OF SEC. 31	*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

16

BOTTOM HOLE
LAT. 36.276973° N (NAD83)
LONG. 107.730968° W (NAD83)
LAT. 36.276961° N (NAD27)
LONG. 107.730355° W (NAD27)

ENTRY POINT
LAT. 36.276995° N (NAD83)
LONG. 107.715228° W (NAD83)
LAT. 36.276983° N (NAD27)
LONG. 107.714616° W (NAD27)

WELL FLAG
LAT. 36.274508° N (NAD83)
LONG. 107.713178° W (NAD83)
LAT. 36.274496° N (NAD27)
LONG. 107.712566° W (NAD27)

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 undivided 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.

Katie Wegner 2/10/14
Signature Date

Katie Wegner

Printed Name

Katie.Wegner@encana.com

E-mail Address

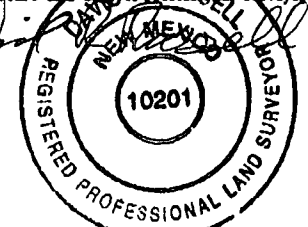
SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

JULY 31, 2013

Date of Survey

Signature and Seal of Professional Surveyor

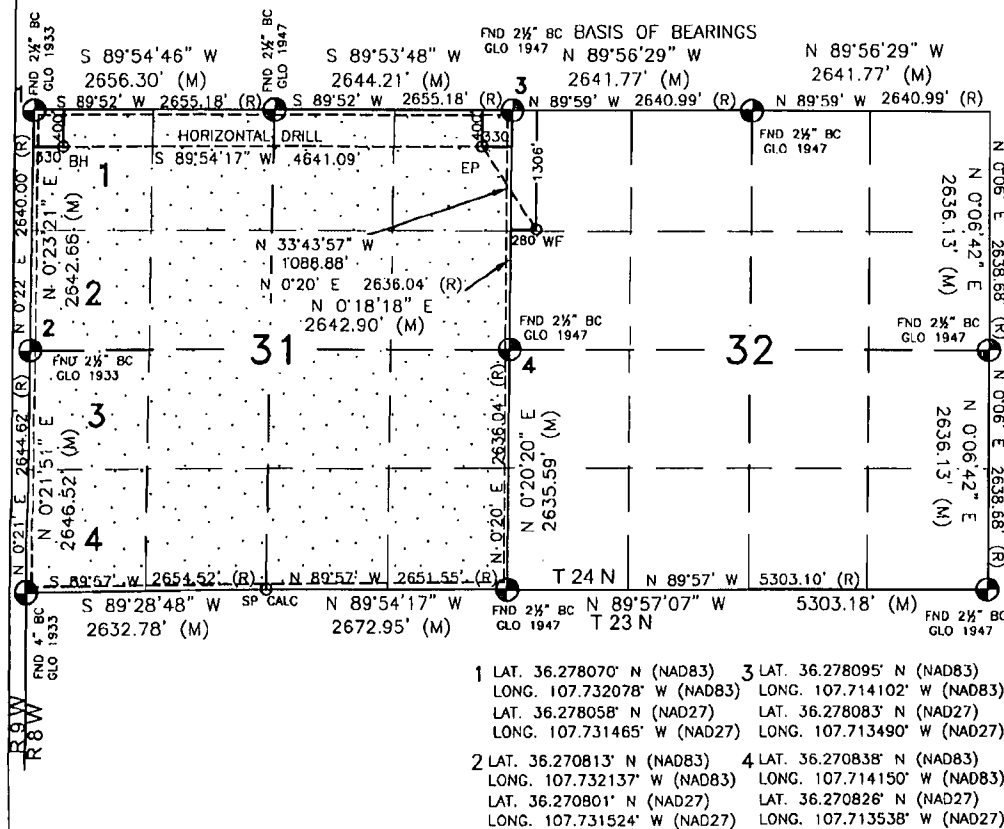


DAVID RUSSELL

Certificate Number

10201

SHEET A



ENCANA OIL & GAS (USA) INC.

ESCRITO D32-2408 #0111

1306' FNL & 280' FWL

LOCATED IN THE NW/4 NW/4 OF SECTION 32,

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

SAN JUAN COUNTY, NEW MEXICO

DIRECTIONS

- 1) FROM THE INTERSECTION OF HWY 64 & HWY 550 IN BLOOMFIELD, GO SOUTH ON HWY 550, 35.0 MILES TO M.P. 116.6 (ISR 459).
- 2) TURN LEFT ONTO ISR 459 AND GO 0.7 MILES TO "Y" INTERSECTION.
- 3) TURN RIGHT AND GO 1.2 MILES WHERE ACCESS IS STAKED ON LEFT SIDE OF ROAD.

