

RECEIVED

Form 3160-5
(June 2015)UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

MAY 11 2017

FORM APPROVED
OMB No. 1004-0137
Expires: January 31, 2018**SUNDRY NOTICES AND REPORTS ON WELLS**
*Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160-3 (APD) for such proposals.*Farmington Field Office
Bureau of Land Management

5. Lease Serial No. NMNM117567

6. If Indian, Allottee or Tribe Name

SUBMIT IN TRIPLICATE - Other instructions on page 2

1. Type of Well

☒ Oil Well ☐ Gas Well ☐ Other

2. Name of Operator LOGOS Operating, LLC

3a. Address 2010 Afton Place
Farmington, NM 874013b. Phone No. (include area code)
(505) 324-4145

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

8. Well Name and No. Escrito D14 2407 Com 1H

9. API Well No. 30-039-31231

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)
471' FNL 564' FWL, NW/NW, D Sec 14, T24N, R04W10. Field and Pool or Exploratory Area
Escrito Gallup (Associated)11. Country or Parish, State
Rio Arriba County, NM

12. CHECK THE APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT OR OTHER DATA

TYPE OF SUBMISSION

- ☒
- Notice of Intent
-
- ☐
- Subsequent Report
-
- ☐
- Final Abandonment Notice

TYPE OF ACTION

- ☐
- Acidize
- ☐
- Deepen
- ☐
- Production (Start/Resume)
- ☐
- Water Shut-Off
-
- ☐
- Alter Casing
- ☐
- Hydraulic Fracturing
- ☐
- Reclamation
- ☐
- Well Integrity
-
- ☐
- Casing Repair
- ☐
- New Construction
- ☐
- Recomplete
- ☐
- Other
-
- ☒
- Change Plans
- ☐
- Plug and Abandon
- ☐
- Temporarily Abandon
- Change**
-
- ☐
- Convert to Injection
- ☐
- Plug Back
- ☐
- Water Disposal

13. Describe Proposed or Completed Operation: Clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports must be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 must be filed once testing has been completed. Final Abandonment Notices must be filed only after all requirements, including reclamation, have been completed and the operator has determined that the site is ready for final inspection.)

LOGOS is requesting permission to change the well name from Escrito D14 24-7 1H to Escrito D14 2407 Com 1H.
LOGOS is revising the bottom hole location from the approved APD footages of 450' FNL & 330' FWL of Section 15 T24N R08W to 378' FNL & 2340' FEL of Section 16 T24N R07W. Changes to the horizontal leg are reflected in the attached revised C-102, Directional Drill Plan and Drilling Plan.

LOGOS proposes to make the following changes:

LOGOS will not be drilling the pilot hole approved in Change Plans NOI sundry dated 7/29/14.

LOGOS will not be drilling the 30" hole and using conductor pipe.

Change the 12-1/4" surface hole depth from 500' to 320' and land the 9-5/8" casing @ 320'.

Change the 7" Intermediate casing from J-55 26# to J-55 23#, and drill to 6259'MD/5890'TVD.

Change the 4-1/2" Production casing from B80 11.6# to P-110 11.6# and drill to 13561'MD/5835'TVD.

Estimated formation tops have also been adjusted after further analysis.

Cement volumes and drilling fluids will be adjusted accordingly.

OIL CONS. DIV DIST. 3
MAY 23 2017

NOTICE: THIS DOCUMENT IS A PUBLIC RECORD AND IS AVAILABLE FOR REVIEW AND REPRODUCTION BY ANY PERSON. NO FEE IS REQUIRED FOR ACCESS TO THIS INFORMATION. FOR OPERATIONS ON FEDERAL AND INDIAN LANDS.

14. I hereby certify that the foregoing is true and correct. Name (Printed/Typed)

Tamra Sessions

Regulatory Specialist

Title

Signature

Date

05/10/2017

THE SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by

Title

PE

Date

5/23/17

Conditions of approval, if any, are attached. Approval of this notice 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.

Office

FFD

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.

(Instructions on page 2)

ADHERE TO PREVIOUS NMOCD
CONDITIONS OF APPROVAL

NMOCD AV

12

DISTRICT I
N. French Dr., Hobbs, N.M. 88240
Phone: (575) 393-6181 Fax: (575) 393-0720

DISTRICT II
811 S. First St., Artesia, N.M. 88210
Phone: (575) 748-1283 Fax: (575) 748-9720

DISTRICT III
Rio Brazos Rd., Aztec, N.M. 87410
Phone: (505) 334-6178 Fax: (505) 334-6170

DISTRICT IV
S. St. Francis Dr., Santa Fe, NM 87506
(505) 476-3480 Fax: (505) 476-3482

State of New Mexico
Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION

1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-102
Revised August 1, 2011
Submit one copy to appropriate
District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-039-31231	² Pool Code 22619	³ Pool Name ESCRITO GALLUP (ASSOCIATED)
⁴ Property Code 317800	⁵ Property Name ESCRITO D14-2407 COM	⁶ Well Number 01H
⁷ GRID No. 289408	⁸ Operator Name LOGOS OPERATING, LLC	⁹ Elevation 7034

¹⁰ Surface Location

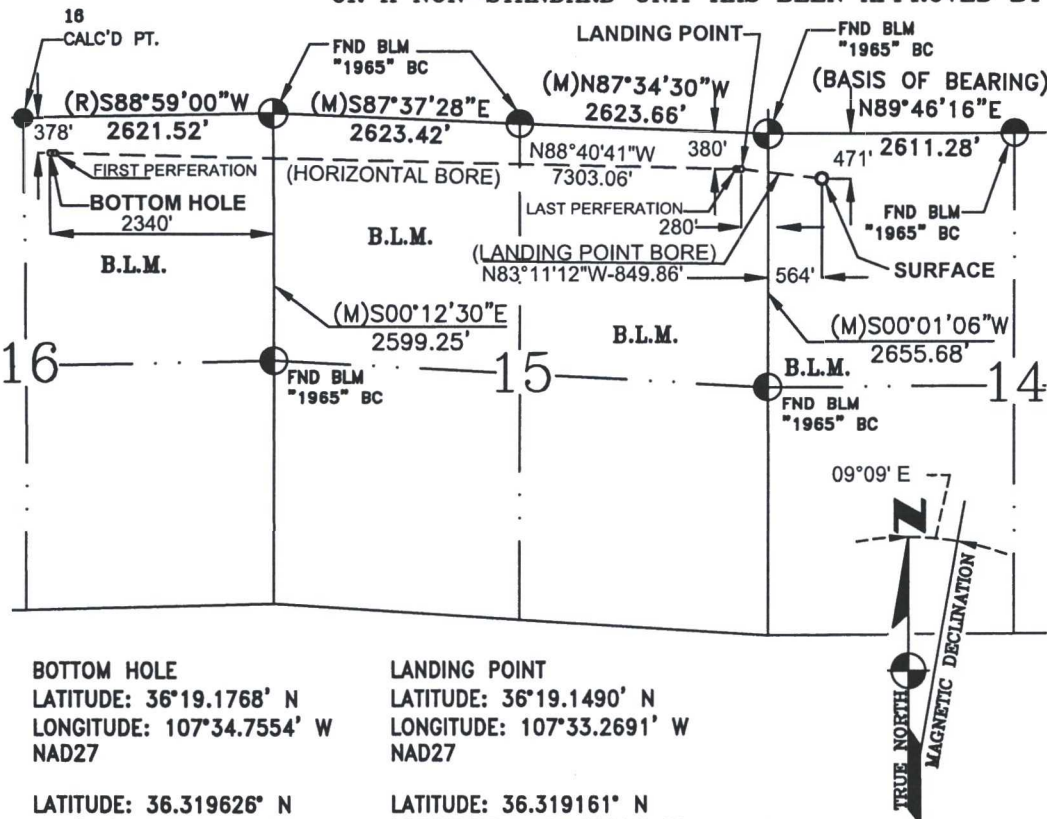
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
D	14	24-N	7-W		471	NORTH	564	WEST	RIO ARRIBA

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
B	16	24-N	7-W		378	NORTH	2340	EAST	RIO ARRIBA

¹² Dedicated Acres 480 ACRES= N/2 SEC 15 & NE/4 SEC 16	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.
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NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED
OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION



BOTTOM HOLE
LATITUDE: 36°19.1768' N
LONGITUDE: 107°34.7554' W
NAD27

LATITUDE: 36.319626° N
LONGITUDE: 107.579865° W
NAD83

BASIS OF BEARING:

TWEEN FOUND MONUMENTS AT THE NORTHWEST CORNER AND THE
NORTH QUARTER CORNER OF SECTION 14, TOWNSHIP 24 NORTH, RANGE
7 WEST, N.M.P.M. RIO ARRIBA COUNTY, NEW MEXICO.

LINE BEARS: N 89°46'16\" E A DISTANCE OF 2611.28 FEET AS MEASURED
BY G.P.S. LOCAL GRID NAD83.

LANDING POINT
LATITUDE: 36°19.1490' N
LONGITUDE: 107°33.2691' W
NAD27

LATITUDE: 36.319161° N
LONGITUDE: 107.555091° W
NAD83

SURFACE
LATITUDE: 36°19.1323' N
LONGITUDE: 107°33.0973' W
NAD27

LATITUDE: 36.318884° N
LONGITUDE: 107.552228° W
NAD83

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
a working interest, or to a voluntary pooling agreement
or a compulsory pooling order heretofore entered by the
division.

Tamra Sessions 5-2-17
Signature Date

Tamra Sessions
Printed Name

tsessions@logosresourcesllc.com
E-mail Address

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.

MAY 2, 2017

Date of Survey

Signature and Seal of Professional Surveyor



GLEN W. RUSSELL

Certificate Number

15703

**Escrito D14-2407 COM 1H
API # 30-039-31231
Lease Serial # NMNM 117567**

Surface Location: 471 FNL, 564 FWL

Legal Description: Sec 14, T24N, R7W (36.318884° N, 107.552228° W –NAD83)

Pay Zone Entry Point Location: 380 FNL, 330 FEL

Legal Description: Sec 15, T24N, R7W (36.319165° N, 107.555261° W –NAD83)

Permitted Bottom Hole Location: (PBHL): 380 FNL, 2290 FEL

Legal Description: Sec 16, T24N, R7W (36.319623° N, 107.579695° W –NAD83)

Rio Arriba, NM

1. The elevation of the unprepared ground is 7034' above sea level. Estimated KB Elev = 7048' (14'KB)
2. The geological name of the surface formation is the Nacimiento.
3. A rotary rig will be used to drill the well to a Proposed Total Measured Depth of 5835' TVD/13561' MD.
4. Estimated top of important geological markers:

Formation	Depth TVD (ft)	Depth MD (ft)
Nacimiento	Surface	Surface
Ojo Alamo	1842	1842
Kirtland	1963	1963
Fruitland	2146	2146
Pictured Cliffs	2453	2453
Chacra	2527	2527
Cliff House	3992	4004
Menefee	4010	4022
Point Lookout	4743	4763
Mancos	4933	4954
Gallup	5690	5749
Top Target Zone	5850	6028

5. Estimated depth at which anticipated water, oil, gas or other mineral bearing formations are expected to be encountered:

<u>Formation</u>	<u>Depth TVD (ft)</u>	<u>Water/Hydrocarbon</u>
Fruitland	2146	Gas
Pictured Cliffs	2453	Gas
Cliff House	3992	Gas
Point Lookout	4743	Gas
Mancos	4933	Oil/Gas

6. All proposed casing is new and the program is as follows:

Casing	Size	Depth		Grade	Weight	Connection	PSI x1000lbs		
		MD	TVD				Burst	Collapse	Tension
Surface	9-5/8"	0-320'	0-320'	J-55	36.00	STC	3520	2020	394
Intermediate	7"	0-6260'	0-5890'	J-55	23.00	LTC	4360	3270	313
Production	4-1/2 "	6110'-13561'	5890'	P-110	11.60	LTC	10690	7560	278