WELL FLAG LOCATED AT LAT. 36.274508° N, LONG. 107.713178° W (NAD 83).

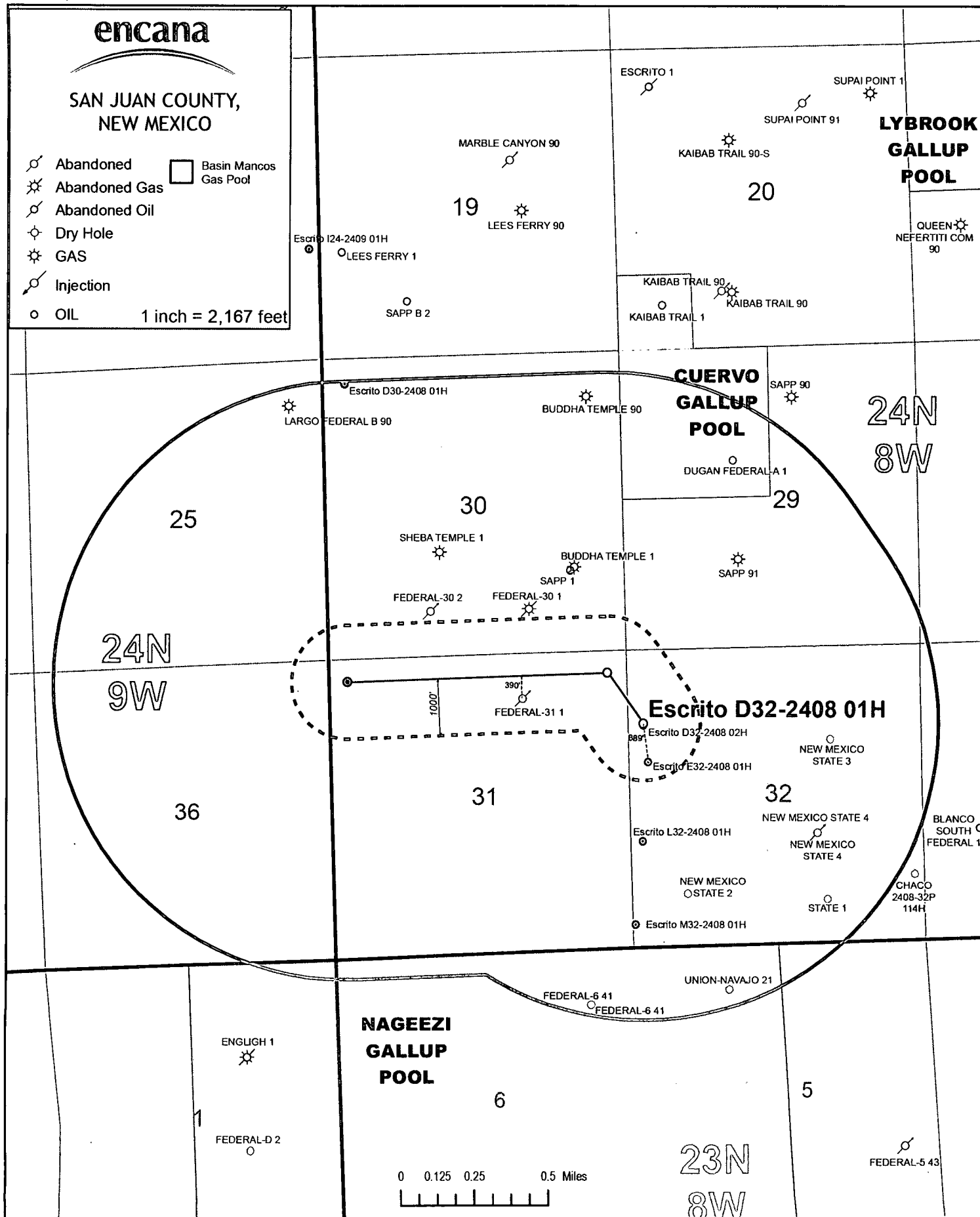


encana

SAN JUAN COUNTY,
NEW MEXICO

- ⊗ Abandoned
 - ⊗ Abandoned Gas
 - ⊗ Abandoned Oil
 - ⊗ Dry Hole
 - ⊗ GAS
 - ⊗ Injection
 - OIL
- 1 inch = 2,167 feet

Basin Mancos
Gas Pool



Escrito D32-2408 01H

SHL: NWNW 32 24N 8W

1306 FNL 280 FWL

BHL: NWNW 31 24N 8W

400 FNL 330 FWL

Lease Number: NMNM 118133

San Juan County, New Mexico

Encana Oil & Gas (USA) Inc. Drilling Plan

1. ESTIMATED TOPS OF GEOLOGICAL MARKERS (TVD)

The estimated tops of important geologic markers are as follows:

Formation	Depth (TVD) units = feet
Ojo Alamo Ss.	1,013
Kirtland Shale	1,257
Fruitland Coal	1,470
Pictured Cliffs Ss.	1,750
Lewis Shale	1,903
Cliffhouse Ss.	2,569
Menefee Fn.	3,275
Point Lookout Ss.	4,141
Mancos Shale	4,336
Mancos Silt	4,903
Gallup Fn.	5,163

The referenced surface elevation is 6945', KB 6961'

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

Substance	Formation	Depth (TVD) units = feet
Water/Gas	Fruitland Coal	1,470
Oil/Gas	Pictured Cliffs Ss.	1,750
Oil/Gas	Cliffhouse Ss.	2,569
Gas	Menefee Fn.	3,275
Oil/Gas	Point Lookout Ss.	4,141
Oil/Gas	Mancos Shale	4,336
Oil/Gas	Mancos Silt	4,903
Oil/Gas	Gallup Fn.	5,163

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.

Escrito D32-2408 01H

SHL: NWNW 32 24N 8W
1306 FNL 280 FWL

BHL: NWNW 31 24N 8W
400 FNL 330 FWL

Lease Number: NMNM 118133

San Juan County, New Mexico

- g) BOP controls must be installed prior to drilling the surface casing plug and will remain in use until the well is completed or abandoned.
- h) BOP testing procedures and testing frequency will conform to Onshore Order No. 2.
- i) BOP remote controls shall be located on the rig floor at a location readily accessible to the driller. Master controls shall be on the ground at the accumulator and shall have the capability to function all preventers.
- j) The kill line shall be 2-inch minimum and contain two kill line valves, one of which shall be a check valve.
- k) The choke line shall be a 2-inch minimum and contain two choke line valves (2-inch minimum).
- l) The choke and manifold shall contain two adjustable chokes.
- m) Hand wheels shall be installed on all ram preventers.
- n) Safety valves and wrenches (with subs for drill string connections) shall be available on the rig floor at all
- o) Inside BOP or float sub shall also be available on the rig floor at all times.

Proposed BOP and choke manifold arrangements are attached.

4. CASING & CEMENTING PROGRAM

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

- a) The proposed casing design is as follows:

Casing	Depth (MD)	Hole Size	Csg Size	Weight	Grade
Conductor	0'-60'	30"	20"	94#	H40, STC New
Surface	0'-500'	12 1/4"	9 5/8"	36#	J55, STC New
Intermediate	0'-6237'	8 3/4"	7"	26#	J55, LTC New
Production Liner	6037'-10971'	6 1/8"	4 1/2"	11.6#	B80*, LTC New

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

*B80 pipe specifications are attached

Casing design is subject to revision based on geologic conditions encountered

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.

Escrito D32-2408 01H

SHL: NWNW 32 24N 8W

1306 FNL 280 FWL

BHL: NWNW 31 24N 8W

400 FNL 330 FWL

Lease Number: NMNM 118133

San Juan County, New Mexico

b) The proposed cementing program is as follows

Casing	Depth (MD)	Cement Volume (sacks)	Cement Type & Yield	Designed TOC	Centralizers
Conductor	0'-60'	100 sks	Type I Neat 16 ppg	Surface	None
Surface	0'-500'	201 sks	Type III Cement + 1% CaCl + 0.25lb/sk Cello Flake + 0.2% FL, 16ppg, 1.38cuf/sk	Surface	1 per joint on bottom 3 joints
Intermediate	0'-6237'	30% open hole excess Stage 1 Lead: 307 sks Stage 1 Tail: 321 sks Stage 2 Lead: 184 sks	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 every 3 joints through water bearing zones
Production Liner	6037'-10971'	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 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 4748'. Directional plans are attached.