7. Cementing Program:

- a. **12-1/4" hole x 9-5/8" casing at 320'** will have cement circulated to surface with 190 sks (100% excess true hole) Class H Cement with 1/4 ppsx seal, 2% CaCL 15.8 ppg, 1.15 ft³/sk. Note: CEMENT MUST BE CIRCULATED TO SURFACE. STANDARD BOW SPRING CENTRALIZERS SHALL BE PLACED ON THE FIRST 3 (BOTTOM 3) JOINTS OF CASING (1 PER JOINT) AND 1 EVERY 3RD JOINT TO SURFACE. 20 BBLS OF WATER FOLLOWED BY 20 BBLS OF MUDFLUSH AHEAD OF CEMENT AS SPACER. Test Surface Casing to 1500 psi.
- b. **8-3/4" hole x 7" casing at 6260' MD.** Cement will be circulated to surface in a single stage with 688 sks (70% excess true hole) of HALCEM with 1.0 % CaC2. 1/4 #/sk Poly-E-Flake, 5 #/sk Kol-Seal (Gilsonite) – 12.3 ppg, 1.95 ft³/sk followed by 200 sks (70% excess true hole) VARICEM with 0.15% Versaset. 0.30% HALAD-9, 1/4 #/sk Poly-E-Flake, 5 #/sk Kol-Seal – 13.5 ppg, 1.3 ft³/sk. ONE CENTRALIZER PER JOINT FOR THE FIRST 3 JOINTS, THEN EVERY OTHER JOINT TO KOP, THEN ONE EVERY 3RD JOINT TO SURFACE. 20 BBLS OF WATER FOLLOWED BY 30 BBLS OF MUDFLUSH AHEAD OF CEMENT AS SPACER. Test Intermediate Casing to 1500 psi. Cement additives subject to change based on wellbore conditions and cement design criteria.
- c. **6-1/8" hole x 4-1/2" liner at 13561' MD** in a single stage using excess of approximately 30% for TOC at 6097'. Base slurry to consist of 653 sks EXTENDACEM -13.3 ppg, 1.36 ft³/sk. CENTRALIZERS TO BE USED AT DISCRETION IN LATERAL TO ACHIEVE 70% STAND OFF. CENTRALIZERS TO BE USED TO TIE BACK DEPTH OF 6000' TO ACHIEVE 70% STAND OFF. PACKOFF SEAL ASSEMBLY TO BE USED FOR LINER TOP ISOLATION. Cement additives subject to change based on wellbore conditions and cement design criteria. Liner to be pressure tested during completion operations.

8. Pressure Control Equipment

BOP equipment and accessories will meet or exceed BLM requirements outlined in 43 CFR Part 3160.

A 2000 psig double ram hydraulic BOP will be used (see attached diagram). Since maximum anticipated formation pressure is 2144 psig (0.364 psi/ft @ 5890' TVD), accessories to the BOP will meet BLM requirements for a 2000 psig system. In accordance with Onshore Order #2 (111.A well requirements) the anticipated surface pressure assuming a partially evacuated hole with normal pressure gradient of 0.22 psi/ft will be 1296 psi (5890' TVD x 0.22 psi/ft).

The accumulator system capacity will be sufficient to close all BOPE with a 50% safety factor. Fill line, kill line and line to the choke manifold will be 2".

BOPs will be function tested every 24 hours and will be recorded on an IADC log. Accessories to the BOPE will include upper and lower Kelly cocks with handles with a stabbing valve to fit drill pipe on the floor at all times, string float at bit, 3000 psig choke manifold with 2" adjustable and 2" positive chokes, and pressure gauge.

All BOP equipment will be hydraulically operated with controls accessible both on the rig floor.

The wellhead BOP equipment will be nipped-up on the 9-5/8" x 11" 2,000 psi WP casing head prior to drilling out from under surface casing. All ram preventers and related equipment will be tested to 2,000 psi for 10 minutes. Annular preventers will be tested to 50% of rated working pressure for 10 minutes. Surface casing will be tested to 70% of internal yield pressure. All preventers and surface casing will be tested before drilling out of surface casing. BOP equipment will be tested every 14 days, after any repairs are made to the BOP equipment, and after the BOP equipment is subjected to pressure. Annular preventers will be functionally operated at least once per week. Pipe rams will be activated daily and blind rams shall be activated each trip or at least weekly. The New Mexico Oil & Gas Conservation Commission and the BLM will be notified 24 hours in advance of testing of BOPE.

9. Mud Program:

0' - 320'	Fresh water/Spud Mud. Paper for losses and seepage. 8.4 to 9.0 ppg, 27 to 35 vis, PV <10, YP 1 to 10, FLNC, LGS < 4%
320' - 6260'	LSND WBM. As needed LCM for losses and seepage. 8.5 to 9.4 ppg, pH 8-9, 50 to 65 vis, PV 10-15, YP 15-25, FL < 5mls, LGS < 3%
6260' - 13561'	LSND WBM. As needed LCM for losses and seepage. 8.5 to 9.5 ppg, PH 8-9, 40 to 45 vis, PV 10-15, YP 10-15, FL < 4mls, LGS < 3%

**During drilling operations, all necessary products will be sufficiently stored on location for abnormal situations. The characteristics, use, testing of drilling mud and the implementation of related drilling procedures shall be designed to prevent the loss of well control. Sufficient quantities of mud materials shall be maintained or readily accessible for the purpose of assuring well control.

**A pH of 8.0-9.0 in the fresh water base mud system shall be maintained to control the effects corrosion has on metallurgy of equipment used.

Operating and Maintenance

LOGOS Operating will be using all above ground steel pits for fluid and cuttings while drilling. If any tank develops a leak we will have immediate visual discovery, we would then transfer the fluid to another tank then remove any contaminated soil and dispose of it in the cuttings bins for transportation. Any leaks, spills or other undesirable events will be reported in accordance with BLM NTL 3A. Rig crews will monitor the tanks at all times. A trip/surge tank will be used to monitor returns for any "kicks" of formation fluids.

Equipment:

2-Mongoose Shale Shakers

2-3400 High Speed Centrifuges with stands and pumps

2- three- high sided cuttings catch tank

2-Roll off bins with track

2-200 bbl Open top Frac tanks

1-Mud/Gas Separator and Degasser

1-Trip/Surge Tank

Electronic or Visual monitoring system to indicate lost returns and gas detection sensors

10. Testing, Logging and Coring Program:

- a. Testing Program: No drillstem tests are anticipated
- b. Electric Logging Program: TBD
- c. LWD Program: TBD
- d. Coring Program: None anticipated.
- e. CBL's and/or Temperature Surveys Will Be Performed as Needed or Required.
- f. MudLogging: On location from 4000'TVD to TD.
- g. Gamma Ray from surface casing point to TD
- h. Cased Hole: CBL/CCL/GRNDL will be run as needed for perforating control.