Description	Proposed Depth (TVD/MD)	Formation
Horizontal Lateral TD	5429'/10971'	Gallup

6. DRILLING FLUIDS PROGRAM

a) Surface through Intermediate Casing Point:

Hole Size (in)	Depth (TVD/MD)	Mud Type	Density (ppg)	Viscosity (sec/qt)	Fluid Loss (cc)
30"	0-60'/60'	Fresh Water	8.3-9.2	38-100	4-28
12 1/4"	0'-500'/500'	Fresh Water	8.4-8.6	60-70	NC
8 3/4"	500'/500'-5451'/6237'	Fresh Water LSND	9.5-8.8	40-50	8-10

Escrito D32-2408 01H

SHL: NWNW 32 24N 8W

1306 FNL 280 FWL

BHL: NWNW 31 24N 8W

400 FNL 330 FWL

Lease Number: NMNM 118133

San Juan County, New Mexico

b) Intermediate Casing Point to TD:

Hole Size (in)	Depth (TVD/MD)	Mud Type	Density (ppg)	Viscosity (sec/qt)	Fluid Loss (cc)
6 1/8"	5451'/6237'- 5429'/10971'	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, & LOGGING

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

Cased Hole:

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

8. ABNORMAL PRESSURES & HYDROGEN SULFIDE

The anticipated bottom hole pressure is +/- 2553 psi based on a 9.0 ppg at 5456' TVD of the horizontal lateral target. No abnormal pressure or temperatures are anticipated.

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

9. ANTICIPATED START DATE AND DURATION OF OPERATIONS

Drilling is estimated to commence on July 24, 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 20 days.

LOC: Sec 31 - T24N - R08W County: San Juan WELL: Escrito D32-2408 01H			Encana Natural Gas WELL SUMMARY			ENG: S Kuykendall RIG: TBD GLE: 6893 RKBE: 6709			2/6/14
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 16.0ppg cmt	Fresh wtr 8.3-9.2	
Multi-Well pad take survey every stand and run anti-collision report prior to spud	None	Nacimiento 9 5/8" Csg	0 500	500.00		12 1/4	9 5/8" 36ppf J55 STC TOC Surface - 201 sks of Type III Cement	Fresh wtr 8.4-8.6	Vertical <1°
Survey Every 60'-120', updating anticollision report after surveys. Stop operations and contact drilling engineer if separation factor approaches 1.5	No OH logs	Ojo Alamo Ss. Kirtland Shale Fruitland Coal Pictured Cliffs Ss. Lewis Shale Cliffhouse Ss. Menefee Fn. Point Lookout Ss. Mancos Shale	1,029 1,273 1,486 1,766 1,919 2,585 3,291 4,157 4,352		Stage tool @ -1,950'	8 3/4	7" 26ppf J55 LTC TOC @ surface 30% OH excess: 628 sksTotal. Stage 1 Lead: 307 sks Premium Lite FM + 3% CaCl2 + 0.25/sk Cello Flake + 5#/sk LCM-1 + 8% Bentonite + 0.4% FL-52A + 0.4% Sodium Metasilicate. Mixed at 12.1 ppg. Yield 2.13 cuft/sk. Stage 1 Tail: 321 sks Type III Cement + 1% CaCl2 + 0.25#/sk Cello Flake + 0.2% FL-52A. Mixed at 14.6 ppg. Yield 1.38 cuft/sk. Stage 2: 168 sks Premium Lite FM + 3% CaCl2 + 0.25/sk Cello Flake + 5#/sk LCM-1 + 8% Bentonite + 0.4% FL-52A + 0.4% Sodium Metasilicate. Mixed at 12.1 ppg. Yield 2.13 cuft/sk.	Fresh Wtr 8.5-8.8	Vertical <1° Build Rate
Surveys every 30' through the curve	Mud logger onsite	KOP Mancos Silt Gallup Fn. 7" Csg	4,748 4,919 5,179 5,451	4,748.0 10,971.4		6 1/8	200' overlap at liner top 5,094' Drilled Lat. 4,634' Completable	Horizontal Inclination Horizontal TVD 8.6-9.0 OBM	Horz Inc/TVD 90.3/5455.9 TD = 10,971.4 MD
Surveys every stand to TD unless directed otherwise by Geologist	No OH Logs	Horizontal Target TD Base Gallup	5,456 5,429 5,504				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	
MWD Gamma Directional									

NOTES:



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

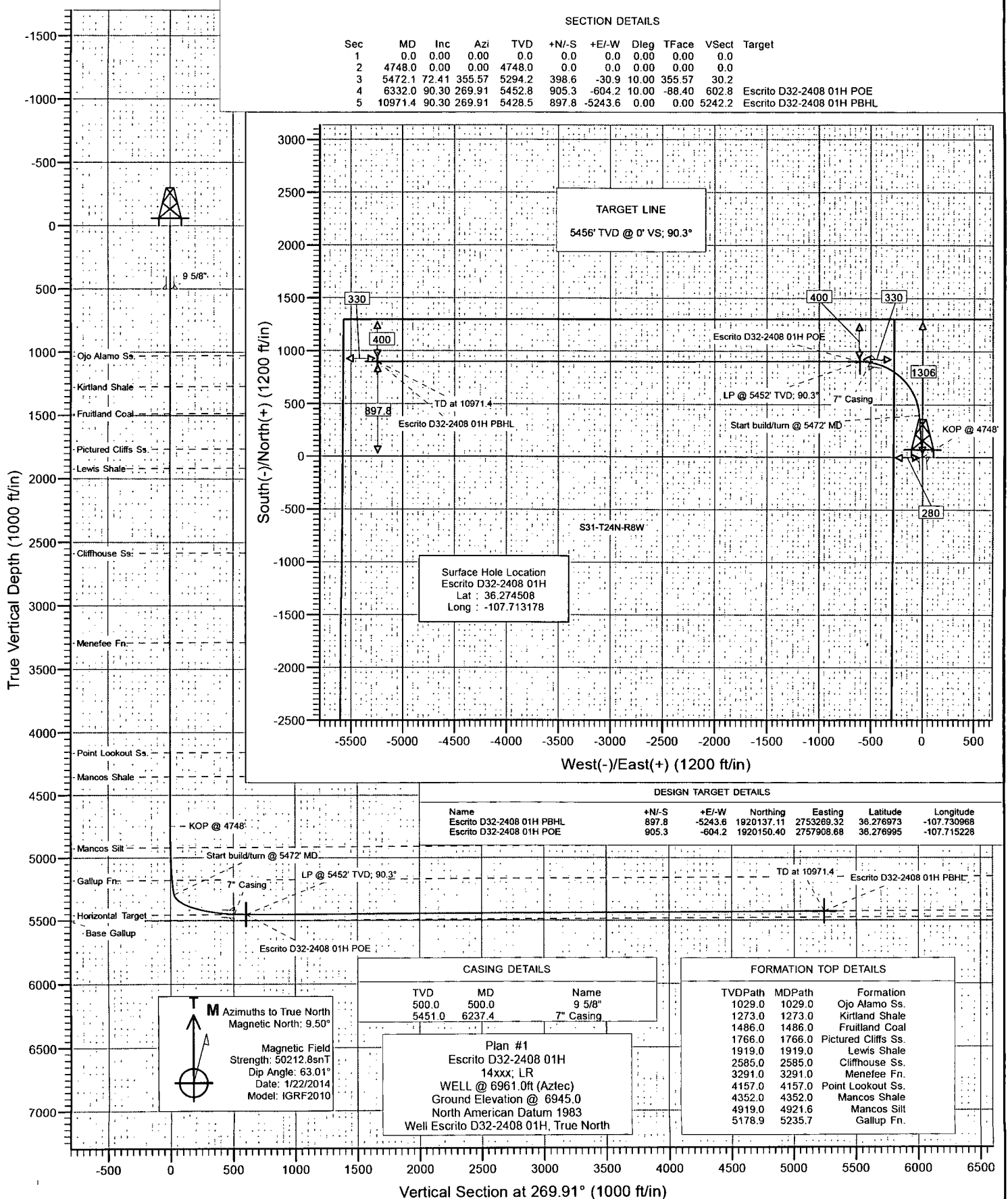
Drilling Mud Weight (ppg)	_____	9.625
Tension Safety Factor	_____	1.80
Maximum Tension Length (ft)	_____	9,630
Internal Yield Safety Factor	_____	1.10
Maximum Depth for Internal Yield (ft)	_____	14,150
Collapse Safety Factor	_____	1.125
Maximum Collapse Depth (ft)	_____	11,290

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: S32-T24N-R8W (Escrito)
Well: Escrito D32-2408 01H
Wellbore: Hz
Design: Plan #1



Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Escrito D32-2408 01H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	WELL @ 6961.0ft (Aztec)
Project:	San Juan County, NM	MD Reference:	WELL @ 6961.0ft (Aztec)
Site:	S32-T24N-R8W (Escrito)	North Reference:	True
Well:	Escrito D32-2408 01H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Hz		
Design:	Plan #1		

Project	San Juan County, NM		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Western Zone		

Site	S32-T24N-R8W (Escrito)			
Site Position:		Northing:	1,917,175.15 ft	Latitude: 36.268820
From:	Lat/Long	Easting:	2,758,448.22 ft	Longitude: -107.713410
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence: 0.07 °

Well	Escrito D32-2408 01H			
Well Position	+N/-S	0.0 ft	Northing:	1,919,245.81 ft
	+E/-W	0.0 ft	Easting:	2,758,514.04 ft
Position Uncertainty	0.0 ft	Wellhead Elevation:	ft	Ground Level: 6,945.0 ft

Wellbore	Hz				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	1/22/2014	9.50	63.01	50,213

Design	Plan #1			
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	269.91

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	
4,748.0	0.00	0.00	4,748.0	0.0	0.0	0.00	0.00	0.00	0.00	
5,472.1	72.41	355.57	5,294.2	398.6	-30.9	10.00	10.00	0.00	355.57	
6,332.0	90.30	269.91	5,452.8	905.3	-604.2	10.00	2.08	-9.96	-88.40	Escrito D32-2408 01H
10,971.4	90.30	269.91	5,428.5	897.8	-5,243.6	0.00	0.00	0.00	0.00	Escrito D32-2408 01H

Cathedral Energy Services

Planning Report

Database: USA EDM 5000 Multi Users DB
 Company: EnCana Oil & Gas (USA) Inc
 Project: San Juan County, NM
 Site: S32-T24N-R8W (Escrito)
 Well: Escrito D32-2408 01H
 Wellbore: Hz
 Design: Plan #1

Local Co-ordinate Reference: Well Escrito D32-2408 01H
 TVD Reference: WELL @ 6961.0ft (Aztec)
 MD Reference: WELL @ 6961.0ft (Aztec)
 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	
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	
1,029.0	0.00	0.00	1,029.0	0.0	0.0	0.0	0.00	0.00	Ojo Alamo Ss.
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	
1,273.0	0.00	0.00	1,273.0	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	
1,486.0	0.00	0.00	1,486.0	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	
1,766.0	0.00	0.00	1,766.0	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	
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	
1,919.0	0.00	0.00	1,919.0	0.0	0.0	0.0	0.00	0.00	Lewis.Shale
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	
2,585.0	0.00	0.00	2,585.0	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	
3,291.0	0.00	0.00	3,291.0	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	
4,157.0	0.00	0.00	4,157.0	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 D32-2408 01H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	WELL @ 6961.0ft (Aztec)
Project:	San Juan County, NM	MD Reference:	WELL @ 6961.0ft (Aztec)
Site:	S32-T24N-R8W (Escrito)	North Reference:	True
Well:	Escrito D32-2408 01H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Hz		
Design:	Plan #1		