11. Bottom Hole Pressure expected to be 2144 +/- psi

12. Bottom Hole Temperature expected to be 160 deg F.

Well Control Equipment Schematic for 2M Service

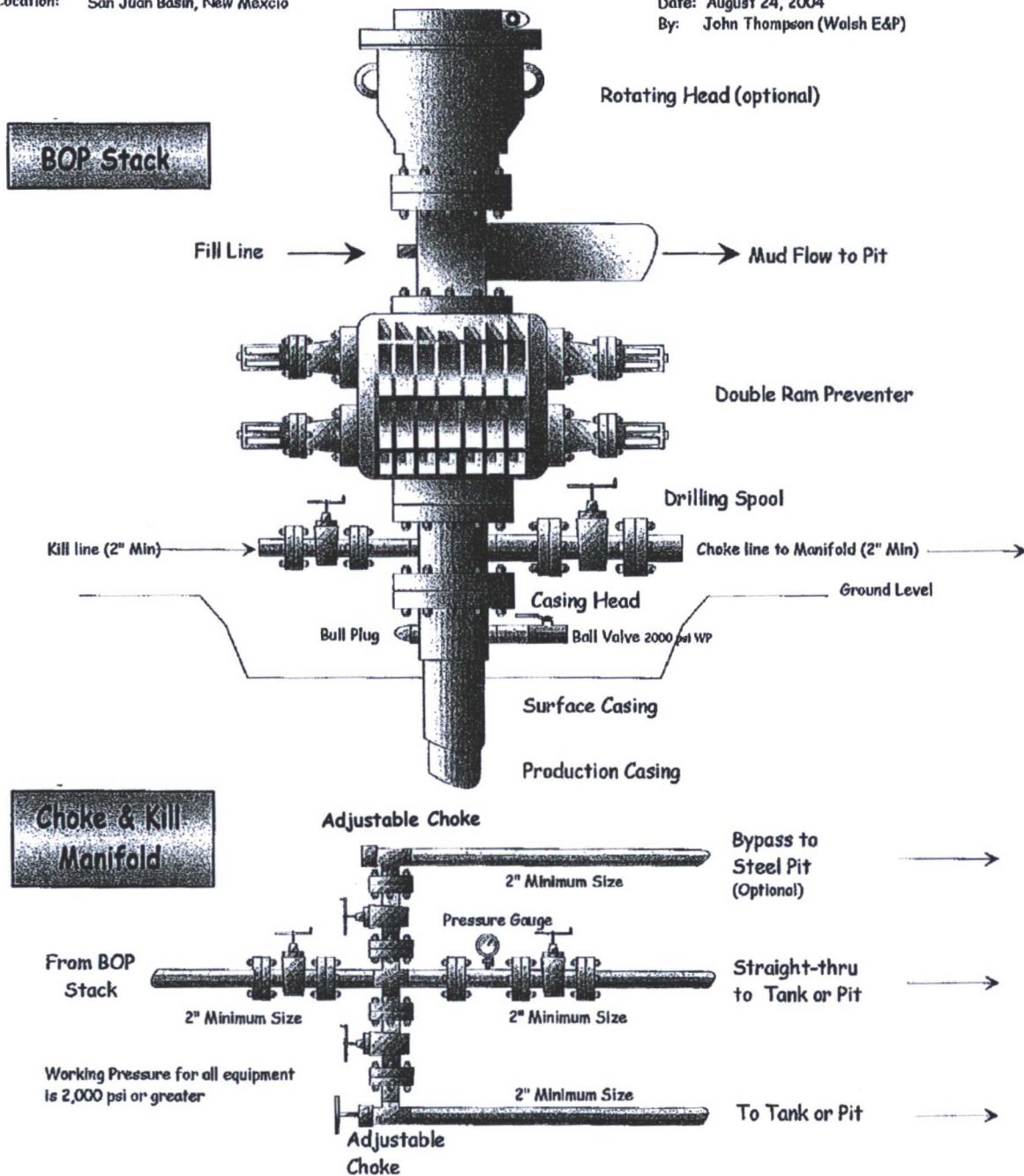
Attachment to Drilling Technical Program

Exhibit #1 Typical BOP setup

Location: San Juan Basin, New Mexico

Date: August 24, 2004

By: John Thompson (Welsh E&P)





Project: Rio Arriba County, NM

Site: S14-T24N-R7W

Well: ESCRITO D14-2407 COM #1H

Wellbore: OH

Design: PLAN #1

PROJECT DETAILS: Rio Arriba County, NM

Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: New Mexico Central Zone

SITE DETAILS: S14-T24N-R7W

Well Centre Northing: 1937924.11
Easting: 1256787.17

Positional Uncertainty: 0.00
Convergence: -0.77
Local North: True

SHL: 471' FNL & 564' FWL
SEC 14 T24N 24N R7W
BHL: 378' FNL & 2340' FEL
SEC 16 T24N 24N R7W

LANDING PT / 7" CSG:
380' FNL & 280' FEL
SEC 15 T24N 24N R7W

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	1200.00	0.00	0.00	1200.00	0.00	0.00	0.00	0.00	0.00	KOP #1 - 1200'
3	1358.13	3.16	289.90	1358.05	1.49	-4.10	2.00	289.90	4.15	EOB; INC=3.16°
4	5292.84	3.16	289.90	5286.77	75.39	-208.22	0.00	0.00	210.61	KOP #2 - 5292' MD, 5286' TVD
5	6259.53	90.00	271.34	5890.00	100.86	-843.54	9.00	-18.59	846.43	LP - 6259' MD, 5890' TVD; 90°
6	6359.53	90.00	271.34	5890.00	103.20	-943.51	0.00	0.00	946.43	START BUILD
7	6381.44	90.44	271.34	5889.92	103.71	-965.42	2.00	-0.31	968.34	EOB; INC=90.44°
8	13561.02	90.44	271.34	5835.00	271.31	-8142.83	0.00	0.00	8147.35	TD at 13561.02

CASING DETAILS

TVD	MD	Name	Size
320.00	320.00	9 5/8"	0
5890.00	6259.53	7"	0
5835.00	13561.02	4 1/2"	0

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
5846.29	6022.22	TOP GLLP TARGET