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
4,352.0	0.00	0.00	4,352.0	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	
4,748.0	0.00	0.00	4,748.0	0.0	0.0	0.0	0.00	0.00	KOP @ 4748'
4,800.0	5.20	355.57	4,799.9	2.4	-0.2	0.2	10.00	10.00	
4,900.0	15.20	355.57	4,898.2	20.0	-1.5	1.5	10.00	10.00	
4,921.6	17.36	355.57	4,919.0	26.0	-2.0	2.0	10.00	10.00	Mancos Silt
5,000.0	25.20	355.57	4,992.0	54.4	-4.2	4.1	10.00	10.00	
5,100.0	35.20	355.57	5,078.3	104.4	-8.1	7.9	10.00	10.00	
5,200.0	45.20	355.57	5,154.6	168.7	-13.1	12.8	10.00	10.00	
5,235.7	48.77	355.57	5,178.9	194.7	-15.1	14.8	10.00	10.00	Gallup Fn.
5,300.0	55.20	355.57	5,218.5	245.2	-19.0	18.6	10.00	10.00	
5,400.0	65.20	355.57	5,268.1	331.6	-25.7	25.1	10.00	10.00	
5,472.1	72.41	355.57	5,294.2	398.6	-30.9	30.2	10.00	10.00	Start build/turn @ 5472' MD
5,500.0	72.51	352.65	5,302.6	425.1	-33.6	32.9	10.00	0.36	
5,600.0	73.21	342.21	5,332.2	518.2	-54.4	53.5	10.00	0.70	
5,700.0	74.43	331.88	5,360.1	606.5	-91.8	90.8	10.00	1.22	
5,800.0	76.13	321.70	5,385.6	687.2	-144.7	143.6	10.00	1.70	
5,900.0	78.24	311.67	5,407.8	758.0	-211.5	210.3	10.00	2.11	
6,000.0	80.69	301.82	5,426.1	816.8	-290.2	288.9	10.00	2.45	
6,100.0	83.42	292.10	5,440.0	861.6	-378.4	377.0	10.00	2.72	
6,200.0	86.32	282.50	5,448.9	891.1	-473.4	472.0	10.00	2.91	
6,237.4	87.44	278.92	5,451.0	898.1	-510.0	508.6	10.00	2.99	7" Casing
6,300.0	89.33	272.96	5,452.7	904.5	-572.3	570.8	10.00	3.02	
6,332.0	90.30	269.91	5,452.8	905.3	-604.2	602.8	10.00	3.03	LP @ 5452' TVD; 90.3° - Escrito D32-2408 01H
6,400.0	90.30	269.91	5,452.5	905.2	-672.2	670.8	0.00	0.00	
6,500.0	90.30	269.91	5,452.0	905.1	-772.2	770.8	0.00	0.00	
6,600.0	90.30	269.91	5,451.4	904.9	-872.2	870.8	0.00	0.00	
6,700.0	90.30	269.91	5,450.9	904.7	-972.2	970.8	0.00	0.00	
6,800.0	90.30	269.91	5,450.4	904.6	-1,072.2	1,070.8	0.00	0.00	
6,900.0	90.30	269.91	5,449.9	904.4	-1,172.2	1,170.8	0.00	0.00	
7,000.0	90.30	269.91	5,449.3	904.3	-1,272.2	1,270.8	0.00	0.00	
7,100.0	90.30	269.91	5,448.8	904.1	-1,372.2	1,370.8	0.00	0.00	
7,200.0	90.30	269.91	5,448.3	903.9	-1,472.2	1,470.8	0.00	0.00	
7,300.0	90.30	269.91	5,447.8	903.8	-1,572.2	1,570.8	0.00	0.00	
7,400.0	90.30	269.91	5,447.2	903.6	-1,672.2	1,670.8	0.00	0.00	
7,500.0	90.30	269.91	5,446.7	903.4	-1,772.2	1,770.8	0.00	0.00	
7,600.0	90.30	269.91	5,446.2	903.3	-1,872.2	1,870.8	0.00	0.00	
7,700.0	90.30	269.91	5,445.7	903.1	-1,972.2	1,970.8	0.00	0.00	
7,800.0	90.30	269.91	5,445.2	903.0	-2,072.2	2,070.8	0.00	0.00	
7,900.0	90.30	269.91	5,444.6	902.8	-2,172.2	2,170.8	0.00	0.00	
8,000.0	90.30	269.91	5,444.1	902.6	-2,272.2	2,270.8	0.00	0.00	
8,100.0	90.30	269.91	5,443.6	902.5	-2,372.2	2,370.8	0.00	0.00	
8,200.0	90.30	269.91	5,443.1	902.3	-2,472.2	2,470.8	0.00	0.00	
8,300.0	90.30	269.91	5,442.5	902.1	-2,572.2	2,570.8	0.00	0.00	
8,400.0	90.30	269.91	5,442.0	902.0	-2,672.2	2,670.8	0.00	0.00	
8,500.0	90.30	269.91	5,441.5	901.8	-2,772.2	2,770.8	0.00	0.00	
8,600.0	90.30	269.91	5,441.0	901.7	-2,872.2	2,870.8	0.00	0.00	
8,700.0	90.30	269.91	5,440.4	901.5	-2,972.2	2,970.8	0.00	0.00	
8,800.0	90.30	269.91	5,439.9	901.3	-3,072.2	3,070.8	0.00	0.00	

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Escrito D32-2408 01H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	WELL @ 6961.0ft (Aztec)
Project:	San Juan County, NM	MD Reference:	WELL @ 6961.0ft (Aztec)
Site:	S32-T24N-R8W (Escrito)	North Reference:	True
Well:	Escrito D32-2408 01H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Hz		
Design:	Plan #1		