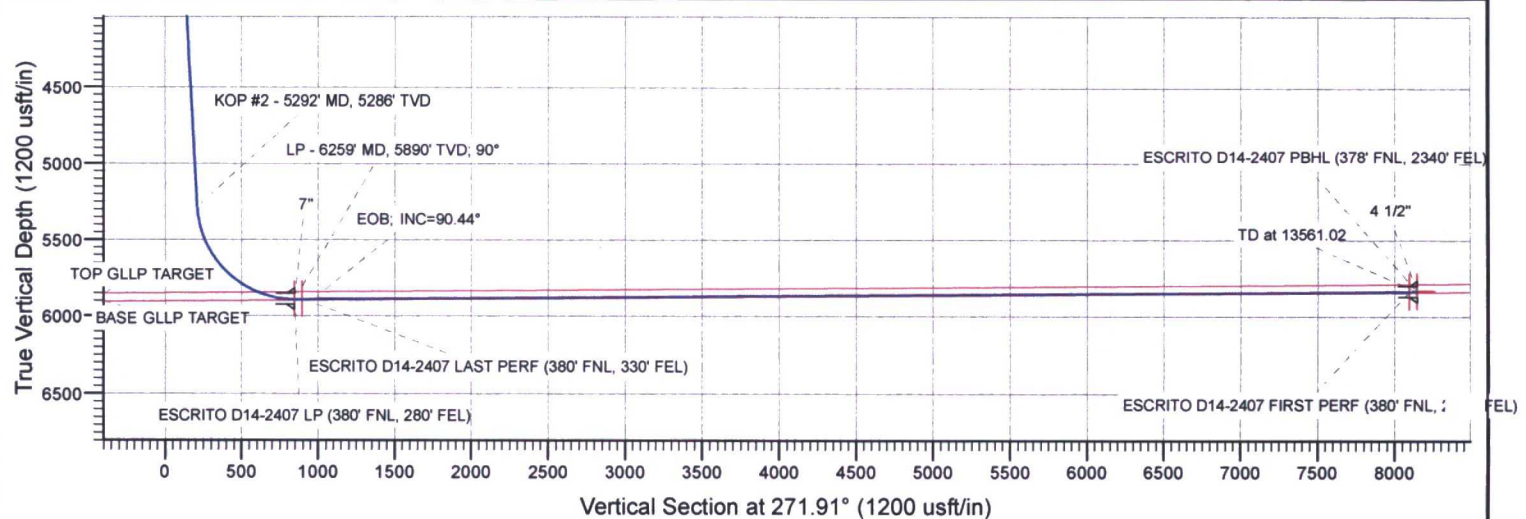
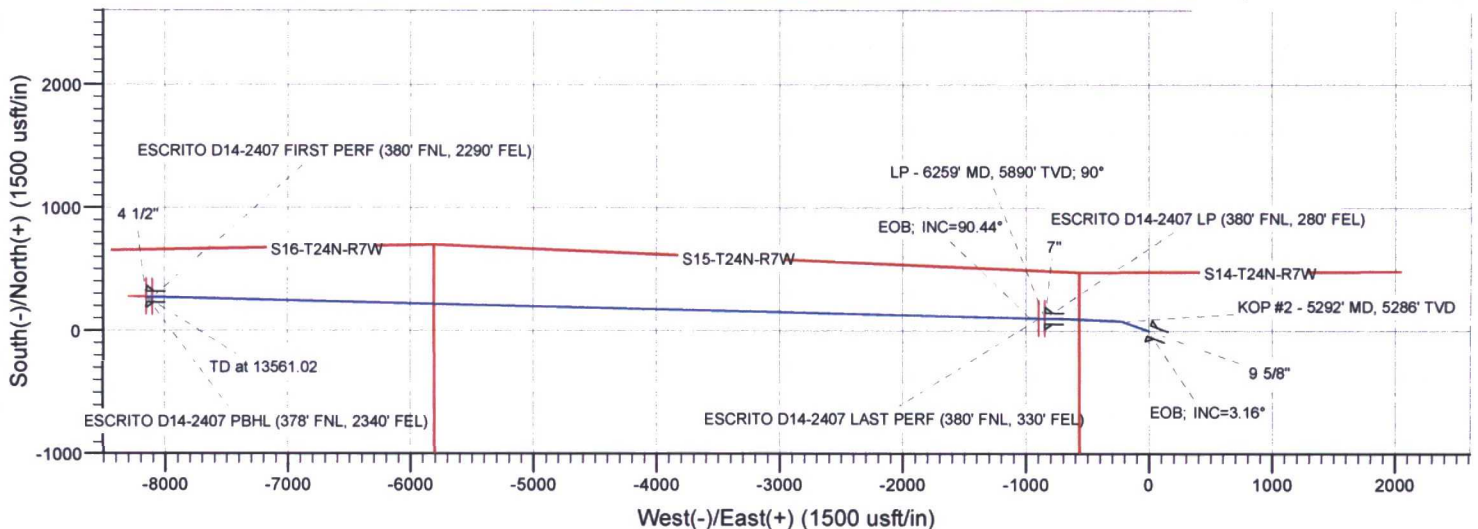
DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
ESCRITO D14-2407 PBHL (378' FNL, 2340' FEL)	5835.00	271.31	-8142.83	1938305.02	1248648.73	36.319626	-107.579865
ESCRITO D14-2407 FIRST PERF (380' FNL, 2290' FEL)	5835.38	270.20	-8092.74	1938303.24	1248698.80	36.319623	-107.579695
ESCRITO D14-2407 LAST PERF (380' FNL, 330' FEL)	5890.00	102.32	-893.63	1938038.45	1255895.00	36.319165	-107.555261
ESCRITO D14-2407 LP (380' FNL, 280' FEL)	5890.00	100.86	-843.54	1938036.32	1255945.06	36.319161	-107.555091



Azimuths to True North
Magnetic North: 8.87°

Magnetic Field
Strength: 49708.4snT
Dip Angle: 62.98°
Date: 5/10/2017
Model: HDGM



WELL DETAILS: ESCRITO D14-2407 COM #1H

+N/-S	+E/-W	Northing	Ground Level: Easting	7029.00	Latitude	Longitude
0.00	0.00	1937924.11	1256787.17		36.318884	-107.552228



Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well ESCRITO D14-2407 COM #1H
Company:	LOGOS Operating LLC	TVD Reference:	KB=14' @ 7043.00usft (AZTEC 920)
Project:	Rio Arriba County, NM	MD Reference:	KB=14' @ 7043.00usft (AZTEC 920)
Site:	S14-T24N-R7W	North Reference:	True
Well:	ESCRITO D14-2407 COM #1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #1		

Project	Rio Arriba County, NM		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Central Zone		