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	90.30	269.91	5,439.4	901.2	-3,172.2	3,170.8	0.00	0.00	
9,000.0	90.30	269.91	5,438.9	901.0	-3,272.2	3,270.8	0.00	0.00	
9,100.0	90.30	269.91	5,438.3	900.8	-3,372.2	3,370.8	0.00	0.00	
9,200.0	90.30	269.91	5,437.8	900.7	-3,472.2	3,470.8	0.00	0.00	
9,300.0	90.30	269.91	5,437.3	900.5	-3,572.2	3,570.8	0.00	0.00	
9,400.0	90.30	269.91	5,436.8	900.4	-3,672.2	3,670.8	0.00	0.00	
9,500.0	90.30	269.91	5,436.3	900.2	-3,772.2	3,770.8	0.00	0.00	
9,600.0	90.30	269.91	5,435.7	900.0	-3,872.2	3,870.8	0.00	0.00	
9,700.0	90.30	269.91	5,435.2	899.9	-3,972.2	3,970.8	0.00	0.00	
9,800.0	90.30	269.91	5,434.7	899.7	-4,072.2	4,070.8	0.00	0.00	
9,900.0	90.30	269.91	5,434.2	899.5	-4,172.2	4,170.8	0.00	0.00	
10,000.0	90.30	269.91	5,433.6	899.4	-4,272.2	4,270.8	0.00	0.00	
10,100.0	90.30	269.91	5,433.1	899.2	-4,372.2	4,370.8	0.00	0.00	
10,200.0	90.30	269.91	5,432.6	899.1	-4,472.2	4,470.8	0.00	0.00	
10,300.0	90.30	269.91	5,432.1	898.9	-4,572.2	4,570.8	0.00	0.00	
10,400.0	90.30	269.91	5,431.5	898.7	-4,672.2	4,670.8	0.00	0.00	
10,500.0	90.30	269.91	5,431.0	898.6	-4,772.2	4,770.8	0.00	0.00	
10,600.0	90.30	269.91	5,430.5	898.4	-4,872.2	4,870.8	0.00	0.00	
10,700.0	90.30	269.91	5,430.0	898.2	-4,972.2	4,970.8	0.00	0.00	
10,800.0	90.30	269.91	5,429.4	898.1	-5,072.2	5,070.8	0.00	0.00	
10,900.0	90.30	269.91	5,428.9	897.9	-5,172.2	5,170.8	0.00	0.00	
10,971.4	90.30	269.91	5,428.5	897.8	-5,243.6	5,242.2	0.00	0.00	TD at 10971.4 - Escrito D32-2408 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 D32-2408 01H P	0.00	0.00	5,452.8	905.3	-604.2	1,920,150.40	2,757,908.68	36.276995	-107.715228
- plan hits target center									
- Point									
Escrito D32-2408 01H P	0.00	0.00	5,428.5	897.8	-5,243.6	1,920,137.11	2,753,269.32	36.276973	-107.730968
- 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
6,237.4	5,451.0	7" Casing	0.000	0.000

Cathedral Energy Services

Planning Report

Database: USA EDM 5000 Multi Users DB
Company: EnCana Oil & Gas (USA) Inc
Project: San Juan County, NM
Site: S32-T24N-R8W (Escrito)
Well: Escrito D32-2408 01H
Wellbore: Hz
Design: Plan #1

Local Co-ordinate Reference: Well Escrito D32-2408 01H
TVD Reference: WELL @ 6961.0ft (Aztec)
MD Reference: WELL @ 6961.0ft (Aztec)
North Reference: True
Survey Calculation Method: Minimum Curvature

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,029.0	1,029.0	Ojo Alamo Ss.		-0.30	269.91
1,273.0	1,273.0	Kirtland Shale		-0.30	269.91
1,486.0	1,486.0	Fruitland Coal		-0.30	269.91
1,766.0	1,766.0	Pictured Cliffs Ss.		-0.30	269.91
1,919.0	1,919.0	Lewis Shale		-0.30	269.91
2,585.0	2,585.0	Cliffhouse Ss.		-0.30	269.91
3,291.0	3,291.0	Menefee Fn.		-0.30	269.91
4,157.0	4,157.0	Point Lookout Ss.		-0.30	269.91
4,352.0	4,352.0	Mancos Shale		-0.30	269.91
4,921.6	4,919.0	Mancos Silt		-0.30	269.91
5,235.7	5,179.0	Gallup Fn.		-0.30	269.91

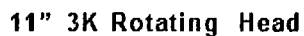
Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
4,748.0	4,748.0	0.0	0.0	KOP @ 4748'
5,472.1	5,294.2	398.6	-30.9	Start build/turn @ 5472' MD
6,332.0	5,452.8	905.3	-604.2	LP @ 5452' TVD; 90.3°
10,971.4	5,428.5	897.8	-5,243.6	TD at 10971.4

encana

Well Name and Number:

Escrito D32-2408 01H



11" 3K Annular

3K Double Ram
Top: Pipe Ram
Bottom: Blind Ram
~~3" Outlets Below Ram~~

3K Mud Cross 3" gate valves