Site	S14-T24N-R7W		
Site Position:		Northing:	1,937,924.11 usft
From:	Lat/Long	Easting:	1,256,787.17 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16"
		Latitude:	36.318884
		Longitude:	-107.552228
		Grid Convergence:	-0.77 °

Well	ESCRITO D14-2407 COM #1H		
Well Position	+N/-S	0.00 usft	Northing: 1,937,924.11 usft
	+E/-W	0.00 usft	Easting: 1,256,787.17 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	0.00 usft
		Latitude:	36.318884
		Longitude:	-107.552228
		Ground Level:	7,029.00 usft

Wellbore	OH		
Magnetics	Model Name	Sample Date	Declination (°)
	HDGM	5/10/2017	8.87
			Dip Angle (°) 62.98
			Field Strength (nT) 49,708

Design	PLAN #1		
Audit Notes:			
Version:	Phase:	PLAN	Tie On Depth: 0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)
	0.00	0.00	0.00
			Direction (°) 271.91

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,358.13	3.16	289.90	1,358.05	1.49	-4.10	2.00	2.00	0.00	289.90	
5,292.84	3.16	289.90	5,286.77	75.39	-208.22	0.00	0.00	0.00	0.00	
6,259.53	90.00	271.34	5,890.00	100.86	-843.54	9.00	8.98	-1.92	-18.59	ESCRITO D14-2407 I
6,359.53	90.00	271.34	5,890.00	103.20	-943.51	0.00	0.00	0.00	0.00	
6,381.44	90.44	271.34	5,889.92	103.71	-965.42	2.00	2.00	-0.01	-0.31	
13,561.02	90.44	271.34	5,835.00	271.31	-8,142.83	0.00	0.00	0.00	0.00	ESCRITO D14-2407 I

Cathedral Energy Services

Planning Report

Database: USA EDM 5000 Multi Users DB
Company: LOGOS Operating LLC
Project: Rio Arriba County, NM
Site: S14-T24N-R7W
Well: ESCRITO D14-2407 COM #1H
Wellbore: OH
Design: PLAN #1

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

Well ESCRITO D14-2407 COM #1H
KB=14' @ 7043.00usft (AZTEC 920)
KB=14' @ 7043.00usft (AZTEC 920)
True
Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100u)	Comments / Formations
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	
320.00	0.00	0.00	320.00	0.00	0.00	0.00	0.00	0.00	9 5/8"
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	KOP #1 - 1200'
1,300.00	2.00	289.90	1,299.98	0.59	-1.64	1.66	2.00	2.00	
1,358.13	3.16	289.90	1,358.05	1.49	-4.10	4.15	2.00	2.00	EOB; INC=3.16°
1,400.00	3.16	289.90	1,399.86	2.27	-6.27	6.35	0.00	0.00	
1,500.00	3.16	289.90	1,499.70	4.15	-11.46	11.59	0.00	0.00	
1,600.00	3.16	289.90	1,599.55	6.03	-16.65	16.84	0.00	0.00	
1,700.00	3.16	289.90	1,699.40	7.91	-21.84	22.09	0.00	0.00	
1,800.00	3.16	289.90	1,799.25	9.78	-27.02	27.34	0.00	0.00	
1,900.00	3.16	289.90	1,899.09	11.66	-32.21	32.58	0.00	0.00	
2,000.00	3.16	289.90	1,998.94	13.54	-37.40	37.83	0.00	0.00	
2,100.00	3.16	289.90	2,098.79	15.42	-42.59	43.08	0.00	0.00	
2,200.00	3.16	289.90	2,198.64	17.30	-47.77	48.32	0.00	0.00	
2,300.00	3.16	289.90	2,298.49	19.18	-52.96	53.57	0.00	0.00	
2,400.00	3.16	289.90	2,398.33	21.05	-58.15	58.82	0.00	0.00	
2,500.00	3.16	289.90	2,498.18	22.93	-63.34	64.07	0.00	0.00	
2,600.00	3.16	289.90	2,598.03	24.81	-68.52	69.31	0.00	0.00	
2,700.00	3.16	289.90	2,697.88	26.69	-73.71	74.56	0.00	0.00	
2,800.00	3.16	289.90	2,797.72	28.57	-78.90	79.81	0.00	0.00	
2,900.00	3.16	289.90	2,897.57	30.44	-84.09	85.05	0.00	0.00	
3,000.00	3.16	289.90	2,997.42	32.32	-89.27	90.30	0.00	0.00	
3,100.00	3.16	289.90	3,097.27	34.20	-94.46	95.55	0.00	0.00	
3,200.00	3.16	289.90	3,197.11	36.08	-99.65	100.80	0.00	0.00	
3,300.00	3.16	289.90	3,296.96	37.96	-104.84	106.04	0.00	0.00	
3,400.00	3.16	289.90	3,396.81	39.84	-110.02	111.29	0.00	0.00	
3,500.00	3.16	289.90	3,496.66	41.71	-115.21	116.54	0.00	0.00	
3,600.00	3.16	289.90	3,596.51	43.59	-120.40	121.78	0.00	0.00	
3,700.00	3.16	289.90	3,696.35	45.47	-125.59	127.03	0.00	0.00	
3,800.00	3.16	289.90	3,796.20	47.35	-130.77	132.28	0.00	0.00	
3,900.00	3.16	289.90	3,896.05	49.23	-135.96	137.53	0.00	0.00	
4,000.00	3.16	289.90	3,995.90	51.10	-141.15	142.77	0.00	0.00	
4,100.00	3.16	289.90	4,095.74	52.98	-146.34	148.02	0.00	0.00	
4,200.00	3.16	289.90	4,195.59	54.86	-151.52	153.27	0.00	0.00	
4,300.00	3.16	289.90	4,295.44	56.74	-156.71	158.51	0.00	0.00	
4,400.00	3.16	289.90	4,395.29	58.62	-161.90	163.76	0.00	0.00	
4,500.00	3.16	289.90	4,495.13	60.50	-167.09	169.01	0.00	0.00	
4,600.00	3.16	289.90	4,594.98	62.37	-172.27	174.26	0.00	0.00	
4,700.00	3.16	289.90	4,694.83	64.25	-177.46	179.50	0.00	0.00	
4,800.00	3.16	289.90	4,794.68	66.13	-182.65	184.75	0.00	0.00	
4,900.00	3.16	289.90	4,894.53	68.01	-187.84	190.00	0.00	0.00	

Cathedral Energy Services

Planning Report

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 KB=14' @ 7043.00usft (AZTEC 920)
 True
 Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100u)	Comments / Formations
5,000.00	3.16	289.90	4,994.37	69.89	-193.02	195.24	0.00	0.00	
5,100.00	3.16	289.90	5,094.22	71.77	-198.21	200.49	0.00	0.00	
5,200.00	3.16	289.90	5,194.07	73.64	-203.40	205.74	0.00	0.00	
5,292.84	3.16	289.90	5,286.77	75.39	-208.22	210.61	0.00	0.00	KOP #2 - 5292' MD, 5286' TVD
5,300.00	3.78	286.79	5,293.91	75.52	-208.63	211.03	9.00	8.61	
5,400.00	12.68	275.82	5,392.79	77.59	-222.73	225.19	9.00	8.90	
5,500.00	21.66	273.88	5,488.23	79.96	-252.13	254.65	9.00	8.98	
5,600.00	30.66	273.04	5,577.90	82.57	-296.09	298.68	9.00	8.99	
5,700.00	39.65	272.56	5,659.57	85.35	-353.55	356.19	9.00	9.00	
5,800.00	48.65	272.23	5,731.25	88.23	-423.07	425.77	9.00	9.00	
5,900.00	57.65	271.98	5,791.16	91.16	-502.95	505.71	9.00	9.00	
6,000.00	66.65	271.78	5,837.83	94.04	-591.23	594.03	9.00	9.00	
6,022.22	68.65	271.73	5,846.29	94.67	-611.77	614.59	9.00	9.00	TOP GLLP TARGET
6,100.00	75.64	271.60	5,870.12	96.82	-685.73	688.57	9.00	9.00	
6,200.00	84.64	271.43	5,887.22	99.42	-784.12	786.99	9.00	9.00	
6,259.53	90.00	271.34	5,890.00	100.86	-843.54	846.43	9.00	9.00	LP - 6259' MD, 5890' TVD; 90° - 7"
6,300.00	90.00	271.34	5,890.00	101.81	-884.00	886.90	0.00	0.00	
6,359.53	90.00	271.34	5,890.00	103.20	-943.51	946.43	0.00	0.00	START BUILD
6,381.44	90.44	271.34	5,889.92	103.71	-965.42	968.34	2.00	2.00	EOB; INC=90.44°
6,400.00	90.44	271.34	5,889.77	104.15	-983.97	986.89	0.00	0.00	
6,500.00	90.44	271.34	5,889.01	106.48	-1,083.94	1,086.89	0.00	0.00	
6,600.00	90.44	271.34	5,888.24	108.81	-1,183.91	1,186.88	0.00	0.00	
6,700.00	90.44	271.34	5,887.48	111.15	-1,283.88	1,286.87	0.00	0.00	
6,800.00	90.44	271.34	5,886.71	113.48	-1,383.85	1,386.86	0.00	0.00	
6,900.00	90.44	271.34	5,885.95	115.82	-1,483.82	1,486.85	0.00	0.00	
7,000.00	90.44	271.34	5,885.18	118.15	-1,583.79	1,586.85	0.00	0.00	
7,100.00	90.44	271.34	5,884.42	120.49	-1,683.76	1,686.84	0.00	0.00	
7,200.00	90.44	271.34	5,883.66	122.82	-1,783.73	1,786.83	0.00	0.00	
7,300.00	90.44	271.34	5,882.89	125.16	-1,883.70	1,886.82	0.00	0.00	
7,400.00	90.44	271.34	5,882.13	127.49	-1,983.67	1,986.82	0.00	0.00	
7,500.00	90.44	271.34	5,881.36	129.82	-2,083.64	2,086.81	0.00	0.00	
7,600.00	90.44	271.34	5,880.60	132.16	-2,183.61	2,186.80	0.00	0.00	
7,700.00	90.44	271.34	5,879.83	134.49	-2,283.58	2,286.79	0.00	0.00	
7,800.00	90.44	271.34	5,879.07	136.83	-2,383.55	2,386.78	0.00	0.00	
7,900.00	90.44	271.34	5,878.30	139.16	-2,483.52	2,486.78	0.00	0.00	
8,000.00	90.44	271.34	5,877.54	141.50	-2,583.49	2,586.77	0.00	0.00	
8,100.00	90.44	271.34	5,876.77	143.83	-2,683.46	2,686.76	0.00	0.00	
8,200.00	90.44	271.34	5,876.01	146.16	-2,783.43	2,786.75	0.00	0.00	
8,300.00	90.44	271.34	5,875.24	148.50	-2,883.40	2,886.74	0.00	0.00	
8,400.00	90.44	271.34	5,874.48	150.83	-2,983.37	2,986.74	0.00	0.00	
8,500.00	90.44	271.34	5,873.71	153.17	-3,083.34	3,086.73	0.00	0.00	
8,600.00	90.44	271.34	5,872.95	155.50	-3,183.31	3,186.72	0.00	0.00	
8,700.00	90.44	271.34	5,872.18	157.84	-3,283.28	3,286.71	0.00	0.00	
8,800.00	90.44	271.34	5,871.42	160.17	-3,383.25	3,386.70	0.00	0.00	
8,900.00	90.44	271.34	5,870.65	162.50	-3,483.22	3,486.70	0.00	0.00	
9,000.00	90.44	271.34	5,869.89	164.84	-3,583.19	3,586.69	0.00	0.00	
9,100.00	90.44	271.34	5,869.12	167.17	-3,683.16	3,686.68	0.00	0.00	
9,200.00	90.44	271.34	5,868.36	169.51	-3,783.13	3,786.67	0.00	0.00	
9,300.00	90.44	271.34	5,867.59	171.84	-3,883.10	3,886.67	0.00	0.00	
9,400.00	90.44	271.34	5,866.83	174.18	-3,983.07	3,986.66	0.00	0.00	
9,500.00	90.44	271.34	5,866.06	176.51	-4,083.04	4,086.65	0.00	0.00	
9,600.00	90.44	271.34	5,865.30	178.84	-4,183.01	4,186.64	0.00	0.00	

Cathedral Energy Services

Planning Report

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Well ESCRITO D14-2407 COM #1H
 KB=14' @ 7043.00usft (AZTEC 920)
 KB=14' @ 7043.00usft (AZTEC 920)
 True
 Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100u)	Comments / Formations
9,700.00	90.44	271.34	5,864.53	181.18	-4,282.98	4,286.63	0.00	0.00	
9,800.00	90.44	271.34	5,863.77	183.51	-4,382.95	4,386.63	0.00	0.00	
9,900.00	90.44	271.34	5,863.00	185.85	-4,482.92	4,486.62	0.00	0.00	
10,000.00	90.44	271.34	5,862.24	188.18	-4,582.89	4,586.61	0.00	0.00	
10,100.00	90.44	271.34	5,861.47	190.52	-4,682.86	4,686.60	0.00	0.00	
10,200.00	90.44	271.34	5,860.71	192.85	-4,782.83	4,786.59	0.00	0.00	
10,300.00	90.44	271.34	5,859.94	195.18	-4,882.79	4,886.59	0.00	0.00	
10,400.00	90.44	271.34	5,859.18	197.52	-4,982.76	4,986.58	0.00	0.00	
10,500.00	90.44	271.34	5,858.41	199.85	-5,082.73	5,086.57	0.00	0.00	
10,600.00	90.44	271.34	5,857.65	202.19	-5,182.70	5,186.56	0.00	0.00	
10,700.00	90.44	271.34	5,856.88	204.52	-5,282.67	5,286.56	0.00	0.00	
10,800.00	90.44	271.34	5,856.12	206.86	-5,382.64	5,386.55	0.00	0.00	
10,900.00	90.44	271.34	5,855.35	209.19	-5,482.61	5,486.54	0.00	0.00	
11,000.00	90.44	271.34	5,854.59	211.52	-5,582.58	5,586.53	0.00	0.00	
11,100.00	90.44	271.34	5,853.82	213.86	-5,682.55	5,686.52	0.00	0.00	
11,200.00	90.44	271.34	5,853.06	216.19	-5,782.52	5,786.52	0.00	0.00	
11,300.00	90.44	271.34	5,852.29	218.53	-5,882.49	5,886.51	0.00	0.00	
11,400.00	90.44	271.34	5,851.53	220.86	-5,982.46	5,986.50	0.00	0.00	
11,500.00	90.44	271.34	5,850.76	223.20	-6,082.43	6,086.49	0.00	0.00	
11,600.00	90.44	271.34	5,850.00	225.53	-6,182.40	6,186.48	0.00	0.00	
11,700.00	90.44	271.34	5,849.23	227.87	-6,282.37	6,286.48	0.00	0.00	
11,800.00	90.44	271.34	5,848.47	230.20	-6,382.34	6,386.47	0.00	0.00	
11,900.00	90.44	271.34	5,847.71	232.53	-6,482.31	6,486.46	0.00	0.00	
12,000.00	90.44	271.34	5,846.94	234.87	-6,582.28	6,586.45	0.00	0.00	
12,100.00	90.44	271.34	5,846.18	237.20	-6,682.25	6,686.44	0.00	0.00	
12,200.00	90.44	271.34	5,845.41	239.54	-6,782.22	6,786.44	0.00	0.00	
12,300.00	90.44	271.34	5,844.65	241.87	-6,882.19	6,886.43	0.00	0.00	
12,400.00	90.44	271.34	5,843.88	244.21	-6,982.16	6,986.42	0.00	0.00	
12,500.00	90.44	271.34	5,843.12	246.54	-7,082.13	7,086.41	0.00	0.00	
12,600.00	90.44	271.34	5,842.35	248.87	-7,182.10	7,186.41	0.00	0.00	
12,700.00	90.44	271.34	5,841.59	251.21	-7,282.07	7,286.40	0.00	0.00	
12,800.00	90.44	271.34	5,840.82	253.54	-7,382.04	7,386.39	0.00	0.00	
12,900.00	90.44	271.34	5,840.06	255.88	-7,482.01	7,486.38	0.00	0.00	
13,000.00	90.44	271.34	5,839.29	258.21	-7,581.98	7,586.37	0.00	0.00	
13,100.00	90.44	271.34	5,838.53	260.55	-7,681.95	7,686.37	0.00	0.00	
13,200.00	90.44	271.34	5,837.76	262.88	-7,781.92	7,786.36	0.00	0.00	
13,300.00	90.44	271.34	5,837.00	265.21	-7,881.89	7,886.35	0.00	0.00	
13,400.00	90.44	271.34	5,836.23	267.55	-7,981.86	7,986.34	0.00	0.00	
13,500.00	90.44	271.34	5,835.47	269.88	-8,081.83	8,086.33	0.00	0.00	
13,561.02	90.44	271.34	5,835.00	271.31	-8,142.83	8,147.35	0.00	0.00	TD at 13561.02

Cathedral Energy Services

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 True
 Minimum Curvature

Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
ESCRITO D14-2407 PB - plan hits target center - Point	0.00	0.00	5,835.00	271.31	-8,142.83	1,938,305.02	1,248,648.73	36.319626	-107.579865
ESCRITO D14-2407 LP - plan hits target center - Point	0.00	0.00	5,890.00	100.86	-843.54	1,938,036.32	1,255,945.06	36.319161	-107.555091
ESCRITO D14-2407 FIF - plan misses target center by 10.91usft at 13500.00usft MD (5835.47 TVD, 269.88 N, -8081.83 E) - Point	0.00	0.00	5,835.38	270.20	-8,092.74	1,938,303.24	1,248,698.80	36.319623	-107.579695
ESCRITO D14-2407 LA: - plan misses target center by 0.29usft at 6309.64usft MD (5890.00 TVD, 102.03 N, -893.64 E) - Point	0.00	0.00	5,890.00	102.32	-893.63	1,938,038.45	1,255,895.00	36.319165	-107.555261

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
6,259.53	5,890.00	7"	0	0
320.00	320.00	9 5/8"	0	0
13,561.02	5,835.00	4 1/2"	0	0

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
6,022.22	5,851.00	TOP GLLP TARGET		-0.44	271.30

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,200.00	1,200.00	0.00	0.00	KOP #1 - 1200'
1,358.13	1,358.05	1.49	-4.10	EOB; INC=3.16°
5,292.84	5,286.77	75.39	-208.22	KOP #2 - 5292' MD, 5286' TVD
6,259.53	5,890.00	100.86	-843.54	LP - 6259' MD, 5890' TVD; 90°
6,359.53	5,890.00	103.20	-943.51	START BUILD
6,381.44	5,889.92	103.71	-965.42	EOB; INC=90.44°
13,561.02	5,835.00	271.31	-8,142.83	TD at 13561.02